



Wylfa Newydd Project

8.19 Health Impact Assessment Report

PINS Reference Number: EN010007

Application Reference Number: 8.19

June 2018

Revision 1.0

Regulation Number: 5(2)(q)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

[This page is intentionally blank]

Contents

	Executive Summary	1
A	Introduction to the Wylfa Newydd Project and approach to the Health Impact Assessment	23
A.1	Introduction	23
	<i>Background</i>	23
	<i>Overview of the Wylfa Newydd Project</i>	23
	<i>Health Impact Assessment</i>	29
A.2	Navigation through this report	31
A.3	Project overview.....	34
	<i>Introduction</i>	34
	<i>Summary of the development</i>	34
	<i>Outline programme of construction and operation</i>	40
	<i>Workforce profile</i>	43
A.4	Overarching health legislation, policy and guidance	50
	<i>Introduction</i>	50
	<i>Key legislation</i>	50
	<i>Key policy</i>	53
	<i>Key guidance</i>	71
A.5	HIA Scoping	72
	<i>Construction</i>	73
	<i>Operation</i>	73
	<i>Topics Scoped Out</i>	74
	<i>Radiation</i>	74
B	Introduction to the topic assessments.....	77
B.1	Introduction	77
B.2	Air quality	77
	<i>Potential health and well-being effects</i>	77
B.3	Noise.....	78
	<i>Potential health and well-being effects</i>	78
B.4	Housing.....	80
	<i>Potential health and well-being effects</i>	80
B.5	Transport.....	80
	<i>Potential health and well-being effects</i>	80
B.6	Demand for medical and healthcare services	82
	<i>Potential health and well-being effects</i>	82
B.7	Lifestyle and behaviour	84
	<i>Potential health and well-being effects</i>	84

B.8	Community identity, social networks and culture	85
	<i>Potential health and well-being effects.....</i>	<i>85</i>
B.9	Employment, income and economic development.....	87
	<i>Potential health and well-being effects.....</i>	<i>87</i>
B.10	Education and training	89
	<i>Potential health and well-being effects.....</i>	<i>89</i>
B.11	Physical activity.....	90
	<i>Potential health and well-being effects.....</i>	<i>90</i>
B.12	Public understanding of risk	92
	<i>Potential health and well-being effects.....</i>	<i>92</i>
B.13	Energy generation: demand and affordability.....	93
	<i>Potential health and well-being effects.....</i>	<i>93</i>
B.14	Energy generation: low carbon technology	94
	<i>Potential health and well-being effects.....</i>	<i>94</i>
C	Project-wide effects.....	96
C.1	Introduction	96
C.2	Air quality	96
	<i>Emissions from vehicles transporting materials and people on the local road network during construction</i>	<i>96</i>
C.3	Noise.....	99
	<i>Noise from vehicles transporting materials and people on the local road network during construction.....</i>	<i>99</i>
C.4	Housing.....	102
	<i>Current tenants leaving due to housing competition during construction</i>	<i>102</i>
C.5	Transport.....	105
	<i>Road safety during construction.....</i>	<i>105</i>
	<i>Health trip journey times (e.g. to a hospital) during construction.....</i>	<i>108</i>
C.6	Demand for medical and healthcare services	111
	<i>NHS capacity during construction</i>	<i>111</i>
	<i>Communicable disease during construction.....</i>	<i>122</i>
C.7	Lifestyle and behaviour	124
	<i>Healthy and safe communities during construction.....</i>	<i>124</i>
C.8	Community identity, social networks and culture	130
	<i>Effects on social networks and culture during construction.....</i>	<i>130</i>
C.9	Employment, income and economic development.....	134
	<i>Supporting local people to access jobs during construction.....</i>	<i>134</i>
	<i>Labour churn (the movement of workers between roles) during construction</i>	<i>137</i>
	<i>Workers spending locally (indirectly benefiting the local economy) during construction.....</i>	<i>140</i>
	<i>Supporting local people to access jobs during operation.....</i>	<i>142</i>

C.10	Education and training	145
	<i>Upskilling local people for construction roles</i>	<i>145</i>
	<i>Supporting local people with their career choices, apprenticeships and progression during operation</i>	<i>148</i>
C.11	Public understanding of risk	151
	<i>The understanding of risk about, and expectations of, the Power Station during operation</i>	<i>151</i>
C.12	Energy generation: demand and affordability.....	154
	<i>The national health benefit of an uninterrupted and affordable electricity supply during operation</i>	<i>154</i>
C.13	Energy generation: low carbon technology	156
	<i>The global health benefit from reducing the effect of climate change during operation</i>	<i>156</i>
D	WNDA Development	159
D.1	Introduction	159
D.2	Air quality	159
	<i>Vehicle and machinery emissions on the Wylfa Newydd Development Area during construction.....</i>	<i>159</i>
	<i>Dust generated by construction activities, excavation and earth movements during construction.....</i>	<i>162</i>
D.3	Noise	165
	<i>Vehicle and machinery noise on the Wylfa Newydd Development Area during construction.....</i>	<i>165</i>
D.4	Community identity, social networks and culture	170
	<i>Changes to local context and identity during construction</i>	<i>170</i>
	<i>Night-time lighting effects during construction.....</i>	<i>173</i>
D.5	Physical activity.....	176
	<i>Promoting use of active travel diversions (e.g. walking and cycling routes) during construction.....</i>	<i>176</i>
	<i>Alternatives for the most affected communities to be physically active during construction.....</i>	<i>179</i>
E	Off-Site Power Station Facilities: AECC, ESL and MEEG.....	183
E.1	Introduction	183
E.2	Summary of rapid HIA screening statement.....	183
F	Park and Ride	186
F.1	Introduction	186
F.2	Summary of rapid HIA screening statement.....	186
G	A5025 Off-line Highway Improvements.....	189
G.1	Introduction	189
G.2	Summary of rapid HIA screening statement.....	189
H	Logistics Centre	193

H.1	Introduction	193
H.2	Summary of rapid HIA screening statement.....	193
I	Cumulative effects	196
I.1	Introduction	196
	<i>What are cumulative effects?</i>	<i>196</i>
	<i>Temporal limits.....</i>	<i>196</i>
	<i>Mitigation.....</i>	<i>196</i>
I.2	Intra-project cumulative effects	197
I.3	Inter-project cumulative effects	209
J	Health commitments	221
J.1	Introduction	221
J.2	Mitigation framework for the HIA.....	221
J.3	Mitigation Route Map	222
J.4	Health commitments	222
	<i>Health Monitoring Group.....</i>	<i>222</i>
	<i>Community Involvement Officer(s).....</i>	<i>223</i>
	<i>Support</i>	<i>223</i>
	<i>Healthcare.....</i>	<i>224</i>
	<i>Construction Practices</i>	<i>225</i>
	<i>Design.....</i>	<i>227</i>
	<i>Safeguarding.....</i>	<i>227</i>
	<i>Rapid HIA mitigation</i>	<i>227</i>
K	References.....	228
K.1	Schedule of references and notes	228
L	HIA appendix – methods.....	243
L.1	Overview of the assessment process.....	243
L.2	HIA approach to assessment.....	243
	<i>Stages of the HIA.....</i>	<i>243</i>
	<i>Objectives of the HIA</i>	<i>244</i>
	<i>Spatial and temporal scope of the HIA.....</i>	<i>246</i>
	<i>Methods used in the assessment.....</i>	<i>248</i>
L.3	Topic-specific methodologies and assessment criteria	265
	<i>Introduction to the assessment process.....</i>	<i>265</i>
	<i>Air quality</i>	<i>265</i>
	<i>Noise.....</i>	<i>270</i>
	<i>Housing.....</i>	<i>276</i>
	<i>Transport.....</i>	<i>279</i>
	<i>Demand for medical and healthcare services</i>	<i>283</i>
	<i>Lifestyle and behaviour</i>	<i>291</i>
	<i>Community identity, social networks and culture</i>	<i>295</i>
	<i>Employment, income and economic development.....</i>	<i>303</i>

	<i>Education and training</i>	307
	<i>Physical activity</i>	309
	<i>Public understanding of risk</i>	313
	<i>Energy generation: demand and affordability</i>	320
	<i>Energy generation: low carbon technology</i>	321
L.4	<i>Decommissioning</i>	323
	<i>Introduction</i>	323
	<i>Air quality</i>	323
	<i>Noise</i>	323
	<i>Housing</i>	324
	<i>Transport</i>	324
	<i>Demand for medical and healthcare services</i>	324
	<i>Lifestyle and behaviour</i>	324
	<i>Community identity, social networks and culture</i>	324
	<i>Employment, income and economic development</i>	324
	<i>Education and training</i>	325
	<i>Physical activity</i>	325
M	<i>HIA appendix – baseline</i>	326
M.1	<i>Introduction</i>	326
M.2	<i>Site-specific baseline data</i>	326
	<i>Introduction</i>	326
	<i>Quality Outcomes Framework data</i>	343
M.3	<i>Local, regional and national baseline data</i>	345
	<i>Introduction</i>	345
N	<i>HIA appendix – consultation</i>	360
N.1	<i>Introduction</i>	360
N.2	<i>Consultation with health stakeholders at a project level</i>	360
	<i>Planning Inspectorate EIA Scoping Opinion</i>	360
	<i>Non-statutory consultation</i>	370
N.3	<i>HIA community consultation</i>	384
O	<i>HIA appendix – rapid HIA screening statements</i>	386
O.1	<i>Introduction and approach to rapid Health Impact Assessment screening</i> ...386	
	<i>Purpose of this document</i>	386
	<i>Background</i>	386
	<i>HIA in general</i>	387
	<i>HIA across the Project</i>	387
	<i>Rapid HIA screening statements</i>	388
O.2	<i>Rapid HIA screening statement: Off-Site Power Station Facilities</i>	389
	<i>The Off-Site Power Station Facilities</i>	389
	<i>Approach</i>	390
	<i>Screening by population groups</i>	391
	<i>Screening by determinants of health</i>	394

	<i>Conclusion</i>	<i>409</i>
O.3	Rapid HIA screening statement: Park and Ride	410
	<i>The Park and Ride</i>	<i>410</i>
	<i>Approach.....</i>	<i>410</i>
	<i>Screening by population groups.....</i>	<i>411</i>
	<i>Screening by determinants of health.....</i>	<i>414</i>
	<i>Conclusion</i>	<i>430</i>
O.4	Rapid HIA screening statement: A5025 Off-line Highway Improvements	431
	<i>The A5025 Off-line Highway Improvements.....</i>	<i>431</i>
	<i>Approach.....</i>	<i>433</i>
	<i>Screening by population groups.....</i>	<i>433</i>
	<i>Screening by determinants of health.....</i>	<i>436</i>
	<i>Conclusion</i>	<i>449</i>
O.5	Rapid HIA screening statement: Logistics Centre	451
	<i>The Logistics Centre</i>	<i>451</i>
	<i>Approach.....</i>	<i>452</i>
	<i>Screening by population groups.....</i>	<i>452</i>
	<i>Screening by determinants of health.....</i>	<i>454</i>
	<i>Conclusion</i>	<i>469</i>
P	HIA appendix – table of significant residual effects (individual and cumulative)	471
P.1	Introduction	471
Q	HIA appendix – results from the Community Survey	485
Q.1	Introduction	485
	<i>The community survey.....</i>	<i>485</i>
	<i>Rationale.....</i>	<i>485</i>
	<i>How the results are used</i>	<i>485</i>
	<i>Interpretation of the analysis</i>	<i>486</i>
Q.2	Summary of results	488
	<i>Life on Anglesey (Question 1a).....</i>	<i>488</i>
	<i>Life on Anglesey (Question 1b).....</i>	<i>488</i>
	<i>Identifying with the community (Question 2a)</i>	<i>489</i>
	<i>Having friends, neighbours or family on Anglesey (Question 2b).....</i>	<i>490</i>
	<i>Importance of the Welsh way of life (Question 2c).....</i>	<i>491</i>
	<i>The importance of place of residence (Question 2d)</i>	<i>492</i>
	<i>Community cohesion (Question 3).....</i>	<i>493</i>
	<i>Knowledge of the proposal for the Power Station (Question 4a).....</i>	<i>494</i>
	<i>People in employment at the Existing Power Station (Question 4b)</i>	<i>495</i>
	<i>Getting on with the construction workers (Question 5a).....</i>	<i>496</i>
	<i>Understanding the local way of life (Question 5b).....</i>	<i>498</i>
	<i>Behaving well in the local area (Question 5c)</i>	<i>499</i>
	<i>The Welsh language (Question 5d)</i>	<i>500</i>
	<i>Changes to the local community (Question 5e)</i>	<i>501</i>

	<i>The safety and reliability of nuclear power stations as a way of producing power (Question 6a)</i>	<i>502</i>
	<i>The new Power Station and opportunities for local people (Question 6b)....</i>	<i>503</i>
	<i>Attitudes towards nuclear power on Anglesey (Question 6c)</i>	<i>504</i>
	<i>The new Power Station and people's physical health (Question 6d)</i>	<i>505</i>
	<i>The new Power Station and people's well-being (Question 6e)</i>	<i>508</i>
	<i>Attitudes towards the new Power Station (Question 6f)</i>	<i>510</i>
	<i>Place of residence and the new Power Station (Question 6g)</i>	<i>511</i>
Q.3	Methods	512
	<i>Conceptual model underpinning questions</i>	<i>512</i>
	<i>Data weighting</i>	<i>517</i>
	<i>Statistical analysis of results</i>	<i>517</i>
	<i>Linear regression</i>	<i>519</i>
Q.4	Data	520
	<i>Questionnaire script</i>	<i>520</i>

[This page is intentionally blank]

Executive Summary

Introduction

- 1-1.1.1 Horizon is applying to the Secretary of State under the Planning Act 2008 for development consent to construct, operate and maintain a new nuclear power station on land west of Cemaes on Anglesey.
- 1-1.1.2 This section is the Executive Summary of the Health Impact Assessment (HIA), and it forms part of the documentation prepared in support of the application for development consent for the Wylfa Newydd DCO Project.
- 1-1.1.3 This Executive Summary provides the technical headlines of the HIA, including its key conclusions. This summary is specifically targeted at supporting the Planning Inspectorate in their review. A separate Non-Technical Summary is available as a standalone report (Application Reference Number: 8.18).
- 1-1.1.4 HIA is a process to identify, assess and manage the potentially significant beneficial and adverse effects of a project on health and well-being. Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Well-being is a state in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community. Health and well-being are influenced by a range of factors, termed the 'wider determinants of health'. The focus of the HIA is on community health and well-being and not on occupational health and safety. The terms 'health' and 'health and well-being' are used interchangeably.
- 1-1.1.5 This HIA has informed, and been informed by, other impact assessment reports, including:
- the Environmental Impact Assessment (EIA), Environmental Statement (Application Reference Numbers: 6.1 to 6.10);
 - the Welsh Language Impact Assessment (Application Reference Number: 8.21); and
 - the Equality Impact Assessment (Application Reference Number 8.22).

Scope

- 1-1.1.6 The application for development consent is based on bounded parameters rather than a defined design (see discussion at HIA paragraph L.2.68). The HIA is based on a worst-case scenario taking these parameters in to account.
- 1-1.1.7 The Wylfa Newydd Project comprises the Wylfa Newydd DCO Project, the Licensable Marine Activities and the Enabling Works.
- 1-1.1.8 The Wylfa Newydd DCO Project comprises those parts of the Wylfa Newydd Project which are to be consented by a Development Consent Order (DCO), namely: the Power Station; other on-site development; Marine Works; Off-site Power Station Facilities; and Associated Development.

- 1-1.1.9 The scope of the HIA focuses on effects associated with the construction and operation of the Power Station, other on-site development and the Site Campus (housing construction workers). Decommissioning is considered, albeit briefly.
- 1-1.1.10 Off-site Power-Station Facilities and other Associated Development of the Wylfa Newydd DCO Project have been assessed and all health and well-being effects have been screened out. The rationale for these conclusions have been recorded through rapid HIA screening statements, which are included as appendices (see HIA volumes E, F, G and H for summaries and HIA volume O for the full rapid HIA screening statements). HIA paragraph O.1.5 explains the context to screening out all potential effects from further rapid HIA work.
- 1-1.1.11 With regard to the Licensable Marine Activities the HIA team's watching brief on water issues has concluded that this determinant of health should continue to be outside the scope of the HIA. For example, EU-designated bathing waters (including at Cemaes Bay) are considered in the Environmental Statement, which concludes that there would be a negligible effect on bathing waters through changes in water quality from drainage, dewatering and sewage associated with the Wylfa Newydd Development Area.
- 1-1.1.12 The Enabling Works comprise the Site Preparation and Clearance Proposals (SPC Proposals) and the A5025 On-line Highway Improvements. These are the subject of rapid HIA screening statements that have screened out all health and well-being effects. For the DCO application the SPC element has been considered part of the construction stage.
- 1-1.1.13 The HIA's cumulative assessment considers all elements of the Wylfa Newydd DCO Project together (including where individual elements have been screened out), as well as the A5025 On-line Highway Improvements. The Wylfa Newydd DCO Project is referred to hereafter as the "Project".
- 1-1.1.14 Geographically the HIA has considered health and well-being effects for the following populations:
- population near the Wylfa Newydd Development Area (site-specific);
 - population near the local road network (A5025, A55, A5 and A487) (site-specific);
 - population near Dalar Hir (site-specific);
 - population near or in Holyhead and near Parc Cybi (site-specific);
 - population of Anglesey and north Wales (local and regional); and
 - population of Wales and beyond the borders of Wales (national and international).
- 1-1.1.15 The HIA has also considered health and well-being effects in relation to key groups that may be particularly vulnerable or sensitive to change:
- children and young people;
 - older people;
 - people with existing poor health (physical and mental health); and

- people who are deprived, including those on low incomes.
- 1-1.1.16 Section A.5 of the HIA sets out the scope of issues considered. That section also notes that actual radiological risks are suitably regulated such that potentially significant population health effects are unlikely. In agreement with the HIA Steering Group actual radiological risks are therefore not assessed in the HIA, but are covered by the Environmental Statement, the Environmental Permitting (Radioactive Substances Regulation) application and the Article 37 submissions.

Approach

- 1-1.1.17 The HIA work for the Project has followed Welsh guidance [RD1] and has been overseen by a steering group. The 'HIA Steering Group' has ensured that local stakeholders have participation in, and had a sense of ownership of, the HIA process. The HIA Steering Group has informed the scope and methods of the HIA. Statements of Common Ground record the views of each organisation on matters pertaining to health and well-being.
- 1-1.1.18 In feedback on the September 2017 draft HIA report Public Health Wales (which includes the Wales Health Impact Assessment Support Unit, the authority on HIA guidance in Wales) stated that: *"All the necessary HIA components are contained within the main HIA report and the methodology followed is robust"*.
- 1-1.1.19 The HIA takes account of the legislative and policy context, for example: the Well-being of Future Generations (Wales) Act 2015; the Overarching National Policy Statement for Energy (EN-1); The National Policy Statement for Nuclear Power Generation (EN-6); the Isle of Anglesey Single Integrated Plan 2013 – 25; the New Nuclear Build at Wylfa: Supplementary Planning Guidance; and the Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026.
- 1-1.1.20 The HIA methodology has been broadly aligned with that of the EIA. In addition to sensitivity and magnitude, the HIA uses local health priorities and local understanding, as well as the wider scientific evidence base and regulatory standards, to reach its conclusions on which effects are considered 'likely significant effects on human health'. The following four criteria are used in reaching the HIA's professional judgements on significance:
- Sensitivity of the affected population.
 - Magnitude of change.
 - Importance of the issue, as evidenced by:
 - scientific literature and baseline; and
 - local health priorities.
 - Acceptability of change, as evidenced by:
 - consultation responses; and
 - regulatory standards and/or policy context.
- 1-1.1.21 Findings regarding 'significance' for health are determined with regard to the expected effect on a defined population. There may be outlying effects due to heightened resilience or sensitivity. Where appropriate, the HIA

includes separate consideration of relevant vulnerable or sensitive sub-populations. Further detail on the HIA methods is presented in the HIA appendix in volume L, with the considerations that have informed specific HIA topic conclusions in section L.3.

- 1-1.1.22 In some circumstances the conclusions of the HIA differ from the other assessment reports on similar topic areas (e.g. air quality (see HIA paragraph D.2.22) and noise (see HIA paragraph D.3.30)). This is legitimate as the HIA considers different population groups and it has different endpoints.

Results

- 1-1.1.23 The key findings of the HIA are structured to first consider 'project-wide effects', then 'Wylfa Newydd Development Area (WNDA) development' effects and finally cumulative effects. The findings (residual effects) are summarised below.
- 1-1.1.24 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.
- 1-1.1.25 The findings demonstrate that the overall effect of the Wylfa Newydd DCO Project on population health would be beneficial, with this overall effect made up of beneficial and adverse effects across different population groups.

Project-wide effects

Air quality (including dust emissions) – Transport related

Emissions from vehicles transporting materials and people on the local road network during construction

- 1-1.1.26 Additional road traffic during the construction stage of the Project would result in higher levels of emissions of pollutants from road vehicles travelling on the local road network. This may have a direct effect on cardiovascular and respiratory health conditions. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the local road network. For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. These scores reflect the fact that for some pollutants any emissions to air, no matter how small, lead to changes in health outcomes (see HIA appendix L section L.3 for further detail on the HIA approach to non-threshold health effects, which differs from the Environmental Statement use of statutory thresholds). Sensitivity in this case is particularly linked to factors such as: proximity to the local road network either due to regular use of footpaths close to the network or due to residential location; age (both young people and older people); or existing poor health (e.g. long-term respiratory conditions such as asthma and chronic obstructive pulmonary disease (COPD)). People who live close to the road network and who spend more time at home than the general population or who are at home during the day, for example, due to low economic activity or shift work are also considered to be sensitive. Further discussion and context to this finding is presented in HIA section C.2.

Noise – Transport related

Noise from vehicles transporting materials and people on the local road network during construction

- 1-1.1.27 Additional road traffic during the construction stage of the Project may cause higher levels of noise from road vehicles travelling on the local road network. This may have a direct effect on cardiovascular and mental health (e.g. stress, anxiety or depression), notably due to sleep disturbance associated with night-time noise effects. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the local road network. For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. Sensitivity in this case is particularly linked to living very close to the local road network; age (both young people and older people); or existing poor health (e.g. long-term illness). People who live close to the road network and who spend more time at home than the general population or who are at home during the day, for example, due to low economic activity or shift work are also considered to be sensitive. Further discussion and context to this finding is presented in HIA section C.3.

Housing

Current tenants leaving due to housing competition during construction

- 1-1.1.28 Accommodating part of the construction workforce in existing housing may increase competition for rental properties in some areas. This, in turn, may place financial pressures on existing tenants who are less able to afford higher rental prices. This may have a direct effect on physical health conditions (e.g. respiratory conditions linked to warmth and indoor air quality) and mental health (e.g. stress, anxiety or depression due to underlying social determinants, such as financial stability and access to employment, education, goods and services). The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales. For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. Sensitivity in this case is particularly linked to being a private rental market tenant with a low income (including those seeking to return to the island having previously moved away). Further discussion and context to this finding is presented in HIA section C.4.

Transport

Road safety during construction

- 1-1.1.29 The proposed new bypasses on the A5025 around the settlements of Valley, Llanfachraeth and Llanrhuuddlad (at Cefn Coch) (Off-line Highway Improvements) would reduce the volume of traffic which passes through, and thus improve road safety in, these communities. There would be no change in speed limits. The increased numbers of vehicles and the potential for higher average speeds on the A5025 may render the road less attractive to non-motorised traffic. This reflects the potential for the Project to have a direct effect on road traffic incidents. The overall effect is expected to be one of improved road safety due to the A5025 highway improvements.

Outside the bypassed communities, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the A5025 highway and using the wider road network of Anglesey and north Wales. For sensitive groups sharing the road network used by the Project the residual effect could range up to minor adverse. Sensitivity in this case is linked to increased risk of injuries from road traffic incidents due to speed and volume of traffic; mode of travel, e.g. pedestrians and cyclists; age (young people and older people); use of services accessed from the A5025 (e.g. children, parents and carers using the schools). Further discussion and context to this finding is presented in HIA section C.5.

Health trip journey times (e.g. to a hospital) during construction

- 1-1.1.30 The construction traffic associated with the Project may affect journey times, including journeys to healthcare services on the Isle of Anglesey and on the mainland. This may have a direct effect on emergency response times or non-emergency treatment outcomes associated with delays or non-attendance. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) on the Isle of Anglesey. For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. Sensitivity in this case is particularly linked to people with long-term illnesses (and their carers) who may experience longer non-emergency journey times to hospitals (or other healthcare) on the mainland. Further discussion and context to this finding is presented in HIA section C.5.

Demand for medical and healthcare services

NHS capacity during construction

- 1-1.1.31 The construction workforce could create additional demand on health services on the Isle of Anglesey and the mainland. Horizon has made strategic commitments, including to make appropriate healthcare provision on-site or contributions to healthcare off-site. Horizon would require its construction workforce to register with, and to prioritise the use of, the on-site medical and healthcare services that would be provided at the Site Campus, rather than make use of the community NHS services. Horizon, Betsi Cadwaladr University Health Board and the wider health economy are considering the ways in which healthcare would be provided to the construction workforce. This may have a direct effect on the capacity of NHS healthcare services. A process by which agreement will be reached between Horizon and health stakeholders regarding the provision of health services for the construction workforce is set out in table C-7. The residual significance of potential health and well-being effects is considered to be negligible for the general population across Anglesey and north Wales. People who require regular health care could experience minor to moderate adverse effects if a proportion of the construction workforce opt to use community NHS services. Some moderate beneficial effects can be expected if the Project aligns with the NHS to build local capacity. This relates to the potential for the NHS to provide some of the services at on-site medical and healthcare services at the Wylfa Newydd Development Area (i.e. in-reach services). Further discussion and context to this finding is presented in HIA section C.6.

Outbreaks of communicable diseases during construction

- 1-1.1.32 The surveillance systems that would be set up as part of occupational health would keep the probability of communicable disease outbreaks very low. It is in Horizon's interests to avoid workforce illness. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales. For particularly sensitive groups within the affected population, the residual effect would be expected to range from negligible to minor adverse. Sensitivity in this case is particularly linked to being more susceptible to contracting infection or more susceptible to strong adverse reactions to infection. For example, due to age (both young and older people) and people with existing poor health (e.g. with suppressed immune systems). Further discussion and context to this finding is presented in HIA section C.6.

Lifestyles and behaviour

Healthy and safe communities during construction

- 1-1.1.33 The presence, and the behaviour, of the construction workforce could influence community or individual-level behaviour. This may have a direct effect on risk-taking behaviour (e.g. smoking, excessive alcohol consumption or sexual behaviour) and on mental health (e.g. stress, anxiety or depression). The issue relates both to accommodation sites for the construction workforce (including the Site Campus) and off-shift destinations such as Holyhead. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales (including near the Wylfa Newydd Development Area). For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. Sensitivity in this case is particularly linked to young adults, groups that are poorly represented in outreach work due to high levels of social isolation, and to safeguarding with regard to vulnerable adults and children. Further discussion and context to this finding is presented in HIA section C.7.

Community identity, social networks and culture

Effects on social networks and culture during construction

- 1-1.1.34 Throughout the construction stage, the community identity, the social networks and culture of the communities across Anglesey and north Wales would be expected to adapt as they host the Project workforce (including communities near the Site Campus). This may have a direct effect on mental health (e.g. stress, anxiety or depression) due to underlying social determinants influencing community cohesion. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales (including near the Wylfa Newydd Development Area). For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. Sensitivity in this case is particularly linked to intergenerational social interactions between younger and older people where traditions and cultural knowledge (including in Welsh) are passed on.

Further discussion and context to this finding is presented in HIA section C.8.

Employment income and economic development

Supporting local people to access jobs during construction

- 1-1.1.35 Maximising the use of workers and businesses from north Wales could have indirect and beneficial effects on physical health (e.g. cardiovascular conditions) and mental health (e.g. stress, anxiety or depression) due to underlying social determinants, such as improved socio-economic position, greater job security and facilitating beneficial lifestyle choices (e.g. healthier eating and recreational physical activity, including for dependants). The residual significance of potential health and well-being effects is considered to be minor beneficial for the general population (the majority of people) of Anglesey and north Wales. For particularly sensitive groups within the affected population, the residual effect could range up to major beneficial. Sensitivity in this case relates to people and their dependants who are on low incomes or who are unemployed. Further discussion and context to this finding is presented in HIA section C.9.

Labour churn (the movement of workers between roles) during construction

- 1-1.1.36 The Project may offer pay or working-hours that existing employers do not match and this could affect services that are important for health (e.g. health and social care community services). The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales. For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. Sensitivity in this case relates to people and their dependants who are reliant on services affected by labour churn, for example the reliance of older people or people with low incomes on health and social care community services (e.g. from fewer care home staff). Sensitivity may also extend to staff who become overworked. Further discussion and context to this finding is presented in HIA section C.9.

Workers spending locally (indirectly benefiting the local economy) during construction

- 1-1.1.37 The procurement of goods and services by the construction workforce would give rise to indirect economic benefits in the local and regional economy. This may have an indirect effect on physical health (e.g. cardiovascular conditions) and mental health (e.g. stress, anxiety or depression) due to underlying social determinants. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales. For particularly sensitive groups within the affected population, the residual effect could range up to minor beneficial. Sensitivity in this case relates to people and their dependants with higher levels of deprivation, particularly those on low incomes, who are owners or employees of community services or facilities that are likely to be used by construction workers. Further discussion and context to this finding is presented in HIA section C.9.

Supporting local people to access jobs during operation

- 1-1.1.38 The operation of the Power Station would provide long-term permanent jobs. The local health opportunity is from maximising employment of existing residents. This may have an indirect effect on physical health (e.g. cardiovascular conditions) and mental health (e.g. stress, anxiety or depression) due to underlying social determinants. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) on the Isle of Anglesey and in north Wales. For particularly sensitive groups within the affected population, the residual effect could range up to major beneficial for those able to successfully compete for the permanent operational jobs. Sensitivity in this case refers to young people choosing their careers, people on low incomes or who are unemployed, people unable to progress their careers due to a local shortage of senior positions (i.e. being currently overqualified for their jobs) and future young or older people who may rely on those employed by the Project. Further discussion and context to this finding is presented in HIA section C.9.

Education and training

Upskilling local people for construction roles

- 1-1.1.39 The Project is part of a trend of increasing demand for technical skills linked to the Isle of Anglesey Energy Programme. Opportunities for improving local health would come through increasing the number of people who have skills, qualifications and experience in construction. This may have an indirect effect on physical health (e.g. cardiovascular conditions) and mental health (e.g. stress, anxiety or depression) due to underlying social determinants, such as improved socio-economic position, better economic opportunities and fewer financial difficulties. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales. For particularly sensitive groups within the affected population, the residual effect could range up to moderate beneficial. This group would benefit from being able to develop and fast track their skills and qualifications through the Project's construction activities. Sensitivity in this case is particularly linked to having a deprived background, low educational achievement, unemployment or working in elementary occupations. Further discussion and context to this finding is presented in HIA section C.10.

Supporting local people with their career choices, apprenticeships and progression during operation

- 1-1.1.40 The operation of the Power Station would provide long-term permanent jobs. Opportunities for improving local health lie in helping local people to get the skills and qualifications they need to compete for such roles. This may have an indirect effect on physical health (e.g. cardiovascular conditions) and mental health (e.g. stress, anxiety or depression) due to underlying social determinants. The residual significance of potential health and well-being effects is considered to be minor beneficial for the general population (the majority of people), as general education and career support in schools and further education would be expected to provide benefits irrespective of a future employment relationship with the Project. For particularly sensitive groups taking advantage of the full education and

training support that would be provided by Horizon, both in the run-up to competing for the permanent operational jobs and during further on-the-job career development, benefits to health and well-being may range up to moderate beneficial. Sensitivity in this case is particularly linked to young people, particularly those with barriers to achieving their educational potential (e.g. deprived background), and people with technical career interests for which local education and training support is limited. Further discussion and context to this finding is presented in HIA section C.10.

Public understanding of risk

The understanding of risk about, and expectations of, the Power Station during operation

- 1-1.1.41 The dialogue about risk in society is based upon a wide spectrum of information and judgements and beliefs. As a high-profile application, strong community views have been expressed in support of the Project, and against it, by people on the Isle of Anglesey and further afield and so the assessment considers the national population alongside people who live close to the Wylfa Newydd Development Area. Concerns about development can have direct effects on physical health (e.g. headaches or blood pressure) and on mental health (e.g. anxiety or depression). The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the Wylfa Newydd Development Area or nationally in Wales. For particularly sensitive groups within the affected population, the residual effect could range up to moderate adverse. Sensitivity in this case is particularly linked to the proportion of people who have expectations that their physical or mental health and well-being would be adversely affected by the Project. Sensitivity may also extend to those who on the same issue are ambivalent or unsure. Further discussion and context to this finding is presented in HIA section C.11.

Energy generation to meet demand and maintain affordability

The national health benefit of an uninterrupted and affordable electricity supply during operation

- 1-1.1.42 The UK is reliant on electricity for healthy lifestyles and the economy that provides jobs and services. Sustained interruption of supply or rapid increases in costs would not be beneficial for population health across the UK. The Project would help meet UK demand and maintain affordability. This may have direct and indirect effects in safeguarding physical health (e.g. safe food, safe homes, essential services and infrastructure) and mental health (e.g. stress, anxiety or depression). The residual significance of potential health and well-being effects is considered to be minor beneficial for the general population (the majority of people) in the UK. For particularly sensitive groups within the affected population who are less able to cope with power cuts or price increases, the residual effect could range up to moderate beneficial. Sensitivity in this case is particularly linked to people with low incomes, age (both young and older people are less able to cope with temperature extremes if homes are not correctly heated or cooled) and people requiring emergency healthcare who could be affected by power cuts (most hospitals have backup generators for this reason). Further discussion and context to this finding is presented in HIA section C.12.

Energy generation through low carbon technology

The global health benefit from reducing the effect of climate change during operation

- 1-1.1.43 Changes in energy sector carbon emissions due to the Project may reduce the potential health effects of climate change. This may have a direct effect in reducing the severity and incidence of the health effects of climate change (e.g. injury, disease and death from heatwaves and fires; undernutrition from reduced food production; and increased risks of food-, water- and vector-borne diseases). Reducing the severity and incidence of these outcomes would also safeguard against associated mental health effects (e.g. stress, anxiety or depression). The residual significance of potential health and well-being effects are considered to be negligible for the general population (the majority of people) globally. For particularly sensitive groups within the affected population, the residual effect could range up to moderate beneficial. Sensitivity in this case is particularly linked to the poorest and most vulnerable members and regions of society (globally), including older people, children and low-income families. Although people in the UK are generally less vulnerable, as they are able to get support to cope with the effects of climate change, some may still be at greater risk (e.g. low incomes or age making it harder to cope with heatwaves or flooding). Further discussion and context to this finding is presented in HIA section C.13.

WNDA Development

Air quality (including dust emissions)

Vehicle and machinery emissions on the Wylfa Newydd Development Area during construction

- 1-1.1.44 UK Air Quality Objective levels would not be exceeded, however, the construction at the Wylfa Newydd Development Area would result in a decrease in air quality due to emissions from vehicles and machinery on-site. The greatest effects are expected to be from nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). This may have a direct effect on cardiovascular and respiratory health conditions. The residual significance of potential health and well-being effects is considered to be minor adverse for the general population (the majority of people) near the Wylfa Newydd Development Area. For particularly sensitive groups within the affected population, the residual effect could range up to moderate adverse. This score reflects that health effects, including non-threshold type effects, cannot be ruled out at the predicted concentrations (see HIA appendix L section L.3 for further detail on the HIA approach to non-threshold health effects, which differs from the Environmental Statement use of statutory thresholds). Sensitivity in this case is particularly linked to living close to sources of emissions (including construction workers accommodated at the Site Campus); regularly using footpaths close to sources of emissions; spending more time in affected dwellings (e.g. due to low economic activity, shift work or ill health); age (both young people and older people); or existing poor health (e.g. long-term respiratory conditions such as asthma and COPD). Further discussion and context to this finding is presented in HIA section D.2.

Dust generated by construction activities, excavation and earth movements during construction

- 1-1.1.45 Dust levels are expected to be raised by the construction activities. The potential for adverse effects associated with dust are relevant to both nuisance from dust deposition and respiratory effects of particulate matter. This may have a direct effect on cardiovascular and respiratory health conditions. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the Wylfa Newydd Development Area. For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. Sensitivity in this case is the same as for 'vehicle and machinery emissions on the Wylfa Newydd Development Area', discussed above. Further discussion and context to this finding is presented in HIA section D.2.

Noise

Vehicle and machinery noise on the Wylfa Newydd Development Area during construction

- 1-1.1.46 The construction activities would result in both day-time and night-time noise. Many people in the communities closest to the Wylfa Newydd Development Area would be exposed to frequent levels of noise (particularly night-time noise) that could reduce their quality of life. This may have a direct effect on cardiovascular and mental health (e.g. stress, anxiety or depression), notably due to sleep disturbance associated with night-time noise effects. The residual significance of potential health and well-being effects is considered to be minor adverse for the general population (the majority of people) near the Wylfa Newydd Development Area. For particularly sensitive groups within the affected population, the residual effect in relation to health outcomes could range up to moderate adverse. Sensitivity in this case is particularly linked to living close to sources of noise (e.g. in Tregele and Cemaes, but also including construction workers accommodated at the Site Campus); age (both young people and older people); existing poor health (e.g. long-term illness); spending more time in affected dwellings (e.g. due to low economic activity, shift work; or ill health); or vulnerability due to deprivation or health inequalities. This finding takes into account the Local Noise Mitigation Strategy. Further discussion and context to this finding is presented in HIA section D.3.

Community identity, social networks and culture

Changes to local context and identity during construction

- 1-1.1.47 Construction would bring visual change and disturbance to the Wylfa Newydd Development Area. Neighbourhood character may also be affected in areas hosting construction workers. Changes to local context and identity may trigger heightened emotional responses. This may have a direct effect on mental health (e.g. stress, anxiety or depression) due to underlying social determinants influencing community cohesion. The residual significance of potential health and well-being effects is considered to be minor adverse for the general population (the majority of people) near the Wylfa Newydd Development Area. For particularly sensitive groups within the affected population, the residual effect could range up to

moderate adverse. Sensitivity in this case is particularly linked to living close to the Wylfa Newydd Development Area (e.g. Tregele and Cemaes), and with younger and older people most sensitive to change as the effects would span an important time in their lives. Further discussion and context to this finding is presented in HIA section D.4.

Night-time lighting effects during construction

- 1-1.1.48 Night-time lighting for working or security purposes may contribute to a change in local character near the Wylfa Newydd Development Area, it may also contribute to sleep disturbance. This may have a direct effect on mental health (e.g. stress, anxiety or depression). The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the Wylfa Newydd Development Area. For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. Sensitivity in this case is particularly linked to age, with the period of potential effect spanning important life stages for older and younger people (e.g. less able to appreciate starlit night skies). Further discussion and context to this finding is presented in HIA section D.4.

Physical activity

Promoting use of active travel diversions (e.g. walking and cycling routes) during construction

- 1-1.1.49 Local people may be less active if footpaths or cycle routes that they regularly use are closed or diverted. Noise, dust and visual appeal may also affect how areas are used for physical activity. This may have a direct effect on physical health (e.g. cardiovascular health) and mental health (e.g. stress, anxiety or depression) associated with obesity and low levels of physical activity. The residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the Wylfa Newydd Development Area. For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse due to a potential disincentive for physical activity or active travel. Sensitivity in this case is particularly linked to people living in communities where a large proportion of active travel routes would be affected (e.g. Tregele or Cemaes) and young or older people who have higher levels of dependence on carers or public transport to access alternative physical activity opportunities. People (adults and children) who are already overweight or obese would be particularly sensitive to fewer opportunities to be physically active. Further discussion and context to this finding is presented in HIA section D.5.

Alternatives for the most affected communities to be physically active during construction

- 1-1.1.50 As the Project would affect many routes near Tregele and Cemaes, this population (including residents of isolated dwellings around the Wylfa Newydd Development Area) would benefit from support to be physically active. This may have a direct effect on physical health (e.g. cardiovascular health) and mental health (e.g. stress, anxiety or depression) associated with obesity and low levels of physical activity. The residual significance of potential health and well-being effects is considered to be negligible for the

general population (the majority of people) near the Wylfa Newydd Development Area. For particularly sensitive groups within the affected population, the residual effect could be up to moderate beneficial from encouraging greater levels of physical activity. Sensitivity in this case is particularly linked to the community of Tregele (which would particularly benefit from improved active travel links to Cemaes, where the majority of local amenities are located, including the local primary school). Further discussion and context to this finding is presented in HIA section D.5.

Cumulative assessment

Intra-project cumulative effects

- 1-1.1.51 Intra-project effects are those effects that occur when a single population is affected by different developments (in the same project) at the same time. The following paragraphs summarise the combined effect of the Wylfa Newydd DCO Project on each population group. Further discussion and context to these findings is presented in HIA section I.2.

Population near the Wylfa Newydd Development Area (site-specific)

- 1-1.1.52 For the general population (the majority of people) near the Wylfa Newydd Development Area, the intra-project population health effect from the Project is considered to be up to minor adverse. For relevant vulnerable groups, the combination of proximity to environmental and social change and increased sensitivity to such changes may result in up to a moderate adverse effect.

Population near the local road network (A5025, A55, A5 and A487) (site-specific)

- 1-1.1.53 For the general population (the majority of people) beside the local road network, the intra-project population health effect from the Project is considered to be negligible. For relevant vulnerable groups, the combination of proximity to roads and increased sensitivity to traffic effects may result in up to a minor adverse effect.

Population near Dalar Hir (site-specific)

- 1-1.1.54 As likely significant site-specific population health influences are not expected, the intra-project population health effect relates to distributed local and regional effects. The effect is considered to be negligible for the general population and up to a minor beneficial effect for relevant vulnerable groups.

Population near or in Holyhead and near Parc Cybi (site-specific)

- 1-1.1.55 For the general population (the majority of people) in or near Holyhead and near Parc Cybi, the intra-project population health effect from the Project is considered to be negligible. For relevant vulnerable groups (despite some short-term peaks in adverse effects at the busiest construction times), the combination of economic opportunities from workers spending locally and high levels of existing deprivation in and near Holyhead may result in up to a minor beneficial effect.

Population of Anglesey and north Wales (local and regional)

- 1-1.1.56 For the general population (the majority of people) of Anglesey and north Wales, the intra-project population health effect from the Project is

considered to be up to minor beneficial. For relevant vulnerable groups (despite some short-term peaks in adverse effects at the busiest construction times), the combination of local and regional economic opportunities and increased sensitivity to their benefits may result in up to a moderate beneficial effect.

Population of Wales and beyond the borders of Wales (national and international)

- 1-1.1.57 For the general population (the majority of people) of Wales and beyond the borders of Wales, the intra-project population health effect from the Project is considered to be up to minor beneficial. For relevant vulnerable groups, the combination of affordable, uninterrupted, low-carbon electricity and increased sensitivity to its benefits may result in up to a moderate beneficial effect.

Children and young people

- 1-1.1.58 For children and young people, the intra-project population health effect from the Project is expected to be up to minor beneficial. This takes account of effects across geographic levels (site-specific, local, regional, national and international (beyond the borders of Wales)). The conclusion reflects that due to developmental stage and other factors (e.g. more time spent outdoors and resting during the day), children and young people are more sensitive to air pollution and sleep disturbance. Children and young people are also sensitive to changes in road safety risk, both as road users (pedestrians/cyclists) and as passengers in vehicles. Young people may benefit directly from employment and educational opportunities and indirectly as dependants.

Older people

- 1-1.1.59 For older people the intra-project population health effect from the Project is expected to be up to minor adverse. This finding takes account of effects across timescales and geographic levels (site-specific, local, regional, national and international). This finding also acknowledges that, for older people, the potential adverse effects during the construction stage may have a greater influence than the potential benefits during the operational stage. The conclusion reflects that older peoples' vulnerabilities tend to relate to biological and social factors (e.g. lower bone density and being more prone to injuries from falls, or greater reliance on social networks based on the existing social or landscape context). Older people are also less likely to benefit directly from employment and educational opportunities, although they may benefit indirectly from those providing care gaining good quality employment locally.

People with existing poor health (physical and mental health)

- 1-1.1.60 For people with existing poor health the intra-project population health effect from the Project is expected to be up to minor adverse. This finding takes account of effects across timescales and geographic levels (site-specific, local, regional, national and international). This finding also acknowledges that, for people with existing poor health, the potential adverse effects during the construction stage may have a greater influence than the potential benefits during the operational stage. People with existing poor health may be more sensitive to changes in air quality and noise (e.g. worsening

asthma or reduced mobility increasing time spent at home). People with multiple or complex long-term health conditions are also particularly reliant on, or more frequently use, medical and health-care services.

People who are deprived, including those on low incomes

- 1-1.1.61 For people who are deprived the intra-project population health effect from the Project is expected to be up to minor beneficial. This takes account of effects across geographic levels (site-specific, local, regional, national and international). People living in deprivation (including those on low incomes) may be particularly sensitive to housing rental and purchase prices. Beneficial effects are particularly expected for people living in deprivation from employment and educational opportunities. Importantly, such opportunities have the potential to reduce inequalities.

Inter-project cumulative effects

- 1-1.1.62 Inter-project effects relate to when a single population is affected by more than one project at the same time. The following paragraphs summarise, for each population group, the combined effect of the Wylfa Newydd DCO Project and all relevant past, current and reasonably foreseeable future projects, that it might interact with. Further discussion and context to these findings is presented in HIA section I.3.
- 1-1.1.63 In addition to the Wylfa Newydd DCO Project, the other projects taken into consideration are: the Existing Power Station decommissioning; Anglesey Eco Park; Land and Lakes leisure village; Holyhead Waterfront Redevelopment; Parc Cybi Stage 2 employment developments; National Grid North Wales Connection Project; Rhyd-y-groes Repower Wind Farm upgrade; Menai Science Park; Amlwch LNG pipeline; Holyhead Deep tidal energy generation; Holyhead Primary School; Llanfaethlu Primary School; Llangefni Link Road Scheme; Utilities works on the Wylfa Newydd Development Area; Llanbadrig Solar Farm; Coleg Menai; Wylfa Newydd Potable Water Supply; Holyhead Port Expansion; Glyn Rhonwy Pumped Storage hydro energy; the A487 Caernarfon to Bontnewydd Bypass; Alexandra Basin Redevelopment Project (Ireland); Dun Laoghaire Harbour Project (Ireland); Hinkley Point C Nuclear Power Station (Somerset); Sizewell C Nuclear Power Station (Suffolk); Moorside Nuclear Power Station (Cumbria) and the A5025 On-line Highway Improvements. This is the same list used by the EIA.

Population near the Wylfa Newydd Development Area (site-specific)

- 1-1.1.64 For the general population (the majority of people) near the Wylfa Newydd Development Area, the overall inter-project population health effect is considered to be up to minor adverse. However, there may be up to moderate adverse effects for vulnerable groups (where proximity and sensitivity coincide). For pollution and disturbance, the strongest relationship is with the Existing Power Station decommissioning. Effects tend to decrease rapidly with distance so the contribution from other projects is likely to be small (transport effects are considered separately in the paragraph below). Other projects would also bring lasting visual change to the local landscape of north-west Anglesey, which may affect local identity and the amenity of the environment for social gatherings. Although few views are likely to take in multiple projects, collectively the projects

contribute to more industrial elements in the predominantly rural landscape. Adverse social and cultural effects may also arise for the local population from the individual and collective influx of workers to the area. The individual effects of other projects are likely to be minor due to the smaller scale of construction.

Population near the local road network (A5025, A55, A5 and A487) (site-specific)

- 1-1.1.65 For the general population (the majority of people) beside the local road network, the overall inter-project population health effect may range up to minor adverse. For vulnerable groups (where proximity and sensitivity coincide) the effect may be up to moderate adverse. The combined vehicle movements of all projects would be expected to reduce road safety, as well as increasing transport related air pollution and noise for communities beside the local road network. The majority of effects relate to construction and are therefore temporary. The combined traffic on the A5025 is expected to be mitigated to a large degree by the A5025 Highway Improvements. Combined transport effects are expected to be greatest at the Menai crossings, where the number of available lanes reduces. Combined congestion may affect health trip related journey times (emergency and non-emergency), as the main hospital services for Anglesey are based in Bangor.

Population near Dalar Hir (site-specific)

- 1-1.1.66 No other projects in proximity to Dalar Hir have been identified. Effects relating to the use of the A5 and A55 are discussed in relation to the geographic population group for the population near the local road network. The overall inter-project population health effect is considered to be negligible for the general population and up to a minor beneficial effect for relevant vulnerable groups (where proximity and sensitivity coincide). This reflects the influence of distributed local and regional effects from the Wylfa Newydd DCO Project.

Population near or in Holyhead and near Parc Cybi (site-specific)

- 1-1.1.67 For the general population (the majority of people) in or near Holyhead and near Parc Cybi, the overall inter-project population health effect is considered to be negligible. However, there may be up to minor adverse effects for vulnerable groups (where proximity and sensitivity coincide). Collectively the Wylfa Newydd DCO Project and other projects are likely to contribute to the size of the workforce who do not usually reside in north Wales. The operation of the Holyhead Waterfront Redevelopment as an off-shift destination could magnify some effects locally. Effects relate primarily to the construction workforce, although there may also be effects from operational workers. Collectively high housing demand in desirable locations may reduce the affordability of the rental and purchase prices in some areas. The individual housing market pressures from the projects are likely to be minor. Collective economic benefits would be expected in communities in which workers reside (e.g. rental income) or which they visit when off-shift (e.g. from use of hospitality, goods and service sectors). The combined workforce from the projects may have adverse social effects in local communities, including changes in exposure to communicable disease and changes in perceptions of social norms for risk taking behaviour, such

as alcohol and tobacco use. Such influences are expected to be due to increased worker numbers and the spread of off-shift activities across the week, and not to higher than average levels of risk-taking activity among the workforce. The collective workforce may also contribute to greater changes in community identity, social networks and culture within local communities, particularly for areas hosting most workers. The individual effects of other projects are likely to be minor due to smaller workforces.

Population of Anglesey and north Wales (local and regional)

- 1-1.1.68 For the general population (the majority of people) of Anglesey and north Wales, the overall inter-project population health effect may range up to minor beneficial. For vulnerable groups (where proximity and sensitivity coincide) the effect may be up to major beneficial. The collective employment and training opportunities from the Wylfa Newydd DCO Project and other projects in north Wales would greatly benefit the populations of Anglesey and north Wales. Linked to this benefit there could also be an increase in short-term labour churn. The overall effect is likely to represent a major benefit if the local people take advantage of the opportunities and the quality of local employment is improved into the long-term. A collective construction workforce that does not usually reside in north Wales would put pressure on already stretched local healthcare and other public sector services. The Wylfa Newydd DCO Project is mitigating its own effect, however, the benefits of such investment may be undermined (to the detriment of local communities and Wylfa Newydd DCO Project workers) if other projects do not take similar responsibility. Effects relating to public understanding of risk are not geographically bounded. The development of other Nuclear Power Stations at sites in the UK have the potential to raise the profile and level of general dialogue and understanding of nuclear power, including for the people of Anglesey and north Wales. Such general awareness raising is potentially positive for health and well-being.

Population of Wales and beyond the borders of Wales (national and international)

- 1-1.1.69 For the general population (the majority of people) of Wales and beyond the borders of Wales, the overall inter-project population health effect may range up to minor beneficial. For vulnerable groups (where proximity and sensitivity coincide) the effect may be up to moderate beneficial. Many of the other planned developments on the Isle of Anglesey and in north Wales relate to energy production. Furthermore, in England other projects that may contribute to high-capacity, uninterrupted, affordable, low-carbon energy production include Hinkley Point C Nuclear Power Station (Somerset); Sizewell C Nuclear Power Station (Suffolk); and Moorside Nuclear Power Station (Cumbria). These projects would collectively contribute to maintaining a supply of affordable electricity. Such a supply has important national public health benefits. Many of these projects are also low-carbon technologies, which globally would contribute to reducing adverse health outcomes associated with climate change.

Children and young people

- 1-1.1.70 For children and young people the overall inter-project population health effect taking account of differing effects across geographic levels is expected to be up to minor beneficial. As air quality and noise disturbance

effects tend to decrease rapidly with distance, the inter-project effects relate primarily to the Wylfa Newydd DCO Project, decommissioning of the Existing Power Station and transport emissions from other projects. Generally, the individual effects on traffic from other projects are likely to be minor, being of smaller scale or temporary. Young people are likely to benefit the most from the collective employment and training opportunities of all planned projects. Many of the projects on the Isle of Anglesey are high-tech industries, suggesting well paid technical roles and skills development. Other Nuclear Power Stations in England may give young people in north Wales broader opportunities and a more secure jobs market. This may be important for those considering specialist careers with the Wylfa Newydd DCO Project, but who would be put off if specialisation limited their ability to seek employment elsewhere in the future. Community social interactions with the collective construction workforces of all projects could affect local young adults most. This is based on a worst-case profile of the construction workforces. Effects may include increased exposure to communicable disease and changes in perceptions of social norms for risk taking behaviour, such as alcohol and tobacco use.

Older people

- 1-1.1.71 For older people the overall inter-project population health effect, taking account of differing effects across geographic levels, is expected to be up to minor adverse. For older people, inter-project environmental pollution and disturbance effects relate primarily to the Wylfa Newydd DCO Project, decommissioning of the Existing Power Station and transport emissions from other projects. Generally, the individual effects on traffic from other projects are likely to be minor, being of smaller scale or temporary. In areas where a large proportion of workers who do not usually reside in north Wales are hosted, community identity, social networks and culture may change. This could particularly affect older people due to greater reliance on existing social networks and community support.

People with existing poor health (physical and mental health)

- 1-1.1.72 For people with existing poor health the overall inter-project population health effect taking account of differing effects across geographic levels is expected to be up to minor adverse. Greater sensitivity to environment effects (e.g. air quality and noise) relates primarily to the Wylfa Newydd DCO Project, decommissioning of the Existing Power Station and transport emissions from other projects. People with multiple or complex long-term health conditions are particularly likely to benefit from the healthcare service improvements that could be provided as part of the Wylfa Newydd DCO Project. They are also the group likely to experience the greatest adverse effects if there is unmitigated pressure from all the other projects on local health services.

People who are deprived, including those on low incomes

- 1-1.1.73 For people who are deprived the overall inter-project population health effect taking account of differing effects across geographic levels is expected to be up to minor beneficial. Deprived groups may be particularly sensitive to increases in local housing rental and purchase prices. High demand for housing by the combined workforces in desirable locations may act over time to displace existing residents. Beneficial employment,

education and investment across all projects may play an important role in reduce inequalities on the Isle of Anglesey and in north Wales. The mix of planned energy generating projects would nationally support uninterrupted and affordable electricity supply. This is likely to benefit the poorest members of society or those with other measures of deprivation (e.g. homes without central heating systems). The contribution by all low-carbon energy generation projects to reducing adverse health outcomes associated with climate change would particularly benefit deprived populations.

Health commitments and monitoring

- 1-1.1.74 A number of mitigation commitments have been developed through the HIA work for the Project. These commitments complement mitigation set out in other assessment reports, such as the Environmental Statement. All measures have been taken into account to reach the HIA's conclusions (i.e. the residual effects set out above). HIA mitigation would be secured through Codes of Construction and Operational Practice, the Workforce Management Strategy and s106 agreements. The following paragraphs summarise the HIA commitments. Further detail on HIA mitigation, including securing mechanisms, is presented in HIA section J.4 (with additional measures arising from rapid HIA work set out in sections E.2, F.2, G.2 and H.2).
- 1-1.1.75** Horizon would establish and chair an external stakeholder group (the Health and Well-being Monitoring Group) that would include members of the health and emergency services to monitor the implementation of the HIA mitigation strategy and provide advice on its delivery.
- 1-1.1.76 Horizon would appoint a bi-lingual Community Involvement Officer to be a key interface between the local community, key stakeholders and Horizon management. The Community Involvement Officer would develop and implement many of the HIA mitigation measures during construction and operation of the Project.
- 1-1.1.77 To address concerns about labour churn within the health and social care sector Horizon would support IACC and BCUHB to develop their own Workforce Strategies.
- 1-1.1.78 Horizon is committed to providing appropriate Occupational Health and Hygiene services for the construction and operational workforce. This would be completed in agreement with BCUHB and PHW where appropriate.
- 1-1.1.79 Horizon is committed to making appropriate healthcare provision or contributions to meet the medical and healthcare needs of the construction workforce, including at a Site Campus Medical Centre. Horizon would require construction workers to register with, and, prioritise the use of these on-site medical and healthcare services rather than using the community NHS services.
- 1-1.1.80 Horizon is committed to providing appropriate provision of emergency services for the construction workforce. An appropriate financial contribution would be considered for the emergency services for the needs of the construction workforce.

- 1-1.1.81 Horizon would promote health and well-being, including occupational health and hygiene and good worker conduct through the preparation and implementation of a Code of Conduct in accordance with the principles in the Workforce Management Strategy.
- 1-1.1.82 Horizon would provide training on community relations, language, culture, health, safety and environmental issues.
- 1-1.1.83 All personnel and contractors would receive a copy of the Code of Conduct and would be required to comply with it. As part of their orientation, construction workers would be required to register with the Worker Accommodation Management Service.
- 1-1.1.84 In accordance with the Hitachi Group Codes of Conduct and the Horizon Nuclear Power 'Modern Slavery Act 2015 Statement' and through the Workforce Management Strategy, Horizon would safeguard the welfare of its employees and its supply chain and, in relation to the activities of its construction workforce, the general public. This would be achieved through using Horizon's normal personnel screening and management systems to identify those that may pose a risk to vulnerable adults and children. In such cases where a potential risk is identified, further checks would be carried out.
- 1-1.1.85 Horizon would comply with the Codes of Construction Practice with regard to dust, noise, congestion and nuisance controls. Information regarding air pollutant concentrations dust and noise would be provided to residents.
- 1-1.1.86 To promote physical activity, Horizon would ensure safe pedestrian access is provided at Tregele to access the proposed new alignment of the Wales Coast Path and onward Public Right of Way to Cemaes. Horizon would also support and enhance active travel access for people using the Copper Trail which currently links to the A5025 in Tregele.

Conclusion

- 1-1.1.87 The overall effect for population health, taking account of differing effects across vulnerable groups and geographic levels, of the Wylfa Newydd DCO Project is considered to be beneficial.
- 1-1.1.88 The overall effect is also considered to be beneficial when taking into account all relevant past, current and reasonably foreseeable future projects, that it might interact with.
 - This encompasses minor to major beneficial effects (at the local, regional, national and international geographic levels, with many such benefits also extending to site-specific communities).
 - It also encompasses minor to moderate adverse effects (for some site-specific communities).
 - The majority of adverse effects are during the construction stage. The majority of beneficial effects are during the operation stage.
- 1-1.1.89 Submission of the HIA as part of the application for development consent is an important milestone, but is not the conclusion of Horizon's work on health and well-being with local stakeholders. Health stakeholders will be involved throughout the application determination process and, if the Project is given

the go-ahead, throughout the Project itself. Health stakeholders would be involved in the planning and implementation of measures to support local healthcare and communities, as well as in monitoring the Project.

A Introduction to the Wylfa Newydd Project and approach to the Health Impact Assessment

A.1 Introduction

- A.1.1 This document is a Health Impact Assessment (HIA), and it forms part of the documentation prepared in support of the application for development consent for the Wylfa Newydd DCO Project.
- A.1.2 This HIA provides a description of the likely significant effects on population health and well-being arising from the Wylfa Newydd DCO Project. It explains the processes followed, the assessment methods used and the mitigation measures proposed to prevent, reduce and offset any significant adverse effects and to enhance beneficial effects.
- A.1.3 The HIA looks at effects on communities, i.e. the populations outside the perimeter fence. The Wylfa Newydd DCO Project's workforces are considered in relation to potential community effects, for example the need for appropriate workforce healthcare and health promotion. It is recognised that there would be overlap between communities and the workforce, for example through local employment. The focus of the HIA is on community health and well-being and not on occupational health and safety.

Background

- A.1.4 Horizon is applying to the Secretary of State under the Planning Act 2008 for development consent to construct, operate and maintain a new nuclear power station on land west of Cemaes on Anglesey. Section 31 of the Planning Act 2008 provides that a Development Consent Order (DCO) is required to the extent that a development is, or forms part of, a Nationally Significant Infrastructure Project (NSIP). The Wylfa Newydd DCO Project is an NSIP.

Overview of the Wylfa Newydd Project

- A.1.5 Horizon is proposing to construct and operate the Wylfa Newydd Project, which comprises the Wylfa Newydd DCO Project, the Licensable Marine Activities and the Enabling Works. Each of these elements is described further below. The Licensable Marine Activities would be consented under a Marine Licence and the Wylfa Newydd DCO Project under a DCO, however there is some overlap between the two; the Marine Works (see below) would be consented under both.

Wylfa Newydd DCO Project

- A.1.6 The Wylfa Newydd DCO Project comprises those parts of the Wylfa Newydd Project which are to be consented by a DCO, namely:
- Power Station: the proposed new nuclear power station, including two UK Advanced Boiling Water Reactors (UK ABWRs) to be supplied by Hitachi-GE Nuclear Energy Ltd., supporting facilities, buildings, plant and structures, and radioactive waste, spent fuel storage buildings and apparatus to transfer electrical energy to the National Grid high voltage electricity transmission network;

- Other on-site development: including landscape works and planting, drainage, surface water management systems, public access works including temporary and permanent closures and diversions of public rights of way, new Power Station Access Road and internal site roads, car parking, construction works and activities including construction compounds and temporary parking areas, laydown areas, working areas and temporary works and structures, temporary construction viewing area, diversion of utilities, perimeter and construction fencing;
 - Marine Works comprising:
 - Permanent Marine Works: the Cooling Water System, Cooling Water System intake and outfall, Marine Off-Loading Facility (MOLF), breakwater structures, shore protection works, surface water drainage outfalls, fish recovery and return system, fish deterrent system, navigation aids and Dredging;
 - Temporary Marine Works: temporary cofferdams, a temporary access ramp, temporary navigation aids, temporary outfalls and a temporary barge berth;
 - Off-site Power Station Facilities: comprising the Alternative Emergency Control Centre (AECC), Environmental Survey Laboratory (ESL) and a Mobile Emergency Equipment Garage (MEEG);
 - Associated Development: the Site Campus within the Wylfa Newydd Development Area; temporary Park and Ride facility at Dalar Hir for construction workers (Park and Ride); temporary Logistics Centre at Parc Cybi (Logistics Centre); and the A5025 Off-line Highway Improvements.
- A.1.7 The following terms are used when describing the geographical areas related to the Wylfa Newydd DCO Project and the Licensable Marine Activities:
- Power Station Site – the indicative area of land and sea within which the majority of the permanent Power Station buildings, plant and structures would be located. This includes the two nuclear reactors, steam turbines, the Cooling Water System intake and outfall structures, breakwaters and the MOLF.
 - Wylfa Newydd Development Area (WNDA) – the indicative areas of land and sea including the Power Station Site, and the surrounding areas that would be used for construction and operation of the Power Station, Marine Works and other on-site development. It would also include the Site Campus. This area is representative of the maximum area that would be physically affected by construction activities related to the Power Station and used to form the setting and landscaping features of the operational Power Station.
- A.1.8 For the purposes of this document, the Wylfa Newydd DCO Project is referred to hereafter as the "Project". In some cases the term Wylfa Newydd DCO Project is retained in full for clarity, e.g. in relation to cumulative effects.
- A.1.9 Figure A-1 shows the location of the Power Station Site, Off-Site Power Station Facilities and Associated Development. A more detailed description of the

Project and its individual components can be found in Environmental Statement chapters A2, D1, E1, F1, G1 and H1 of the accompanying the application for development consent (Application Reference Numbers: 6.1.2, 6.4.1, 6.5.1, 6.6.1, 6.7.1 and 6.8.1).

Licensable Marine Activities

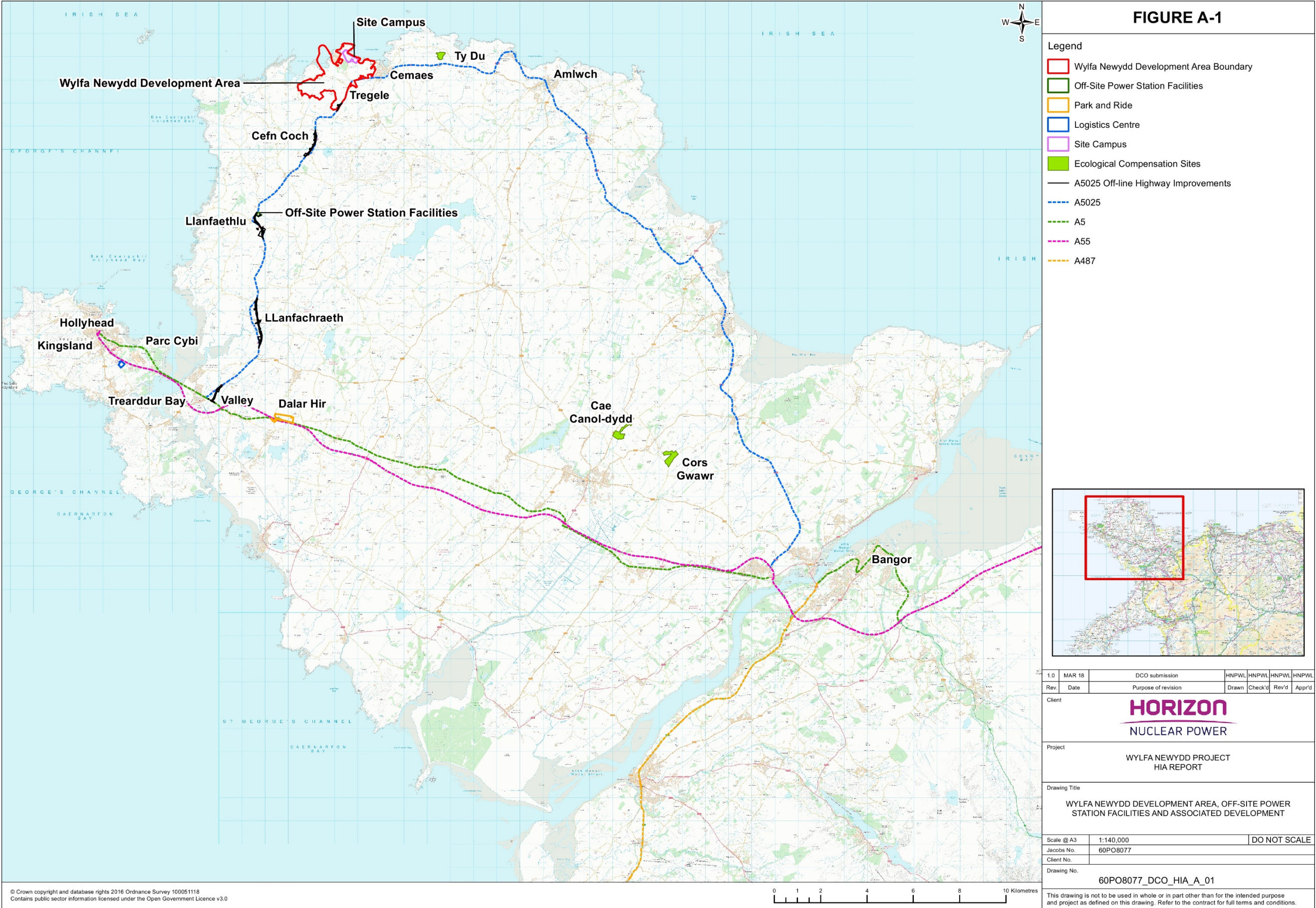
- A.1.10 The Licensable Marine Activities comprise the Permanent Marine Works, the Temporary Marine Works, the disposal of dredged material at the Disposal Site, the drainage of surface water into the sea, the construction of a waste water treatment effluent outfall, and the drainage of treated sewage into the sea.
- A.1.11 The HIA has had regard to the Environmental Impact Assessment (EIA) findings in relation to the water environment as a determinant of health. The HIA team's watching brief on water issues has concluded that this determinant of health should continue to be outside the scope of the HIA. For example, EU-designated bathing waters (including at Cemaes Bay) are considered in the Environmental Statement volume D chapter 13 (the marine environment) (Application Reference Number: 6.4.13), which concludes that there would be a negligible effect on bathing waters through changes in water quality from drainage, dewatering and sewage associated with the WNDA Development (including the Site Campus).

Enabling Works

- A.1.12 The Enabling Works comprise the Site Preparation and Clearance Proposals (SPC Proposals) and the A5025 On-line Highway Improvements.
- A.1.13 Horizon has submitted applications for planning permission for the Enabling Works under the *Town and Country Planning Act 1990* to the Isle of Anglesey County Council (IACC).
- A.1.14 In order to maintain flexibility in the consenting process for the Wylfa Newydd DCO Project, the SPC Proposals have also been included in the application for development consent.
- A.1.15 The A5025 On-line Highway Improvements are not part of the application for development consent and are therefore excluded from the scope of the HIA. The cumulative effects assessment reported in volume I does, however, consider the A5025 On-line Highway Improvements.

[This page is intentionally blank]

Figure A-1 Power Station Site, Off-Site Power Station Facilities and Associated Development



[This page is intentionally blank.]

Health Impact Assessment

- A.1.16 HIA is a process to identify and assess the potentially significant beneficial and adverse effects of a project on health and well-being. The HIA suggests ways in which opportunities for health gain can be increased and risks to health avoided or mitigated. The HIA also highlights ways in which health effects may be distributed unevenly. It seeks to address these existing health inequalities and to avoid the creation of new ones.
- A.1.17 Health is understood as a positive concept that encompasses mental, physical and social well-being.
- A.1.18 Well-being is an intrinsic aspect of health that, while not always explicitly stated, is implicit in any reference to health. The terms 'health' and 'health and well-being' are used interchangeably.
- A.1.19 Determinants of health are the range of personal, social, economic and environmental factors which determine the health status of individuals or populations [RD2].
- A.1.20 A health outcome is a change in the health status of an individual, group or population which is attributable to a planned intervention or series of interventions, regardless of whether such an intervention was intended to change health status [RD2].
- A.1.21 In their response to the 2009 EIA Scoping Report, Betsi Cadwaladr University Health Board (BCUHB) stated that a comprehensive HIA would be required to complement the EIA [RD3].
- A.1.22 The HIA work for the Project has followed Welsh guidance [RD1] and has been overseen by a steering group. The 'HIA Steering Group' ensures that local stakeholders have participation in, and a sense of ownership of, the HIA process. The HIA Steering Group comprises representatives from:
- BCUHB;
 - Wylfa Project Liaison Group (representing local community interests);
 - Public Health Wales (PHW);
 - Welsh Government;
 - Wales Health Impact Assessment Support Unit (WHIASU);
 - Isle of Anglesey County Council (IACC); and
 - Horizon.
- A.1.23 Natural Resources Wales, Public Health England and the Office for Nuclear Regulation (ONR) are observers at HIA Steering Group meetings.
- A.1.24 The HIA Steering Group terms of reference describe the role of the group as a process for guiding and reaching consensus between stakeholders on the screening, scoping, assessment, reporting and monitoring of the HIA work for the Project.
- A.1.25 In agreement with the HIA Steering Group, two recognised types of HIA processes are being used:

- a 'comprehensive HIA' process for the application for development consent to the relevant Secretary of State, focusing on the construction, operation and decommissioning of the Power Station (but also including the findings from rapid HIA work).
 - a 'rapid HIA' process for each of the *Town and Country Planning Act 1990* planning applications being made by Horizon to the IACC. Rapid HIA is also applied to some components within the application for development consent (e.g. Off-Site Power Station Facilities and some Associated Development, see volumes E to H of this report).
- A.1.26 This HIA Report is a comprehensive HIA. Unless indicated otherwise reference to the HIA Report relates to the use of a comprehensive HIA process, (i.e. except work specifically using the rapid HIA process (volumes E, F, G, H and O). This HIA Report considers all the components of the Project by also reporting on each of the rapid HIAs, including effects acting together (cumulative effects) (see volume I). Both types of HIA have the following steps [RD1]:
- screening: deciding whether to undertake an HIA;
 - scoping: deciding the focus, methods and work plan of the HIA;
 - appraisal of evidence: identifying the health effects of the relevant components of the Project;
 - reporting and recommendations; and
 - monitoring and evaluation.
- A.1.27 This assessment considers how different factors might affect health and well-being. These include:
- environmental factors, for example health effects from air quality and noise;
 - social factors, for example what potential health effects arise from changes to people's way of life; and
 - economic factors including issues such as employment, effects on certain economic sectors (such as tourism) and effects associated with increased spending within a local area.
- A.1.28 This HIA Report has considered the potential for effects before and after mitigation measures are applied. Residual effects therefore indicate the expected outcome for health and well-being should the proposed mitigation measures be adopted and be successful. See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.
- A.1.29 This HIA draws information from the other impact assessment reports. The HIA has informed, and been, informed by:
- the EIA Environmental Statement (Application Reference Numbers: 6.1 to 6.10) (which includes specific environmental and socio-economic assessments);
 - the Welsh Language Impact Assessment (WLIA) (Application Reference Number: 8.21); and

- the Equality Impact Assessment (EqIA) (Application Reference Number: 8.22).
- A.1.30 Full details of the HIA approach, population groups assessed and methods, including topic-specific considerations that have informed professional judgements, are set out within the HIA appendix in volume L.
- A.1.31 The Site Campus (an Associated Development of the Project) has been assessed in this comprehensive HIA Report as a component of the activities at the Wylfa Newydd Development Area (see volumes C and D). This prominence is due to the potential health and well-being effects associated with the Project's construction workforce (including the location of their accommodation) having a cross-cutting relevance to the scope of the HIA. For this reason, the Site Campus is an integrated element of the comprehensive HIA and not the subject of a separate rapid HIA (as is the case for other Associated Developments).
- A.1.32 Consultation specific to the HIA is described in volume N of this report. This work was a part of wider consultation described in the Consultation Report (Application Reference Number: 5.1). For example, the HIA team undertook a workshop with Over 50's, whilst other members of the Project team worked with schools and local community groups. To avoid community consultation fatigue, events were coordinated rather than duplicated. For example, the Community Survey (a telephone survey) was a HIA led consultation that addressed cross-cutting community cohesion issues.
- A.1.33 The following feedback was received on the September 2017 draft HIA report. PHW (which includes WHIASU, the authority on HIA guidance in Wales) stated that: *"All the necessary HIA components are contained within the main HIA report and the methodology followed is robust"*. The IACC response stated: *"IACC is satisfied that this Assessment contains all the required elements of a comprehensive Health Impact Assessment. It clearly identifies the various policy frameworks, the project itself and specific vulnerable groups."* BCUHB also noted that *"It is evident that a huge amount of work has been undertaken over many years on this HIA and the decision to undertake a full technical HIA on this development is to be commended."* For full responses see the Consultation Report (Application Reference Number: 5.1). A summary is provided in in table N-6 of the report.

A.2 Navigation through this report

- A.2.1 This report is divided into 11 volumes (volumes A to K).
- Volume A introduces the Project and the HIA. This volume is supported by three appendices setting out detail on methods, baseline and consultation.
 - Volume B introduces the topics within the scope of the HIA and the potential effects on health and well-being.
 - Volume C reports the assessment of those effects that are more appropriately considered at a project-wide level rather than for each constituent development in turn. This includes workforce related issues

that, although strongly associated with the Site Campus, also relate to wider accommodation for the workforce.

- Volume D reports the assessment of effects at the 'WNDA Development' (activities at the Wylfa Newydd Development Area associated with the Power Station, the Site Campus, other on-site development and Marine Works). This excludes both the Off-Site Power Station Facilities and the Associated Developments.
- Volume E reports the rapid HIA screening of the Off-Site Power Station Facilities, i.e. the Alternative Emergency Control Centre (AECC), Environmental Survey Laboratory (ESL) and Mobile Emergency Equipment Garage (MEEG). The rapid HIA screening statement is provided as an appendix in volume O.
- Volume F reports the rapid HIA screening of the Park and Ride facility at Dalar Hir (hereafter referred to as the 'Park and Ride'). The rapid HIA screening statement is provided as an appendix in volume O.
- Volume G reports the rapid HIA screening of the A5025 Off-line Highway Improvements. The rapid HIA screening statement is provided as an appendix in volume O.
- Volume H reports the rapid HIA screening of the Logistics Centre at Parc Cybi (hereafter referred to as the 'Logistics Centre'). The rapid HIA screening statement is provided as an appendix in volume O.
- Volume I reports the assessment of cumulative effects of the different developments within the Project and the cumulative effects of the Project together with relevant past, current and reasonably foreseeable future projects.
- Volume J provides a summary of the health and well-being mitigation and enhancement commitments. The volume is supported by an appendix setting out a table of residual effects.
- Volume K sets out the references for the HIA.

A.2.2 There are six appendices (volumes L to Q).

- The HIA appendix in volume L sets out the comprehensive HIA methods and information for each topic underpinning the professional judgements on significance (scientific literature, baseline, local health priorities, consultation responses, regulatory standards (if applicable) and the IACC Supplementary Planning Guidance (SPG) [RD4] policy context).
- The HIA appendix in volume M summarises the general state of health and key determinants of health for the site-specific, local, regional and national spatial scope.
- The HIA appendix in volume N summarises the HIA consultation activities. Further project-wide consultation is described in the Environmental Statement (Application Reference Numbers: 6.1 to 6.10) and the Consultation Report (Application Reference Number: 5.1). The

HIA appendix on methods discusses specific consultation responses that underpin the professional judgements on significance.

- The HIA appendix in volume O sets out the rapid HIA screening statements that support the discussion Off-Site Power Station Facilities and Associated Development in volumes E, F, G and H.
- The HIA appendix table of significant residual effects is in volume P. This appendix sets out those individual and cumulative effects that potentially remain significant after mitigation has been taken into account.
- The HIA appendix volume Q provides the results from the community survey. This informs the assessment and the additional mitigation in volume C, volume D and volume J.

A.3 Project overview

Introduction

- A.3.1 Nuclear power can play a vital role in meeting the challenge of maintaining secure energy supplies for the UK. The *National Policy Statement for Nuclear Power Generation (EN-6)* (NPS EN-6) identifies the proposed Project's location as a site potentially suitable for deployment of a new Nuclear Power Station by the end of 2025.
- A.3.2 The UK Government is committed to meeting its legally binding target to cut greenhouse gas emissions by at least 80% by 2050, based on 1990 levels. As a low carbon source of energy, the UK Government has clearly stated that nuclear power has an important role to play in the diversification and decarbonisation of electricity demand.

Summary of the development

- A.3.3 The application for development consent is based on bounded parameters rather than a defined design (see discussion at HIA paragraph L.2.68). The HIA is based on a worst-case scenario of these parameters.

Power Station, other on-site developments and Marine Works

- A.3.4 The Power Station Site would comprise a range of buildings, structures, facilities and features. These include the following:

Power Station

- **Main plant** - located on a single power island and comprising those parts of the Power Station that enable the generation of power:
 - two reactor buildings;
 - two turbine buildings;
 - two control buildings;
 - one service building; and
 - one radioactive waste building.
- **Common plant including ABWR** – comprising those parts of the Power Station that service the generation of power but are shared between the two UK ABWRs:
 - common radioactive waste buildings; and
 - Cooling Water System (CWS) (which also forms part of the Marine Works).
- **Supporting facilities, buildings, structures and features** – including those parts of the Power Station necessary to support the construction of, and the operation and maintenance of the main plant, including:
 - offices; and
 - security facilities.

Other on-site development

- landscape works and planting;
- drainage;
- surface water management systems;
- public access works including temporary and permanent closures and diversions of public rights of way;
- new Power Station Access Road and internal site roads;
- car parking;
- construction compounds and temporary parking areas;
- laydown areas;
- working areas and temporary works and structures;
- temporary construction viewing area;
- diversion of utilities;
- perimeter; and
- construction fencing.

Marine Works

A.3.5 The Marine Works comprise:

- Permanent Marine Works: the CWS, Cooling Water System intake and outfall, Marine Off-Loading Facility (MOLF), breakwater structures, shore protection works, surface water drainage outfalls, fish recovery and return system, fish deterrent system, navigation aids and Dredging;
- Temporary Marine Works: temporary cofferdams, a temporary access ramp, navigation aids, temporary outfalls and a temporary barge berth.

A.3.6 Further detailed description of the Wylfa Newydd Development Area and Power Station Site is provided in Environmental Statement chapter D1 (proposed development) (Application Reference Number: 6.4.1).

Licensable Marine Activities

A.3.7 The Licensable Marine Activities comprise the Permanent Marine Works, the Temporary Marine Works, the disposal of dredged material at the Disposal Site (at Holyhead North), the drainage of surface water into the sea, the construction of a waste water treatment effluent outfall, and the drainage of treated sewage into the sea.

Off-site Power Station Facilities

A.3.8 All of the Off-site Power Station Facilities would be located on the same site. The selected site is located adjacent to the A5025 at Llanfaethlu, 7.5 km from the Wylfa Newydd Development Area, on a site currently used as a garage and vehicle parking. The proposed development would consist of:

- an AECC to provide back-up command and communications facilities that would be used to remotely manage an incident at the Power Station in the

extremely unlikely event the primary facilities on the Power Station Site were untenable or if there was no access to the Power Station Site;

- a MEEG to enable Horizon to store a number of specialist vehicles at a location close to but separate from the Power Station Site, allowing them to be rapidly deployed if needed to support an incident. The MEEG could also be used as a marshalling point for support arriving on Anglesey before onward dispatch to the Power Station Site in an emergency situation. The MEEG would be located in the same building as the AECC;
- an ESL would perform a normal operating function on a daily basis for environmental monitoring and, as such, would contain facilities such as radiation monitoring equipment to conduct radiological surveys in the local area;
- car parking and pedestrian walkways;
- access and delivery areas;
- generator;
- pump house;
- fuel pump and fill point;
- substation;
- two underground fuel tanks;
- refuse compound;
- portable office pods;
- container storage;
- security fencing; and
- drainage swale.

A.3.9 The Off-Site Power Station Facilities would be used during the operational stage of the Power Station. The facilities are required in order to provide resilience against extreme events with very low probabilities.

A.3.10 Further detailed description of the Off-site Power Station Facilities is provided in Environmental Statement chapter E1 (proposed development) (Application Reference Number: 6.5.1).

Associated Development

A.3.11 The Associated Development facilitates the delivery of the NSIP, and comprises the Site Campus; a Park and Ride facility at Dalar Hir for construction workers; a Logistics Centre at Parc Cybi; and the A5025 Off-line Highway Improvements. Each of these is described below.

Site Campus

A.3.12 The Site Campus would provide temporary worker accommodation on land to the north east of the Wylfa Newydd Development Area, to be delivered in phases. The Site Campus would only be present during construction of the Power Station. When it is no longer required the Site Campus buildings would be removed and the area returned to its pre-developed condition. Public

footpaths and access to Fisherman's Car Park would be reinstated after decommissioning.

A.3.13 The Site Campus would consist of:

- accommodation for circa 4,000 workers in 'campus' style modular form (providing an independent living space for each worker);
- the Site Campus Medical Centre (within the ground floor of an accommodation block) (further details in section C.6 of this report);
- amenity building including:
 - cafeteria;
 - café;
 - reception area;
 - gym;
 - bar; and
 - other social space.
- outdoor recreation including two multi-use games areas, outdoor seating and informal public spaces;
- Site Campus access road (from the site to the A5025);
- bus set down and parking area;
- disabled parking spaces (staff only) and parking for light vans/minibuses;
- temporary parking for workers;
- internal access ways for pedestrians, service vehicles and emergency vehicles;
- 2.4m high Paladin type fence around the perimeter;
- soft landscaping works; and
- secondary substation, compactor, bin and bike stores.

A.3.14 The total of circa 4,000 bed spaces would be provided over a total of up to 25 buildings between four and seven storeys in height. Each building would provide between 128 and 224 bed spaces.

A.3.15 Additional services associated with the worker accommodation, though not provided on the Site Campus itself, would include the following:

- associated parking would be provided for up to 800 spaces located to the south of the Site Campus, adjacent to the access road (though during the initial phases, 400 spaces would be provided on the Site Campus to the east of the amenity building);
- a facility within the security fence on the Power Station Site will treat minor injuries. This facility will also be a staging point for any more serious incidents; and
- extension to the existing Welsh Water sewage treatment plant (this is not part of the Project as it is being undertaken by the local water utility).

A.3.16 Further detailed description of the Site Campus is provided in Environmental Statement chapter D1 (proposed development) (Application Reference Number: 6.4.1).

Park and Ride facility

A.3.17 The proposed Park and Ride facility at Dalar Hir would be located immediately to the north east of Junction 4 on the A55 and approximately 18.5km from the Wylfa Newydd Development Area.

A.3.18 The Park and Ride facility would consist of:

- secure parking for up to 1,900 cars which would include 10 disabled car spaces, as well as spaces for 55 minibuses and 35 motorbikes;
- a bus waiting pick up and drop off zone for up to 15 buses with additional parking for eight buses;
- a bus transport facility building to provide:
 - transport information;
 - a waiting area;
 - welfare facilities;
 - a bus driver canteen; and
 - management office facilities.
- access via a new roundabout located near the existing A55-A5 junction (Junction 4);
- landscaping and screen planting for visual mitigation;
- other ancillary development, including a cycle store for up to 25 bicycles, signage, fencing, lighting, CCTV and utilities; and
- a crossing at the east end of the site.

A.3.19 This Park and Ride facility would be used during the construction stage of the Power Station to transport and manage the flow of some of the construction workforce to and from the Wylfa Newydd Development Area, in order to reduce the number of vehicles being driven to the Wylfa Newydd Development Area.

A.3.20 Following construction of the Power Station, the Park and Ride facility would be removed and the land restored to its existing use (agricultural land). The existing hedge line and proposed new hedge line to the west of the site, along with tree and shrub planting, using native species, on the southern boundary would be retained as a legacy benefit.

A.3.21 Further detailed description of the Park and Ride facility at Dalar Hir is provided in Environmental Statement chapter F1 (proposed development) (Application Reference Number: 6.6.1).

A5025 Off-line Highway Improvements

A.3.22 The main route to the Wylfa Newydd Development Area from the mainland and the port of Holyhead is along the A55, the A5 and the A5025. Studies undertaken by Horizon in 2010–2011 (summarised in Environmental Statement chapter G2 (alternatives and design evolution) (Application Reference Number: 6.7.2)) identified that the stretch of the A5025 between the

community of Valley and the Existing Power Station access road has physical and operational constraints in relation to its width, alignment, overtaking opportunities and surfacing condition.

- A.3.23 A variety of highway improvement works along the A5025 would be needed to address existing safety and environmental concerns and mitigate the impacts of the construction and operation of the Project.
- A.3.24 The proposed A5025 Off-line Highway Improvements form an important component of the Project, and are required as part of the wider Integrated Traffic and Transport Strategy. The A5025 Off-line Highway Improvements involve the construction of new sections of road such as bypasses and road realignment works.
- A.3.25 The A5025 Off-line Highway Improvements seek to address potential environmental effects on communities, including noise from increased road traffic and severance.
- A.3.26 The A5025 between Valley and the Power Station Site is approximately 16.5km in length and can be broadly described geographically in eight sections. Sections 1, 3, 5 and 7 relate to the A5025 Off-line Highway Improvements.
- A.3.27 The A5025 Off-line Highway Improvements can be described as follows:
- section 1 – A5 east of Valley Junction to the north of Valley Junction – proposed four arm roundabout and bypass connecting the A5 with the A5025 to the east of the existing A5/A5025 signalised junction;
 - section 3 – north of Llanynghenedl to the north of Llanfachraeth – proposed 2km highway to provide a bypass to the east of Llanfachraeth village;
 - section 5 – south of Llanfaethlu to the north of Llanfaethlu – proposed bypass to provide a straighter section of road, where there are two existing substandard bends near the Black Lion pub and through Llanfaethlu;
 - section 7 – north of Llanrhyddlad to the north of Cefn Coch – proposed bypass to eliminate two existing substandard bends in Llanrhwyrus; and
 - new Power Station Access Road junction - proposed roundabout junction linking the proposed Power Station Access Road to the existing A5025 public highway.
- A.3.28 Further detailed description of the A5025 Off-line Highway Improvements is provided in Environmental Statement chapter G1 (proposed development) (Application Reference Number: 6.7.1).
- A.3.29 The proposed A5025 On-line Highway Improvements include the replacement of the existing carriageway and minor widening within or adjacent to the highway boundary. Sections 2, 4, 6 and 8 relate to the A5025 On-line Highway Improvements. The A5025 On-line Highway Improvements are the subject of a separate planning application made to the Isle of Anglesey County Council (IACC) under the *Town and Country Planning Act 1990*.

Logistics Centre

- A.3.30 The proposed Logistics Centre would be located in the north west of the wider Parc Cybi employment area approximately 19km from the Wylfa Newydd Development Area. The Logistics Centre would consist of:
- an office/welfare building;
 - security kiosk;
 - driver instructor point;
 - covered inspection bay;
 - Heavy Goods Vehicle (HGV) scanner; and
 - parking zones (100 parking bays for HGV, MGV and LGVs, 12 staff parking bays (including one disabled space)).
- A.3.31 The Logistics Centre would be used during the construction stage of the Power Station to control the flow of traffic along the A5025, in order to prevent vehicles leaving in convoy and to avoid sensitive times of the day (such as peak work rush hour and school run).
- A.3.32 Following construction of the Power Station, the site would be available for another use subject to necessary consents being secured.
- A.3.33 Further detailed description of the Logistics Centre at Parc Cybi is provided in Environmental Statement chapter H1 (proposed development) (Application Reference Number: 6.8.1).

Related application by National Grid

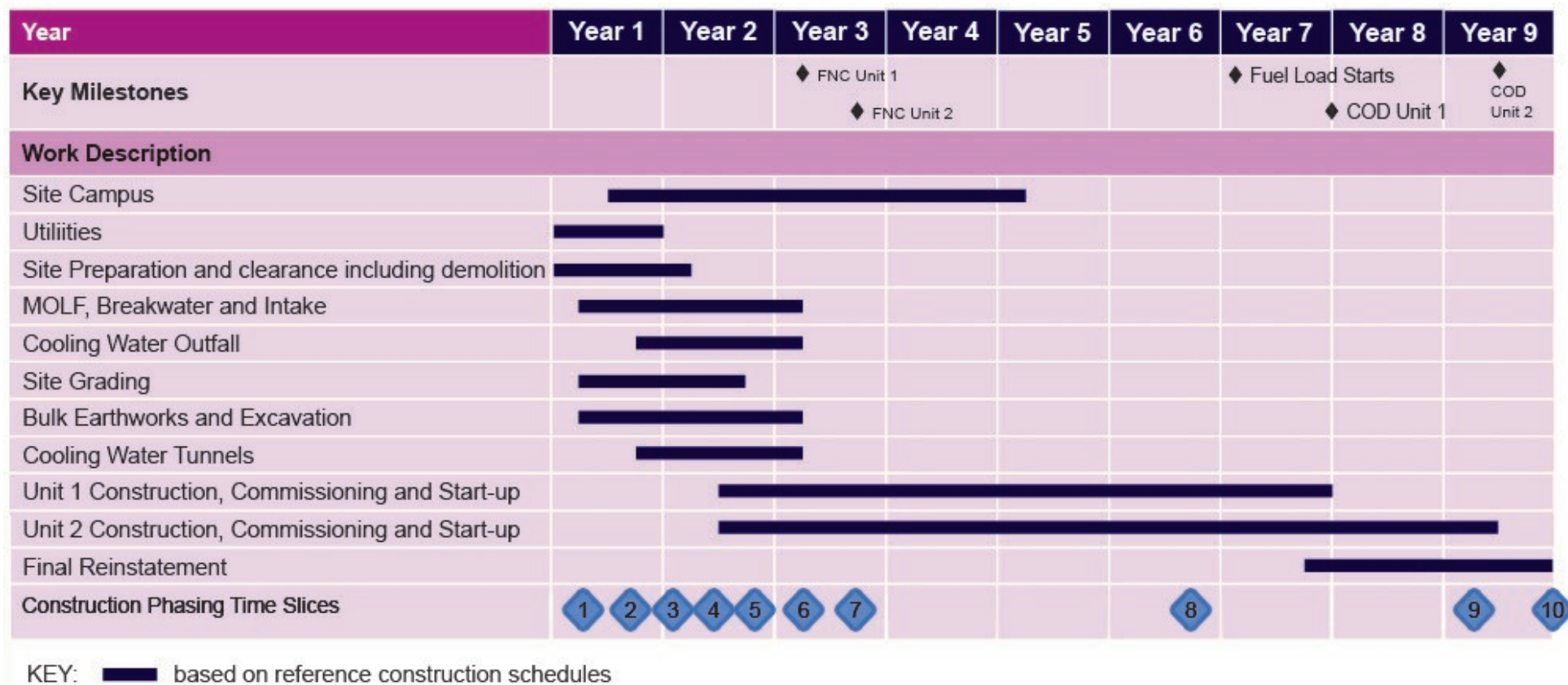
- A.3.34 The electrical energy generated by the Power Station would be transferred to the National Grid via the existing 400kV substation. The connection from the 400kV substation into the National Grid at Pentir near Bangor on the Welsh mainland is a separate DCO project, known as the North Wales Connection Project and is being separately taken forward by National Grid Electricity Transmission plc. The DCO application for the North Wales Connection Project will also include an Environmental Statement and rapid HIA. The cumulative effects of the Project together with the North Wales Connection Project have been assessed and are reported in volume I.

Outline programme of construction and operation

- A.3.35 The Power Station construction programme is anticipated to commence following grant of development consent. The Main Construction stage is anticipated to take approximately nine years, with the first ABWR Unit operational seven years after grant of development consent, and the second ABWR Unit operational approximately two years later.
- A.3.36 Construction of the spent fuel storage facility would commence some 14 years after grant of development consent and would not be required until approximately 2035. The solid Intermediate Level Waste storage facility would be built at the same time. Further details on construction can be found in Environmental Statement appendix D1-1(construction method statement) (Application Reference Number: 6.4.17).

- A.3.37 Activities such as bulk earthworks, deep excavations, rock excavation and MOLF construction would commence in the first year following grant of development consent. Construction activities, concrete production, distribution and placing, steel reinforcing works, craneage, access to structures and related site logistics would likely peak during year 4 following grant of development consent.
- A.3.38 It is anticipated that the construction of the Off-site Power Station Facilities would commence in the third year following grant of development consent, and last for approximately two years. The Off-site Power Station Facilities would be operated until the decommissioning of the Power Station.
- A.3.39 It is anticipated that construction of the Park and Ride facility would commence in the first year following grant of development consent and that construction activity on the site would last for approximately 18 months. Construction would be phased in order to most effectively cater for construction workforce ramp up during the period in which the Power Station is being constructed. The Park and Ride facility would be in operation for approximately 10 years.
- A.3.40 The A5025 Off-line Highway Improvements are proposed to be completed in time for the start of major construction activities at the Wylfa Newydd Development Area. It is anticipated that construction of the A5025 Off-line Highway Improvements would commence in summer 2019 and last for approximately 18 months. The roads would then be open to traffic in early 2021.
- A.3.41 It is anticipated that construction of the Logistics Centre at Parc Cybi would commence in the first year following grant of development consent and last for approximately 15 months. It is anticipated that the Logistics Centre would be operational for a period of approximately 10 years.
- A.3.42 It is expected that the Site Campus would likely be operational some two years following grant of development consent, and be operational for five years, with peak occupation levels being the last two years of operation. The Site Campus would be designed however, to have a service life of a minimum of 10 years. Construction would be in a phased manner with three key stages. The first phase would provide accommodation for circa 1,000 workers (stage one), then increase incrementally to provide accommodation for circa 2,500 workers (stage two) and circa 4,000 workers (stage three).
- A.3.43 Figure A-2 sets out the indicative construction timeline.

Figure A-2 Indicative construction timeline



Workforce profile

- A.3.44 Several thousand construction workers would be required during the approximately nine-year construction programme, with numbers estimated to reach circa 8,500 shift workers during peak periods. To ensure any unforeseen increases in worker numbers are mitigated, a peak of circa 9,000 workers is used for assessment purposes. The exception to this is in assessments where the lower number of workers represents the 'worst-case' scenario, in which case the lower figure of circa 8,500 workers is assessed (for example associated economic benefits to the community from the workforce).
- A.3.45 Circa 4,000 of these would be accommodated within the Site Campus. Circa 3,000 are expected to use the existing accommodation within the Key Socio-Economic Study Area (KSA), which would be the area most likely to experience the socio-economic effects of the Project (approximately equating to Anglesey and Arfon). Circa 2,000 are expected to be already residing in the KSA and represents the local (home-based) workforce.
- A.3.46 Table A-1 shows the indicative breakdown of the additional population during main construction. This is calculated based on benchmarking information that 25% of non-home-based professional workers, 4% of operatives (for example civils; and mechanical and electrical workers) and 60% of operational workers (arriving during construction) would bring families into the area. A more detailed description of these assumptions and the approach is provided in Environmental Statement chapter B2 (socio-economics) (Application Reference Number: 6.2.2).
- A.3.47 Table A-2 sets out the estimated indicative breakdown by country for the non-local international labour force.
- A.3.48 Table A-3 summarises the estimated indicative split between the local, UK and international construction workforce. A more detailed description of the assumptions and the approach to these estimates are provided in the Community Cohesion Report (Environmental Statement appendix C1-3) (Application Reference Number: 6.3.10).
- A.3.49 Table A-4 represents indicative maximum labour demand estimates for each of Associated Developments and Off-site Power Station Facilities. Table A-4 excludes operation of the Site Campus as this is included under construction workforce numbers.

Table A-1 Indicative breakdown of non-home-based workers and dependants during peak construction

Additional population	Number
Non-home-based workers	7,000
Estimated partners	285
Estimated dependants	220
Total	7,505

Table A-2 Indicative summary of international workforce by country of origin

Non-Local – International	Number	Proportion of Total Worker Demand at Peak (%)
Japan	210	2%
United States	120	1%
Eastern Europe including Poland	550	6%
Ireland	330	4%
Baltic States	210	2%
Other Europe and Rest of World	280	3%
Total	1,705	19%

Table A-3 Indicative summary of estimated workforce split

Labour Category	Total Worker Demand at Peak ¹	Local		Non-Local – UK		Non-Local - International	
		No.	%	No.	%	No.	%
Civils Operatives	3,070	675	22%	1,535	50%	860	28%
M&E Operatives	2,580	208	8%	1,550	60%	820	32%
Professional Staff	2,000	237	12%	1,735	87%	25	1%
Support Staff	900	689	77%	210	23%	0	0%
Total	8,550	1,809	21%	5,030	59%	1,705	20%

Table A-4 Indicative maximum labour demand estimates

Project element	Construction	Operation
A5025 Highway Improvements	211(Off-line)	-
Logistics Centre	50	29
Park and Ride	70	13
Off-site Facilities	85	-

A.3.50 Figure A-3 shows the indicative quarterly profile of the workforce for the Project during the construction stage. This workforce profile includes the workers required for the construction and operation of the Power Station, the Off-site

¹ It should be noted that this estimate is of worker source excludes 450 operational workers that could alter the proportion of Local, Non-Local – UK, and Non-Local – International slightly.

Power Station Facilities and Associated Development, noting that Power Station operational workers would join the workforce during the construction period and overlap. The Main Construction stage is anticipated to take approximately seven years, with the first Unit operational seven years after grant of development consent, and the second Unit operational approximately two years later. The Main Construction workforce is associated with the seven-year period between year three and year nine.

Figure A-4 shows the indicative trade breakdown for the workforce profile. This does not include management, operations or support staff which are included in the previous figure. This informs the assessment of skills and local labour, and the assessment of accommodation effects.

- A.3.51 Figure A-5 shows the indicative profile of accommodation take-up. This encompasses all accommodation stock types, including the provision of the Site Campus bed spaces as identified within the Workforce Accommodation Strategy (Application Reference Number: 8.4). The figure shows the expected distribution within various accommodation, and does not indicate any preference for prioritising any stock type provider over another.

Figure A-3 Indicative construction workforce profile

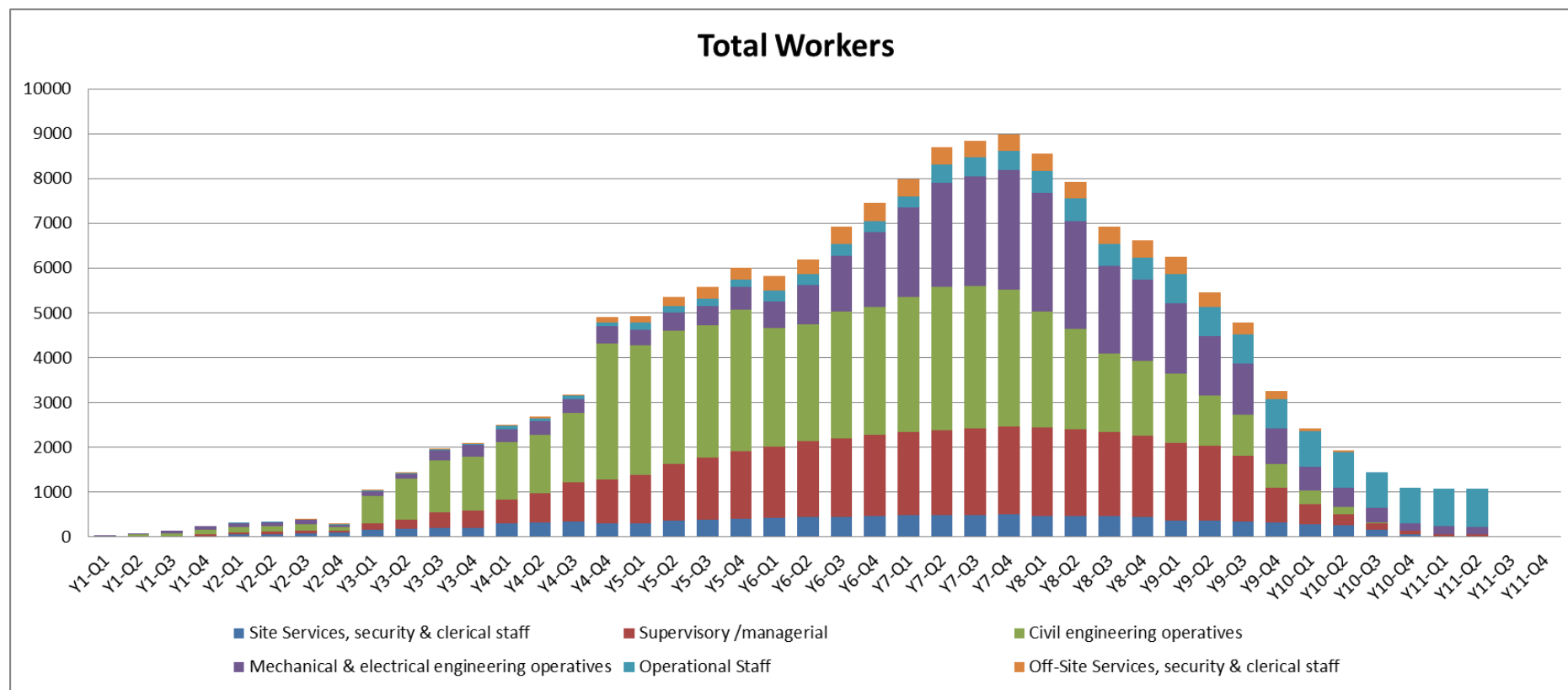


Figure A-4 Indicative trade breakdown

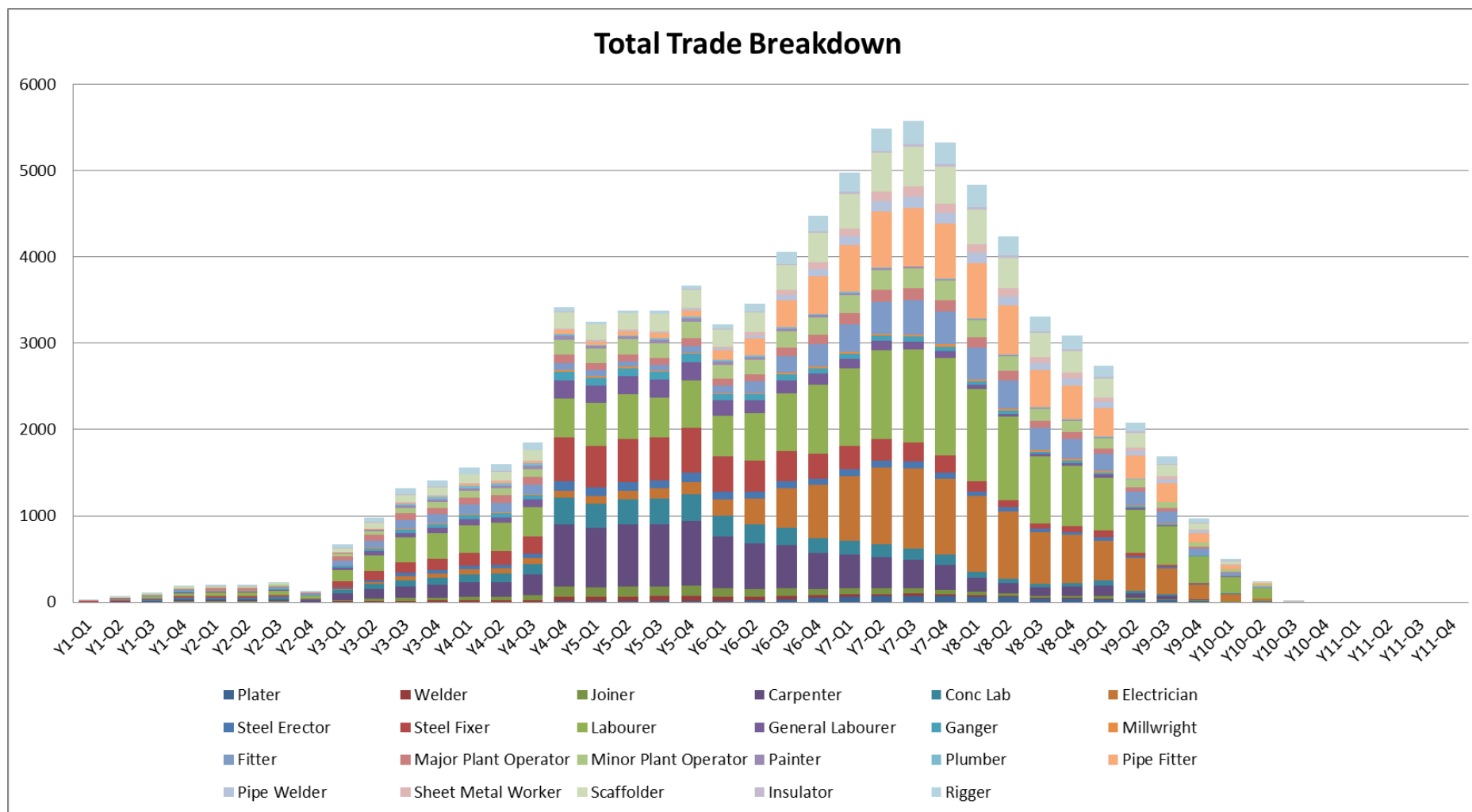
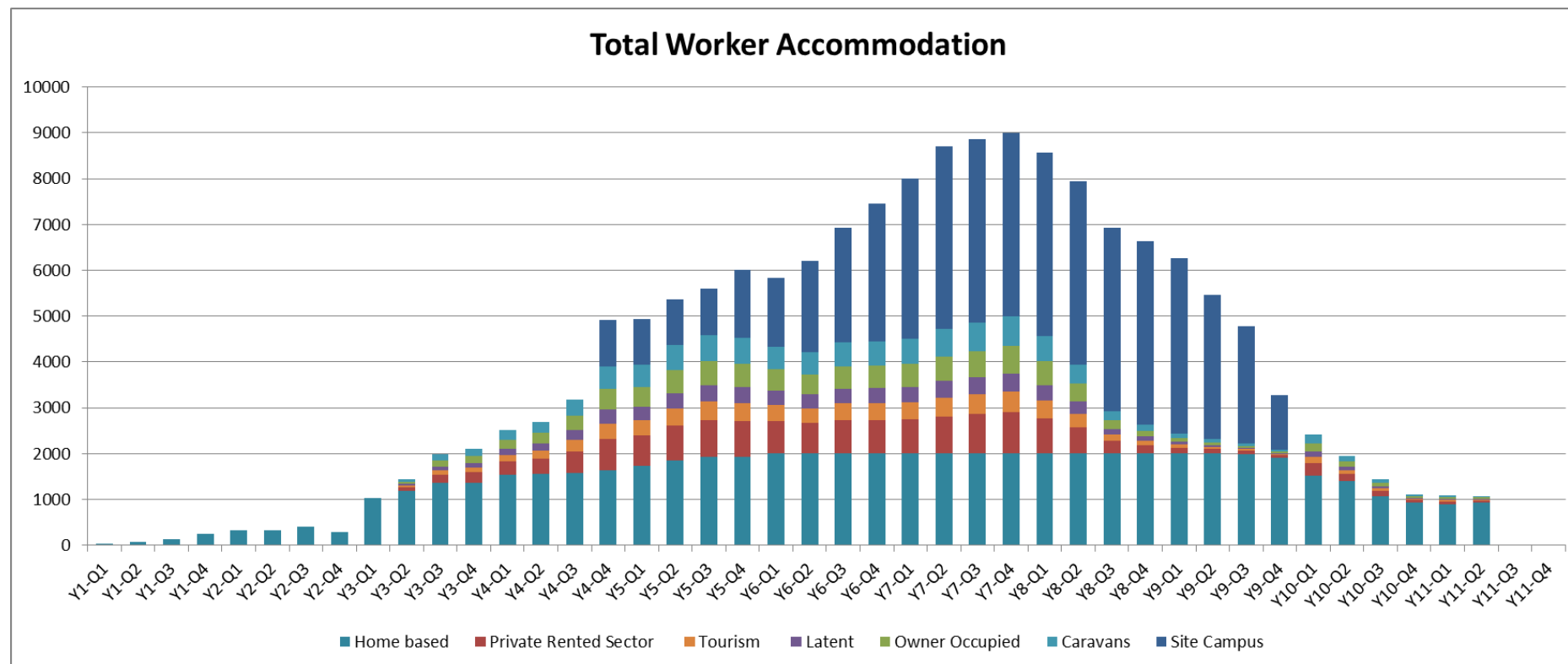


Figure A-5 Indicative total worker accommodation



Workforce composition and demand for health services

- A.3.52 The workforce includes the construction workers and staff providing administrative and ancillary support on-site. Environmental Statement chapter C1 (socio-economics) (Application Reference Number: 6.3.1) sets out the expected numbers of workers over the construction stage. Changes in on-site healthcare infrastructure would take account of the growth, and subsequent reduction, of the size of the workforce to ensure that services are provided at an appropriate level.
- A.3.53 The workforce has a 'home-based' and a 'non-home-based' component. The home-based workforce numbers circa 2,000 and already lives on the Isle of Anglesey or on the mainland in north Wales. As existing residents, they would create no additional demand on local health services (though are taken into account with regard to ambulance service planning needs for the Project).
- A.3.54 The non-home-based workforce are those people who move to the Isle of Anglesey, or to the mainland, to take up employment on the Project. This non-home-based workforce can be divided into two groups according to where they live:
- those who choose to reside in temporary workers' accommodation at the Site Campus (circa 4,000 workers at peak); and
 - those who make their own provision and use other housing stock on the Isle of Anglesey and on the mainland (circa 3,000 workers plus an estimated 285 partners and 220 dependants).

Nationality, gender and age

- A.3.55 The assessment makes a number of assumptions about the workforce. These assumptions would be monitored as the Project progresses.
- The majority of the non-home-based workforce would be from the UK. A UK profile has been used to consider healthcare needs.
 - Workers would remain in the Anglesey area while on shift but would return regularly to their usual places of residence.
 - The non-home-based workforce would be predominantly male and would be aged between 35 and 49. This age group has a relatively low total and emergency hospital admission rate.
 - The average contract length would be 18 months. NHS Direct Wales advises people to register with a GP at their new address if they are away from home for three months or more [RD5]. If construction workers do register with an NHS GP, the GP would receive NHS funding for the increased population (it is noted that there is not an automatic population adjustor for additional funding to BCUHB or Welsh Government).

A.4 Overarching health legislation, policy and guidance

Introduction

- A.4.1 The following legislation, policy and guidance have been used to inform the scope and content of the HIA; assist in the identification of potential effects and mitigation; and influence the design of the Project to reduce the significance of effects.
- A.4.2 The Planning Statement (Application Reference Number: 8.1) sets out the Project's compliance with the NPSs. The Environmental Statement includes a dedicated appendix (Appendix A5-1) (Application Reference Number: 6.1.9) on compliance with National Policy Statements (NPSs): the NPS tracker. That appendix includes compliance with issues in relation to health and well-being. Key points are summarised in table A-7 and table A-8 below.

Key legislation

- A.4.3 The reporting of legislation within this section focuses on the HIA scope (see section A.5). The legislation context relevant to nuclear power in general is set out in Environmental Statement chapter A5 (overarching environmental legislation, policy and guidance) (Application Reference Number: 6.1.5): for example, the *Basic Safety Standards Directive*, the *Justification of Practices Involving Ionising Radiation Regulations 2004*, the *Energy Act 2013*, the *Ionising Radiations Regulations 1999*, the *Radiation (Emergency Preparedness and Public Information) Regulations 2001* and the *Nuclear Installations Act 1965*.
- A.4.4 The relevant legislation and how it relates to health and well-being are set out in table A-5.

Table A-5 Summary of key legislation

Legislation	Description
Well-being of Future Generations (Wales) Act 2015	The <i>Well-being of Future Generations (Wales) Act 2015</i> requires listed public bodies (including Local Health Boards and PHW) to carry out sustainable development. The Act defines 'Sustainable development' as the process of improving the economic, social, environmental and cultural well-being of Wales by taking action aimed at achieving the 'Well-being Goals' in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs. Table A-6 sets out links in the HIA to the Well-being Goals to support public bodies in discharging their duties in accordance with the Act when considering the HIA.
Social Services and Well-being (Wales) Act 2014	The <i>Social Services and Well-being (Wales) Act 2014</i> provides a framework for improving the well-being of people who need care and support and their carers. The Act promotes equality and encourages a focus on prevention and early intervention.

Legislation	Description
Housing (Wales) Act 2014	The <i>Housing (Wales) Act 2014</i> aims to improve the supply, quality and standards of housing in Wales. The Act includes a compulsory registration and licensing scheme for the private rented sector and gives local authorities greater powers to charge council tax on long-term empty properties.
Active Travel (Wales) Act 2013	The <i>Active Travel (Wales) Act 2013</i> requires local authorities to continuously improve facilities and routes for pedestrians and cyclists and to prepare maps identifying current and potential future routes for their use. The Act also requires new road schemes (including road improvement schemes) to consider the needs of pedestrians and cyclists at the design stage.
Environment (Wales) Act 2016	The <i>Environment (Wales) Act 2016</i> enables Wales' resources to be managed in a more proactive, sustainable and joined-up way. The Act provides powers to put in place statutory emission reduction targets, including at least an 80% reduction in emissions by 2050 and carbon budgeting to support their delivery. There are noted links between the <i>Environment (Wales) Act 2016</i> , the <i>Well-being of Future Generations (Wales) Act 2015</i> and the <i>Planning (Wales) Act 2015</i> .
Health and Safety at Work Act 1974	As with other industries, operators of nuclear facilities are required to comply with the <i>Health and Safety at Work Act 1974</i> and its relevant statutory provisions. The <i>Health and Safety at Work Act 1974</i> places duties on employers to ensure, so far as is reasonably practicable: • the health, safety and welfare at work of all their employees; and • that persons not in their employment are not exposed to risks to their health or safety as a result of the activities undertaken. In both cases, the requirement for risks to be reduced to As Low As Reasonably Practicable is fundamental and applies to all activities within the scope of the <i>Health and Safety at Work Act 1974</i>.
Control of Major Accident Hazards Regulations 1999	Although the <i>Control of Major Accident Hazards Regulations 1999</i> apply mainly to the chemical industry, some nuclear sites are also sites subject to these Regulations, since threshold quantities of dangerous substances identified in the regulations are kept or used.

A.4.5 Table A-6 sets out links in the HIA to the Well-being Goals of the *Well-being of Future Generations (Wales) Act 2015* to support public bodies in discharging their duties in accordance with the Act when considering the HIA.

Table A-6 Links between the HIA and the Well-being Goals

Well-being Goal	HIA section and link to the Well-being Goal
A prosperous Wales An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change), and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work.	Section C.9 considers effects to health and well-being from employment, income and economic development. Section C.10 considers effects to health and well-being from education and training.
A resilient Wales A nation that maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example, climate change).	Sections D.4 and D.5 consider the effect of changes in the quality of open spaces and recreational opportunities, including the effect on community cohesion and physical activity.
A healthier Wales A society in which people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.	The HIA considers effects to health and well-being.
A more equal Wales A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio-economic background and circumstances).	The HIA considers inequalities between population groups. The HIA makes relevant links to the EqIA (Application Reference Number: 8.22).
A Wales of cohesive communities Attractive, viable, safe and well-connected communities.	Section C.4 considers effects to health and well-being from housing. Section C.7 considers effects to health and well-being from lifestyles and behaviour. Section C.8 considers effects to health and well-being from community identity, social networks and culture.

Well-being Goal	HIA section and link to the Well-being Goal
A Wales of vibrant culture and thriving Welsh language A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts and sports and recreation.	Section C.8 considers effects to health and well-being from community identity, social networks and culture. The HIA makes relevant links to the WLIA (Application Reference Number: 8.21).
A globally responsible Wales A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being.	Section C.13 considers global health effects through low carbon technology energy generation. HIA volume I considers cumulative effects.

Key policy

Review of Compliance with National Policy Statement (NPS) Commitments

- A.4.6 The UK Government has designated a number of NPSs relevant to the development of new nuclear projects in the UK [RD6]. These NPSs form the primary policy basis for a decision on this application for development consent for the Wylfa Newydd DCO Project.
- A.4.7 The principal NPSs for the Project comprise the *Overarching National Policy Statement for Energy (EN-1)* (NPS EN-1) [RD7] and the *National Policy Statement for Nuclear Power Generation* (NPS EN-6) [RD8]. These form the primary policy context for a decision on Horizon's application for development consent. Separately, the *National Policy Statement for Electricity Networks Infrastructure (EN-5)* [RD9] is particularly relevant for National Grid's separate application to connect the Power Station to the national grid electricity transmission network.

Overarching National Policy Statement for Energy (EN-1)

- A.4.8 NPS EN-1 covers health effects [RD7, s.4.13] and states that, although access to energy is clearly beneficial to society and to our health as a whole, the production, distribution and use of energy may have adverse effects on some people's health.
- A.4.9 Table A-7 and table A-8 demonstrate how the Wylfa Newydd DCO Project complies with policy on health and well-being in NPS EN-1 and EN-6 respectively. The tables refer to information provided within the HIA. Environmental Statement appendix A5-1 (Application Reference Number: 6.1.9) sets out how other assessments prepared for the development consent application also contribute to such compliance.

Table A-7 Health and well-being compliance with EN-1

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
4.10 Pollution control and other environmental regulatory regimes	Issues relating to discharges or emissions from a proposed project which affect air quality, water quality, land quality and the marine environment, or which include noise and vibration may be subject to separate regulation under the pollution control framework or other consenting and licensing regimes.	The HIA considers the effect to public health including opportunities for health and well-being improvements. The HIA considers air quality (including dust) and noise effects. Potential effects to population health from water quality, land quality and the marine environment have been kept under review, but scoped out of the HIA as the Environmental Statement findings indicate they are unlikely to have significant population health effects. Where appropriate, the HIA makes reference to regulatory standards as one of the factors relevant to the professional judgement on the significance of potential effects.	Sections D.2 and D.3 of the HIA Report consider air quality and noise effects for the WNDA Development.
4.10 Pollution control and other environmental regulatory regimes	The planning and pollution control systems are separate but complementary. The planning system controls the development and use of land in the public interest. It plays a key role in protecting and improving the natural environment, public health and safety, and amenity, for example by attaching conditions to allow developments which would otherwise	The HIA Steering Group includes stakeholders involved in the monitoring of pollution control. The HIA sets out mitigation to inform planning conditions and notes that, as good practice and in view of the potential for non-threshold health effects, it is expected that levels of pollutants	Sections C.2 and D.2 of the HIA Report considers non-threshold health effects associated with air quality. Section L.3 of the HIA Report sets out topic-specific methods, which include discussion of policy and regulation on pollution control. Vol J of the HIA Report sets out

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
	not be environmentally acceptable to proceed, and preventing harmful development which cannot be made acceptable even through conditions. Pollution control is concerned with preventing pollution through the use of measures to prohibit or limit the releases of substances to the environment from different sources to the lowest practicable level. It also ensures that ambient air and water quality meet standards that guard against impacts to the environment or human health.	would be reduced “As Low As Reasonably Practicable”.	mitigation measures to inform planning conditions.
4.10 Pollution control and other environmental regulatory regimes	In considering an application for development consent, the IPC should focus on whether the development itself is an acceptable use of the land, and on the impacts of that use, rather than the control of processes, emissions or discharges themselves. The IPC should work on the assumption that the relevant pollution control regime and other environmental regulatory regimes, including those on land drainage, water abstraction and biodiversity, will be properly applied and enforced by the relevant regulator. It should act to complement but not seek to duplicate them.	The HIA has proceeded on the assumption that the appropriate regulatory standards would be enforced, e.g. in relation to public exposure to ionising radiation.	Section A.5 of the HIA Report sets out the scope of the HIA, which reflects that some potential health effects are suitably regulated such that potentially significant population health effects are unlikely.

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
4.13 Health	New energy infrastructure may also affect the composition, size and proximity of the local population, and in doing so have indirect health impacts, for example if it in some way affects access to key public services, transport or the use of open space for recreation and physical activity.	The HIA considers how the transport and workforce requirements of the Wylfa Newydd Project may affect population health and well-being, including potential effects on NHS services, road safety and journey times, social effects on community life and opportunities for physical activity.	Section C.5 of the HIA Report considers transport effects. Section C.6 of the HIA Report considers demand for medical and healthcare services. Sections C.7 and C.8 of the HIA Report consider social influences on communities. Section D.5 of the HIA Report considers effects on physical activity.
4.13 Health	Energy production has the potential to impact on the health and well-being (“health”) of the population. Access to energy is clearly beneficial to society and to our health as a whole. However, the production, distribution and use of energy may have negative impacts on some people’s health.	The HIA discusses effects on both health and well-being. The HIA scope includes potentially beneficial health effects linked to access to energy as well as potentially adverse health effects linked to its production by the Wylfa Newydd Project. The distribution of energy is outside the scope of the HIA. National Grid are responsible for distribution (including assessment of associated health effects).	Sections C.12 and C.13 of the HIA Report consider beneficial effects of access to energy. Sections C.2 to C.11 and D.2 to D.5 of the HIA Report consider the potentially adverse effects linked to energy production by the Wylfa Newydd Project. Vol I of the HIA Report considers cumulative health effects.
4.13 Health	As described in the relevant sections of this NPS and in the technology-specific NPSSs, where the proposed project has an effect on human beings, the Environmental Statement should assess these effects for each	The HIA has informed and been informed by the EIA work undertaken for the Wylfa Newydd Project. The HIA includes a consideration of potentially significant effects on health and	Vol P of the HIA Report sets out an appendix table summarising the significant residual effects of the Wylfa Newydd Project on health and well-being. Vol J of the HIA

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
	element of the project, identifying any adverse health impacts, and identifying measures to avoid, reduce or compensate for these impacts as appropriate. The impacts of more than one development may affect people simultaneously, so the applicant and the IPC should consider the cumulative impact on health.	well-being (beneficial and adverse), including appropriate mitigation or enhancement measures where relevant. The HIA also includes an assessment of potentially cumulative effects.	Report sets out the committed mitigation measures. Vol I of the HIA Report considers cumulative health effects.
4.13 Health	The direct impacts on health may include increased traffic, air or water pollution, dust, odour, hazardous waste and substances, noise, exposure to radiation, and increases in pests.	The HIA scoping stage considered these issues and reported on this in the HIA Scoping Report. The HIA scope was agreed with the HIA Steering Group and it reflects the outcome of that scoping exercise. The HIA scope includes traffic, air pollution, dust and noise effects. Potential effects to population health from water, odour, hazardous waste and substances, exposure to radiation and increases in pests have been kept under review, but were scoped out the HIA. In most cases this is because the Environmental Statement findings indicate such issues are unlikely to have significant population health effects.	Section A.5 of the HIA Report sets out the scope of the HIA.

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
4.13 Health	Generally, those aspects of energy infrastructure which are most likely to have a significantly detrimental impact on health are subject to separate regulation (for example for air pollution) which will constitute effective mitigation of them, so that it is unlikely that health concerns will either constitute a reason to refused consents or require specific mitigation under the Planning Act 2008. However, the IPC will want to take account of health concerns when setting requirements relating to a range of impacts such as noise.	UK statutory or regulatory standards (e.g. for air quality or noise) are one of the factors used by the HIA in determining the significance of potential health effects. In view of the potential for non-threshold health effects below such regulatory standards, the HIA also takes into account baseline health and environmental conditions, emerging scientific evidence and stakeholder consultation responses on these issues.	Sections D.2 and D.3 of the HIA Report consider health effects associated with air quality and noise from the WNDA Development. Section L.3 of the HIA Report sets out topic-specific methods, which includes detail on the range of evidence sources that underpin the HIA scorings.
4.14 Common law nuisance and statutory nuisance	Section 158 of the Planning Act 2008 confers statutory authority for carrying out development consented to by, or doing anything else authorised by, a development consent order. Such authority is conferred only for the purpose of providing a defence in any civil or criminal proceedings for nuisance. This would include a defence for proceedings for nuisance under Part III of the Environmental Protection Act 1990 (statutory nuisance) but only to the extent that the nuisance is the inevitable consequence of what has been authorised. The defence does not	The HIA considers emissions of pollutants (e.g. fine particulate matter) and disturbance (e.g. noise or light) that may be prejudicial to health.	Sections D.2, D.3 and D.4 of the HIA Report consider health effects associated with air quality, noise and lighting from the WNDA Development.

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
	extinguish the local authority's duties under Part III of the EPA 1990 to inspect its area and take reasonable steps to investigate complaints of statutory nuisance and to serve an abatement notice where satisfied of its existence, likely occurrence or recurrence. The defence is not intended to extend to proceedings where the matter is "prejudicial to health" and not a nuisance.		
5.10 Land use including open space, green infrastructure and Green Belt	The Government's policy is to ensure there is adequate provision of high quality open space (including green infrastructure) and sports and recreation facilities to meet the needs of local communities. Open spaces, sports and recreational facilities all help to underpin people's quality of life and have a vital role to play in promoting healthy living. Green infrastructure in particular will also play an increasingly important role in mitigating or adapting to the impacts of climate change.	The HIA considers the effects, on health and well-being, of changes in the quality of open spaces and recreational opportunities, including the effect on community cohesion and physical activity.	Section D.5 of the HIA Report considers health effects associated with physical activity near the WNDA Development.
5.10 Land use including open space, green infrastructure and Green Belt	Applicants will need to consult the local community on their proposals to build on open space, sports or recreational buildings and land. Taking account of the consultations, applicants should consider providing	The HIA considers the effects on health and well-being of changes in the quality of open spaces and recreational opportunities, including the effect on community cohesion and physical activity.	Section D.5 of the HIA Report considers health effects related to physical activity in areas associated with the WNDA Development.

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
	new or additional open space including green infrastructure, sport or recreation facilities, to substitute for any losses as a result of their proposal. Applicants should use any up-to-date local authority assessment or, if there is none, provide an independent assessment to show whether the existing open space, sports and recreational buildings and land is surplus to requirements.		
5.11 Noise and vibration	The IPC should not grant development consent unless it is satisfied that the proposals will meet the following aims: • avoid significant adverse impacts on health and quality of life from noise; • mitigate and minimise other adverse impacts on health and quality of life from noise; and • where possible, contribute to improvements to health and quality of life through the effective management and control of noise.	The HIA considers effects to health and well-being from noise. Night-time construction noise from the Wylfa Newydd Development Area and night-time vehicle movements on the local road network are likely to cause sleep disturbance, with adverse effects on health and well-being. Whilst significant adverse effects from operational noise are avoided, some potential significant noise effects during the construction period have been identified. Detailed construction noise management and mitigation measures would be the focus of the Section 61 applications under the Control of	Section C.3 of the HIA Report considers health effects associated with noise from traffic. Section D.3 of the HIA Report considers health effects associated with noise from the WNDA Development.

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
		Pollution Act 1974 which would be made at a time when the plant list, working method and programme have been finalised to remove areas of uncertainty. Potentially significant traffic noise effects are also unable to be avoided completely, although the number of receptors affected have been reduced by the mitigation measures included in the scheme.	
5.11 Noise and vibration	Excessive noise can have wide-ranging impacts on the quality of human life, health (for example owing to annoyance or sleep disturbance) and use and enjoyment of areas of value such as quiet places and areas with high landscape quality. The Government's policy on noise is set out in the Noise Policy Statement for England. It promotes good health and good quality of life through effective noise management. Similar considerations apply to vibration, which can also cause damage to buildings. In this section, in line with current legislation, references to "noise" below apply equally to assessment of impacts of vibration.	The HIA considers effects to health and well-being from noise (including linked to annoyance, sleep disturbance and setting). Potential health effects from vibration have been kept under review, but scoped out of the HIA as a separate consideration as they are closely linked to the exacerbation of noise effects. The discussion of noise effects in the HIA includes where some receptors are also affected by related vibration effects.	Section C.3 of the HIA Report considers health effects associated with noise from traffic. Section D.3 of the HIA Report considers health effects associated with noise from the WND A Development.

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
5.14 Waste management	Government policy on hazardous and non-hazardous waste is intended to protect human health and the environment by producing less waste and by using it as a resource wherever possible. Where this is not possible, waste management regulation ensures that waste is disposed of in a way that is least damaging to the environment and to human health.	The potential effects to population health from hazardous and non-hazardous waste were considered at the HIA scoping stage and reported on in the HIA Scoping Report. These potential effects were scoped out of the HIA as the Environmental Statement findings indicate they are unlikely to have significant population health effects. With regard to radiological waste, the HIA has proceeded on the assumption that the appropriate regulatory standards would be enforced – see EN-1 paragraph 4.10.3.	Section A.5 of the HIA Report sets out the scope of the HIA.
5.15 Water quality and resources	Infrastructure development can have adverse effects on the water environment, including groundwater, inland surface water, transitional waters and coastal waters. During the construction, operation and decommissioning stages, it can lead to increased demand for water, involve discharges to water and cause adverse ecological effects resulting from physical modifications to the water environment. There may also be an increased risk of spills and leaks of pollutants to the water	Potential effects to population health from the water environment, including groundwater, inland surface water, transitional waters and coastal waters, were considered at the HIA scoping stage and reported in the HIA Scoping Report. Such potential effects were scoped out of the HIA as review of the Environmental Statement findings indicate there are unlikely to be significant effects on population health.	Section A.5 of the HIA Report sets out the scope of the HIA.

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
	environment. These effects could lead to adverse impacts on health or on protected species and habitats (see Section 4.3 and Section 4.18) and could, in particular, result in surface waters, groundwaters or protected areas failing to meet environmental objectives established under the Water Framework Directive.		

National Policy Statement for Nuclear Power Generation (EN-6)

Table A-8 Health and well-being compliance with EN-6

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
3.12 Nuclear Impact: human health and wellbeing	In common with other major industrial processes, the construction, operation and decommissioning of new nuclear power stations could affect health care provision. For example, the facility could increase demand on health monitoring services.	The HIA considers how the construction workforce requirements of the Wylfa Newydd Project may affect health care provision, including the need for monitoring. Although not within the scope of the HIA, the HIA notes that operational staff would require an occupational health service commensurate with the occupational demands of a functioning nuclear generation site. The operational outage staff would require similar services to non-home-based construction workers.	Section C.6 of the HIA Report considers demand for medical and healthcare services.

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
3.12 Nuclear Impact: human health and wellbeing	In accordance with Section 2.7 of this NPS, the IPC should act on the basis that the regulatory regime (including the consideration of demographics as part of the site licensing process) will be properly applied and enforced to protect human health. The IPC should act on the basis that the risk of adverse effects resulting from exposure to radiation for workers, the public and the environment will be adequately mitigated because of the need to satisfy the requirements of the UK's strict legislative and regulatory regime as well as the ONR's implementation of the Government's policy on demographics. Radiation from nuclear power stations requires careful management during and beyond the operational life of the power station. However, safety systems in place in the designs of new nuclear power stations and compliance with the UK's robust legislative and regulatory regime mean that the risk of radiological health detriment posed by nuclear power stations (both during normal operation and as a result of an unplanned release) is very small.	Based on this clear direction, the scope of the HIA does not include assessment of actual radiological effects. Quantitative analysis of radiological risks is presented in Environmental Statement chapter D14 (radiological effects) (Application Reference Number: 6.4.14), the Environmental Permitting (Radioactive Substances Regulation) application [RD10] and the Article 37 submissions. Although not assessing actual risks, the HIA does consider effects to health and well-being from public understanding of risk, including radiological risks.	Section A.5 of the HIA Report sets out the scope of the HIA. Section C.11 of the HIA Report considers health effects associated with public understanding of risk.
3.12 Nuclear Impact:	The Nuclear AoS also identified that there could be positive effects for health and	The HIA considers beneficial effects and opportunities for health	Section C.9 of the HIA Report considers beneficial health

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
human health and wellbeing	well-being resulting from the positive socio-economic benefits of new nuclear power stations (see Section 3.11 above).	and well-being. This includes on socio-economic determinants of health.	effects associated with employment, income and economic development. Section C.10 of the HIA Report considers beneficial health effects associated with education and training.
3.12 Nuclear Impact: human health and wellbeing	The applicant should work with the local authority and the local primary care trust (in England) or the Health Board (in Wales) to identify any potentially significant health impacts and appropriate mitigation measures. Where such measures relate to better public information on the extent of risk in relation to radiological hazard, the applicant should consult the Health Protection Agency on the appropriate standards for radiological protection.	The HIA has been guided by a Steering Group, the membership of which includes the Betsi Cadwaladr University Health Board, Public Health Wales and the local authority (IACC). NRW, Public Health England (including Public Health England's Centre for Radiation, Chemical and Environmental Hazards (Wales)) and the ONR are observers at the Steering Group meetings.	Section A.1 of the HIA Report introduces the HIA Steering Group. Vol B to I of the HIA Report assess the potential effects. Vol J of the HIA Report sets out the committed mitigation measures. Section C.11 of the HIA Report considers health effects associated with public understanding of risk (including risk in relation to radiological hazard).
3.12 Nuclear Impact: human health and wellbeing	The IPC should consider the positive effect of employment and other socio-economic impacts (see Section 3.11 above) on human health and well-being.	The HIA considers beneficial effects and opportunities for health and well-being. This includes on socio-economic determinants of health.	Section C.9 of the HIA Report considers beneficial health effects associated with employment, income and economic development. Section C.10 of the HIA Report considers beneficial health effects associated with education and training.

NPS Reference	NPS paragraph	How addressed in the HIA	Where covered in the HIA
3.12 Nuclear Impact: human health and wellbeing	The IPC should have regard to the Secretary of State's Regulatory Justification decision when considering impacts on human health and well-being (see Section 2.6 of this NPS).	The HIA cites, and has regard to, the Secretary of State's decision as Justifying Authority on the Regulatory Justification of the UK Advanced Boiling Water Reactor (UK ABWR).	Section B.12 of the HIA Report considers the reported health implications of the reactor technology.
3.4 Nuclear Impacts	The Nuclear Impacts are: • flood risk; • water quality and resources; • coastal change; • biodiversity and geological conservation; • landscape and visual impacts; • socio-economic; and • human health and well-being.	Noted. These Nuclear Impacts have been assessed and are presented in the relevant chapters within the Environmental Statement and HIA.	Section C.11 of the HIA Report considers health effects associated with public understanding of risk (including risk in relation to radiological hazard).

Other relevant international, national, regional and local policy

A.4.10 The relevant international, national, regional and local plans and policies, and how these relate to the health and well-being, are described in table A-9.

Table A-9 Summary of key policy

Policy	Description
Health 2020	The World Health Organization's (WHO's) Health 2020, a policy framework and strategy for the 21st century [RD11], aims to significantly improve the health and well-being of populations, reduce health inequalities, strengthen public health and ensure sustainable people-centred health systems that are universal, equitable, sustainable and of high quality. The Health 2020 policy is based on four priority areas: investing in health through a life-course approach and empowering people; tackling the region's major health challenges of non-communicable and communicable diseases; strengthening people-centred health systems, public health capacity and emergency preparedness, surveillance and response; and creating resilient communities and supportive environments.
Helping people live well for longer	The UK policy statement and resource pack <i>Helping people live well for longer</i> [RD12] sets out national policy actions and support for delivering local priorities to reduce levels of premature mortality, for example due to cancer, heart disease, stroke, respiratory and liver disease.
UK Strategy for the Management of Solid Low Level Radioactive Waste from the Nuclear Industry	The UK has a published strategy for the management of solid low level radioactive waste from the nuclear industry [RD13]. Radioactive waste disposal is a devolved matter and the Welsh Government is therefore responsible for determining the policy for the disposal of radioactive waste in Wales [RD14].
Well-being statement for people who need care and support and carers who need support	The Welsh Government <i>Well-being statement for people who need care and support and carers who need support</i> [RD15] describes the national well-being outcomes that are to be achieved in terms of the well-being of these groups. Well-being aspects include control over day-to-day life; physical and mental health; physical, intellectual, emotional, social and behavioural development; education, training and recreation; family and personal relationships; the ability to contribute to society; social and economic well-being; participation in work and suitability of living accommodation.
Strategy for Older People in Wales 2013-2023	The Welsh Government's <i>Strategy for Older People in Wales 2013-2023</i> [RD16] sets out the vision that all older people in Wales have the social, environmental and financial resources they need to deal with the opportunities and challenges they face. The strategy aims to address the barriers faced by

Policy	Description
	older people in Wales today and to ensure that well-being is within the reach of all.
Delivering Local Health Care - Accelerating the pace of change	The Welsh Government plan <i>Delivering Local Health Care - Accelerating the pace of change</i> [RD17] notes the need to strengthen local care services and ensure the right care is provided in the right place, at the right time. This means delivering more care close to home, where appropriate, to reduce the need for people to use hospitals and increasing the ability of local services to support people to be healthy and by making access easier.
Public Health Outcomes Framework	The Welsh Government's Public Health Outcomes Framework [RD18] can be used in the design or delivery of policies or services and to understand the effects on health and well-being in Wales. It supports the national indicators for the <i>Well-being of Future Generations (Wales) Act 2015</i> [RD19].
National indicators for Wales	National indicators for Wales [RD20] measure progress towards the achievement of the Well-being Goals and are required by section 10(1) of the <i>Well-being of Future Generations (Wales) Act 2015</i> [RD19]. They can be used as part of monitoring to understand the effects on health and well-being in Wales.
Planning Policy Wales	<i>Planning Policy Wales</i> , November 2016 [RD21] recognises that planning and the way land is used contributes to economic development, to maintaining Wales' natural assets and to health, well-being and the quality of life of individuals and communities. Planning Policy Wales notes that in contributing to the Well-being of Future Generations Act goals, planning policies, decisions and proposals should contribute to the protection and, where possible, the improvement of people's health and well-being. Consideration of the possible impacts of developments – positive and/or negative – on people's health at an early stage will help to clarify the relevance of health and the extent to which it needs to be taken into account.
The Wales Spatial Plan	<i>People, Places, Futures - The Wales Spatial Plan</i> [RD22] sets a strategic framework to guide future development and policy interventions. It integrates the spatial aspects of national strategies for social inclusion and economic development, health, transport and environment, translating the Welsh Government's sustainable development duty into practice. The Plan notes that key challenges in building sustainable communities are to tackle deprivation - and particularly concentrations of poverty and worklessness - and to bring about improvements in public health and the eradication of child poverty. Sound and accessible health services are noted as important to help sustain communities.

Policy	Description
Local Public Health Strategic Framework	The North Wales <i>Local Public Health Strategic Framework</i> [RD23] notes the importance of inequities in health and the need to positively contribute to a fairer society through advancing equality for all through all aspects of service delivery. The framework sets out, for different life stages, links between public health actions (including influencing social networks, housing and alcohol use) and expected outcomes (and indicators) for health and well-being.
New Nuclear Build at Wylfa: Supplementary Planning Guidance (Wylfa SPG)	The IACC's Wylfa SPG [RD4] sets out objectives and guiding principles relevant to the local policy context that are also relevant to the wider determinants of health and well-being. Objective four of the Wylfa SPG aims to ensure that the Project supports improvements to the quality of life (including health, housing, well-being and amenity) of the island's residents, visitors and workers during construction and operation. Objective four of the Wylfa SPG includes issues of noise, air quality, visual amenity and community facilities (including recreation and healthcare services). Key Wylfa SPG guiding principles include local job creation and skills development (guiding principle 2); maintaining and enhancing community facilities and services (guiding principle 6); protecting health (guiding principle 7); supporting healthy lifestyles (guiding principle 8) and maintaining and creating cohesive communities (guiding principle 9).
Isle of Anglesey Single Integrated Plan 2013 – 25	The <i>Isle of Anglesey Single Integrated Plan 2013 – 25</i> [RD24] merges the following local plans and strategies: Health, Social Care and Well-being Strategy; Community Strategy; Children and Young People's Plan; and Community Safety Plan. The plan aims to improve the quality of life of local people and communities by enhancing economic, social and environmental well-being. The plan responds to residents' views that the important local issues are job prospects, affordable housing, activities across all age groups, road repairs and support for vulnerable children and young people. The plan sets out key objectives which are to: • improve economic performance and skills; • create and sustain jobs focusing on lifelong learning opportunities; • enable communities and individuals to maintain and develop their independence; • ensure opportunities exist for young people to remain on the island to live and work; • meet the needs of individuals and communities with less available public money; • reduce poverty and provide effective services that meet the needs of vulnerable groups; and • promote and sustain the environment and rich culture.

Policy	Description
Single Integrated Plan for Anglesey and Gwynedd 2013-2017	A Single Integrated Plan for Anglesey and Gwynedd 2013-2017 [RD25] sets out how Anglesey and Gwynedd will work together in order to improve economic, social and environmental well-being. The plan notes that Anglesey and Gwynedd have a notable natural environment and that the Welsh language is prominent in the life of the area's communities. The plan notes that the Project would bring major economic, social and environmental opportunities as well as challenges. This plan aims to facilitate the sustainable development of such projects whilst protecting the unique culture, heritage and natural environment of the area.
Public Protection Service Enforcement Policy	<i>The Public Protection Service Enforcement Policy</i> [RD26] sets out the general principles for regulation and enforcement activities within the remit of the IACC. The policy's key regulatory outcomes include fewer health inequalities and safer and stronger communities.
The Strategy for Older People	The Strategy for Older People [RD27] sets out a vision where older people have choice and control over their lives. At its heart is an appreciation of older people as active, vital members of communities. The strategy's aims include to: • identify and value what older people can do for the community in which they live; • provide better access to leisure and health promotion activities; • provide better access to social activities and lifelong learning; and • increase access to information and advice so that older people can take action for themselves.
Anglesey Life	The strategic review <i>Anglesey Life</i> [RD28] aims to provide an overview of the main factors influencing quality of life of individuals and communities on the Isle of Anglesey. The review has informed the Single Integrated Plan by providing a picture of the health and welfare needs and condition of the county and its population.
Destination Management Action Plan	The IACC's <i>Destination Management Action Plan</i> [RD29] sets out the process of coordinating the management of all the aspects of a destination that contribute to a visitor's experience, taking account of the needs of visitors, local residents, businesses and the environment. The Plan is relevant to effects on important local routes such as the Wales Coastal Path and Copper Trail and to supporting local community identity

Policy	Description
Joint Local Development Plan	The <i>Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026</i> [RD30] sets out a vision, which includes being an area that is home to vibrant networks of inclusive communities where residents enjoy good health and well-being. In order to realise the vision, the Anglesey and Gwynedd Partnership aims to put plans and projects in place that will promote prosperous, healthy and safe communities. This includes ensuring that appropriate infrastructure, facilities, services and related works are in place in a timely manner. For example, in relation to development proposals that directly generate a need for new or improved health facilities.

Key guidance

- A.4.11 The HIA has been undertaken in line with a number of key technical guidance documents. These are widely used across the UK and represent standard good practice for the assessment for the various consenting regimes. These are summarised in table A-10.

Table A-10 Summary of key guidance

Guidance	Description
Health Impact Assessment: a practical guide	WHIASU <i>Health Impact Assessment: a practical guide</i> [RD1]. WHIASU was established in 2001 and provides advice, support, guidance, training and research for HIAs across Wales. Funded by the Welsh Government through PHW, the unit has an international reputation for best practice in HIA.
Isle of Anglesey Health Impact Assessment Tool	Isle of Anglesey Health Impact Assessment Tool [RD31]. The tool has informed the HIA Scoping Report and approach of the rapid HIA screening statements in volume O; however, this HIA Report has gone beyond the level of detail set out in this table-based tool.
Mental well-being impact assessment: a toolkit for well-being	<i>Mental well-being impact assessment: a toolkit for well-being</i> [RD32]. This tool has been used to fill gaps in other guidance with regard to mental health issues. Importantly, the tool highlights mental health links to many social and environmental issues.
Guidance by the Scottish Public Health Network	Guidance by the Scottish Public Health Network on HIA for rural development has also been consulted [RD33]. The guidance identifies important points in relation to assessing the health effects of rural communities. These points are instructive beyond Scotland. The guidance is deemed

Guidance	Description
	relevant to the Isle of Anglesey due to the rural nature of the area. Key issues for rural communities include: • youth out-migration and ageing of the population; • lack of major employers and reliable work; • 'portfolio' careers (seasonal working and seasonal/transient workforce); • lower wages; • lack of jobs for young people in some locations; • recruitment and retention of high skill workers; • need to travel long distances to access services and amenities; • fuel and food costs; and • vulnerability of supply and distribution chains.
Environment Agency guidance on the assessment of ionising radiation doses to the public	Environment Agency guidance [RD34] on the assessment of ionising radiation doses to the public under radioactive substances legislation, states the principal aims are to ensure that: • all public ionising radiation exposures from radioactive waste disposal are kept As Low As Reasonably Achievable, taking economic and social factors into account; • the sum of the doses arising from such exposures does not exceed the individual public dose limit of 1mSv (millisievert) a year; • the individual dose received from any new discharge source since 13 May 2000 does not exceed 0.3mSv a year; and • the individual dose received from any single site does not exceed 0.5mSv a year.
Internal guidance	Volume M of this HIA Report defines technical terms used throughout this report. For example, in relation to magnitude and sensitivity scores.

A.5 HIA Scoping

- A.5.1 NPS EN-1 [RD7] and NPS EN-6 [RD8] state that health effects should be assessed, and that the applicant should work with the local authority and the relevant Health Board to identify any potentially significant health effects and appropriate mitigation measures.
- A.5.2 In 2010, BCUHB and the Welsh Government advised that a comprehensive HIA should be undertaken to complement the EIA [RD3]. In response to that request, Horizon is voluntarily undertaking HIA work for the Project. The HIA appendix in volume N summarises relevant consultation feedback on the approach to and the scope of the HIA.

- A.5.3 This HIA Report sets out an assessment of the matters that have been identified as relevant to health and well-being. The health and well-being topics identified at the HIA scoping stage and considered in this report are as follows.

Construction

- air quality (including dust emissions);
- noise;
- housing;
- transport;
- demand for medical and healthcare services;
- lifestyles and behaviour;
- community identity, social networks and culture;
- employment income and economic development;
- education and training; and
- physical activity.

Operation

- public understanding of risk;
- employment income and economic development;
- education and training;
- energy generation to meet demand and maintain affordability; and
- energy generation through low carbon technology.

- A.5.4 These topics are presented in this HIA Report under the relevant development volumes. All potentially significant health effects are reported in either volume C (project-wide effects), volume D (WNDA Development) or volume I (cumulative effects), which includes relevant effects from volumes E to H.
- A.5.5 The HIA Scoping Report [RD35] was issued for consultation in parallel to the Pre-Application Consultation Stage One. The HIA Interim Report was issued for consultation as part of the Pre-Application Consultation Stage Two. The comments on these reports by stakeholders and the public have informed the evidence which has been collected and subsequent analysis of it. A record of the comments made and the way that they have been taken into account is provided in volume N.
- A.5.6 In addition to these publicly available documents, the HIA Steering Group had an ongoing role in the development of this comprehensive HIA Report. A technical HIA Progress Report was issued to the HIA Steering Group in February 2016 for comment. A draft of the HIA report was also shared with the HIA Steering Group in September 2017. A record of the comments made and the way that they have been taken into account is provided in volume N.
- A.5.7 Scoping is a dynamic process that has been ongoing during the HIA. The HIA Scoping Report [RD35] and subsequent series of documents shared with the

HIA Steering Group have iteratively informed the scope of HIA topics and the effects considered within these topics, e.g. in relation to the Site Campus size.

- A.5.8 The scoping of effects specific to volumes E to H (Power Station Off-Site Power Station Facilities and Associated Development within the application for development consent scope) have been considered through a series of rapid HIA screening statements.
- A.5.9 Table A-11 summarises the scope of HIA topics covered by each volume of this report. Those labelled 'Y' are the areas where potentially significant effects that warrant further assessment have been identified. Those labelled 'N' indicate that either no significant effects are likely, or that potentially beneficial significant effects are noted, but do not require further assessment within that volume (e.g. road safety benefits of the A5025 Off-line Highway Improvements).

Topics Scoped Out

- A.5.10 The following section sets out additional detail to that in the HIA Scoping Report on the justification for scoping a number of topic areas out of the HIA. For discussion of other topics scoped out of the HIA see the HIA Scoping Report [RD35].

Radiation

Ionising

- A.5.11 EN-6 s.3.12.11 [RD8] states that the application for development consent should be determined on the basis that regulation would adequately mitigate radiation exposure to workers, the public and the environment. Based on this clear direction, the scope of the HIA Report does not include assessment of actual radiological effects.
- A.5.12 Coverage of radiological assessment within the application for development consent, including that the scope of the HIA does not duplicate assessment of actual radiological risks, has been discussed with the HIA Steering Group and with Public Health England's Centre for Radiation, Chemical and Environmental Hazards (Wales)).
- A.5.13 Quantitative analysis of radiological risks is presented in the radiological effects chapter of the Environmental Statement chapter D14 (Application Reference Number: 6.4.14), the Environmental Permitting (Radioactive Substances Regulation) (EP-RSR) application and the Article 37 submissions. Although not assessing actual risks, the HIA does consider effects to health and well-being from public understanding of risk, including radiological risks (see sections B.12 and C.11).

Non-ionising

- A.5.14 Electromagnetic fields (EMF) generated by electrical infrastructure, for example electrical substations or power lines have the potential for health effects under certain circumstances, typically requiring very close proximity. PHE consultation responses discussed in volume N include the request that the public health impacts of EMF be considered.

- A.5.15 The scope of the HIA Report looks at effects on communities outside the perimeter fence. As proximity is a key factor in EMF exposure the electrical infrastructure on the Wylfa Newydd Development Area (e.g. an electrical substation at the Site Campus) is not expected to adversely affect local communities.
- A.5.16 Occupational exposure by the Project construction and operational workforces to EMF from electrical infrastructure on the Wylfa Newydd Development Area would be a matter for the Occupational Health and Hygiene services that would be provided (see section C.6). Assessment of potential workforce exposure is not part of the scope of this HIA Report.
- A.5.17 EMF associated with the power line connection of the Power Station as part of the North Wales Connection Project is a matter for National Grid (which includes a National Grid rapid HIA). Not being part of the Wylfa Newydd DCO Project, the assessment of EMF from those sources is not within the scope of this HIA Report.
- A.5.18 The siting of an electrical substation at the north-west of the Off-Site Power Station Facilities site is of potential interest in relation to EMF effects in a community context. This potential EMF effect is considered in volume O. That desk based qualitative assessment concludes that there is considered to be an appropriate separation between the substation and the closest dwelling (approximately 10m), so changes in health outcomes are not likely [RD180]. This judgement is based on the precautionary findings of the UK Stakeholder Advisory Group on Extremely Low Frequency Electric and Magnetic Fields (SAGE). SAGE was initiated by National Grid and was adopted by the Department of Health in order to provide advice to the Government. SAGE notes that for ground-mounted final distribution substations, background electromagnetic field levels are achieved within two to five meters.

Unplanned events

- A.5.19 Unplanned events and emergency planning are outside the HIA scope and subject to separate assessment and regulation. EN-6 s.3.12.4 [RD8] states radiological health risk from nuclear power stations (during normal operation and as a result of an unplanned release) is very small.

Table A-11 Scope of the HIA

Volume / Topic	C	D	E	F	G	H
	Project-wide effects	WNSA Development	Off-Site Power Station Facilities	Park and Ride	A5025 Off-line Highway Improvements	Logistics Centre
Air quality (including dust emissions)	Y	Y	N	N	N	N
Noise	Y	Y	N	N	N	N
Housing	Y	N	N	N	N	N
Transport	Y	N	N	N	N	N
Demand for medical and healthcare services	Y	N	N	N	N	N
Lifestyles and behaviour	Y	N	N	N	N	N
Community identity, social networks and culture	Y	Y	N	N	N	N
Employment income and economic development	Y	N	N	N	N	N
Education and training	Y	N	N	N	N	N
Physical activity	N	Y	N	N	N	N
Public understanding of risk	Y	N	N	N	N	N
Energy generation to meet demand and maintain affordability	Y	N	N	N	N	N
Energy generation through low carbon technology	Y	N	N	N	N	N

B Introduction to the topic assessments

B.1 Introduction

- B.1.1 This volume introduces the HIA topics listed in section A.5, including the scope of potential health and well-being effects. These effects are assessed in volumes C to H.
- B.1.2 The overarching approach to the HIA and the specific methodology used to assess the effects of the Project for individual topics is set out in the HIA appendix in volume L.
- B.1.3 That appendix explains how the HIA considers significance in terms of the 'importance' and/or the 'acceptability' of any potential change in health outcomes. The appendix includes a summary for each HIA topic of:
- the source-pathway-receptor model describing how health and well-being may be affected by a topic;
 - topic-specific considerations in relation to the importance of potential effects (scientific literature, baseline and local health priorities); and
 - topic-specific considerations in relation to the acceptability of potential effects (consultation responses, regulatory standards (if applicable) and the Wylfa SPG policy context).
- B.1.4 These sources are considered collectively, not in isolation, to inform the professional judgements reached in this HIA on the potential significance of population health effects. For example, a regulatory standard being met does not automatically indicate no significant health effect. Rather all relevant considerations in relation to the importance and acceptability of a change are taken into account.
- B.1.5 The following sections describe the potential health and well-being effects.

B.2 Air quality

Potential health and well-being effects

- B.2.1 Air quality effects can be toxicological from inhaled and dermal exposure; they can also have an effect on well-being (e.g. stress and anxiety) through perceived nuisance (e.g. dust deposition on property, including windows and washing). The nature of air quality health effects are heavily dependent on background levels, proximity to source and the vulnerabilities in the people exposed [RD36]; [RD37]; [RD38]; [RD39].
- B.2.2 The rural nature of the Wylfa Newydd Development Area means that, in general, there are low levels of background outdoor air pollution and that there are relatively few receptors in close proximity to sources of air pollution associated with the construction at the Wylfa Newydd Development Area.
- B.2.3 Receptors include isolated dwellings, small groups of dwellings and the larger settlements of Tregele and Cemaes, which includes Ysgol Gynradd Cemaes (the primary school at Cemaes). The main sources of baseline outdoor air pollution are traffic related, with the greatest concentrations occurring along the local road network.

- B.2.4 Indoor air pollution, although linked to outdoor air pollution, particularly in urban settings, is likely to be dominated by secondary emissions from smoking, which has a high prevalence in the local population, particularly in the most deprived areas [RD40]. A high rate of smoking (including passive smoke effects) is likely to reduce the resilience of the local population to reductions in air quality. The local population affected by air pollution includes some groups known to be at risk, such as children and young people and people with respiratory illnesses such as asthma and chronic obstructive pulmonary disease (COPD). The population that would be exposed to activities associated with the construction is broadly downwind of the prevailing west to east weather systems that the UK experiences.
- B.2.5 The realignment of the A5025 (the A5025 Off-line Highway Improvements) would move traffic further from most dwellings. The greater dispersion distances would be expected to contribute to improved traffic related air quality particularly in Valley, Llanfachraeth, Llanfaethlu and Cefn Coch. In some cases, the new alignment brings the road closer to dwellings, for example at Parc Llynnon in Llanfachraeth.
- B.2.6 Construction activities involve soil exposure, movement and mounding; rock breaking, crushing and chip laying; and construction of structures. All these activities involve fixed and mobile plant with associated fossil fuel combustion emissions profiles, notably oxides of nitrogen and particulate matter. Dust including fine particulate matter would also be mobilised by all these activities.
- B.2.7 Concentrations of all emissions are expected to decrease rapidly with distance from source, due to either dispersal or settling in the case of courser fractions of dust and particulate matter. Weather plays a key role, particularly wind conditions and precipitation levels.
- B.2.8 The HIA considers the following effects of the Project in detail (for this topic, these are the effects most likely to be associated with changes in health outcomes):
- emissions from vehicles transporting materials and people on the local road network (see volume C);
 - vehicle and machinery emissions on the Wylfa Newydd Development Area (see volume D); and
 - dust generated by construction activities, excavation and earth movements (see volume D).

B.3 Noise

Potential health and well-being effects

- B.3.1 Community noise effects are primarily associated with disturbance. Physical auditory damage is highly unlikely outside occupational settings.
- During the day, noise disturbance can disrupt learning, work or recreation.
 - During the night, disruption of sleep patterns and circadian rhythms can directly affect health and well-being as well as affecting day-time

functioning and safe task performance (such as machinery operation or driving).

- B.3.2 Noise can have effects on well-being [RD41]. Noise disturbance is associated with physiological outcomes, including effects on cardiovascular health such as hypertension (high blood pressure) and cardiovascular disease [RD42]; [RD43]; [RD44]. People who are recovering from illness can be sensitive to reductions in the quality of their rest. People who work shift patterns may be resting during the day when noise levels are typically greater. The groups that are cited in academic literature as being at risk from increases in noise are children and the elderly [RD45].
- B.3.3 At the Llanbadrig ward level, the area statistics show that levels of deprivation are similar to levels reported across Wales. While smaller area statistics are not available to confirm specific locations, it would be expected that there would be pockets of higher deprivation. Inequality issues may arise if pockets of deprivation coincide with areas where there is an increased likelihood of noise affecting health outcomes. In such cases, changes in health outcomes would be expected to be higher.
- B.3.4 Noise dissipates with distance, so significant noise effects due to the construction activities would only be expected in the vicinity of the Wylfa Newydd Development Area boundary. Environmental Statement chapter B6 (noise and vibration) (Application Reference Number: 6.2.6) considers a zone up to 600m from the edge of the Wylfa Newydd Development Area boundary. The area includes the settlements of Tregele and Cemaes, as well as more isolated dwellings to the west, south and east of the Wylfa Newydd Development Area.
- B.3.5 Characteristics of noise, other than sound level, are also important [RD46]. The source of a noise is important for the way in which it is perceived. Noise associated with constructing earth mounding to provide a shield might be received more favourably if lines of communication are established and maintained between those responsible for the noise and people who would be affected.
- B.3.6 The converse is also possible: people who object to the Project may experience adverse effects on well-being at noise levels that would not normally be expected to be associated with discernible effects.
- B.3.7 People's potential to adapt to noise sources is also relevant, though the evidence is limited [RD47]. The duration of the construction stage means that people are likely to become more accustomed to sounds from construction even though the absolute noise levels from construction remain unchanged.
- B.3.8 Sleep disturbance may also follow a similar trend if levels of noise are not excessive, with people reporting greater sensitivity to novel noises than to familiar ones. People can experience sleep disturbance when they sleep in a new environment. Sleep disturbance would be expected to also apply to a change in the noise character of an area.
- B.3.9 The change in the character of the local noise environment is likely to be most notable when new noise sources are introduced and shortly afterwards. People's reaction to noise is subjective but the time to adapt to noise sources that are unpredictable, intermittent or of distinct tonal character are likely to be

longer than for sources that are continuous or similar to baseline tonal patterns. There are potentially significant noise effects due to the construction even though it would be reasonable to anticipate a degree of adaptation over time.

- B.3.10 The HIA considers the following effects of the Project in detail (for this topic, these are the effects most likely to be associated with changes in health outcomes):
- noise from vehicles transporting materials and people on the local road network (see volume C); and
 - vehicle and machinery noise on the Wylfa Newydd Development Area (see volume D).

B.4 Housing

Potential health and well-being effects

- B.4.1 Housing is an important determinant of health with both environmental and socio-economic aspects.
- Environmental aspects include indoor air quality and provision of sufficient space that is at an appropriate temperature and is not damp.
 - Socio-economic aspects include affordability, both of the purchase or rental value as well as running costs such as heating; accessibility in relation to work, education, leisure, goods and services; and social or community networks.
- B.4.2 The availability of a mix of good-quality housing stock to accommodate a range of different needs is important to maintaining mixed and vibrant communities. Environmental Statement chapter C1 (Application Reference Number: 6.3.1) on socio-economics characterises the availability of, and effect to, housing stock in the KSA.
- B.4.3 The Project would seek to balance the potential for adverse effects on the local communities arising from the influx of a large workforce with the economic benefits arising from providing accommodation, goods and services to the workforce. At the heart of this approach is the balance between the use of existing bed spaces, e.g. in hotels and the private rental market, and the new Site Campus. This refers to temporary accommodation, for the construction workforce, on-site at the Wylfa Newydd Development Area.
- B.4.4 The HIA describes the ways that changes in the overall supply and demand for housing due to the Project might affect population health. The HIA covers in detail current tenants leaving due to housing competition during construction (see volume C). For this topic, this is the effect most likely to be associated with changes in health outcomes.

B.5 Transport

Potential health and well-being effects

- B.5.1 Transport is linked to a wide variety of health determinants [RD48]:

- increased access to goods and services including education and employment (see sections B.9 and B.10);
 - air quality (see section B.2);
 - noise (see section B.3);
 - journey times to medical and healthcare services (see section B.5); and
 - active travel, which relates to physical activity (see section B.11).
- B.5.2 Emergency planning, and the implications for transport, are subject to a separate assessment process and are not within the scope of the HIA.
- B.5.3 The traffic and transport assessment sections from volumes B to H, in the Environmental Statement (Application Reference Number: 6.2 to 6.8), considers aspects relevant to human health: these are the potential for driver stress, severance, vehicle journey times, and accidents and safety. Accident and safety analysis has been addressed in the Environmental Statement as part of joint working with the HIA team.
- B.5.4 The analysis in this HIA focuses on the potential effects associated with changes in traffic volumes due to the Project, including taking into consideration the A5025 Off-line Highway Improvements.
- B.5.5 The A5025 route between Valley and Cemaes is expected to experience the majority of the change in traffic flows during the construction stage. The HIA therefore focuses its discussion on this part of the overall transport network.
- B.5.6 The potential to use rail transport for the Project (and the long-term benefits that could bring) has been considered by Horizon. This transport option is discussed in the Environmental Statement chapter C2 (traffic and transport) (Application Reference Number: 6.3.2).
- B.5.7 The potential for transportation-related effects associated with the movement of radiological material is discussed in Environmental Statement chapter D14 (Application Reference Number: 6.4.14). Unplanned events are outside the HIA scope and are also considered in Environmental Statement chapter D14 (Application Reference Number: 6.4.14).
- B.5.8 Traffic associated with the Project has the potential to affect school travel times. Horizon has taken this into consideration when planning shift change times and associated workforce travel.
- B.5.9 The Environmental Statement traffic and transport assessment (Application Reference Number: 6.3.2) has reviewed the need for highway improvements between the Wylfa Newydd Development Area and Amlwch (A5025 northern route). That assessment has concluded that On-line Highway Improvements would address any potentially significant adverse effects, including those related to health and well-being. The A5025 northern section of the transport network is therefore not discussed further.
- B.5.10 The Site Campus accommodation reduces the vehicle movements associated with the Project, with workers accommodated at this location travelling predominantly by a shuttle bus service. The Park and Ride (see volume F of this report) would include provision for construction workers accommodated at the Site Campus to leave their vehicles at the facility for the duration of their

rotation. The transport effects of the Site Campus are therefore not assessed separately from the project-wide effects.

- B.5.11 The majority of the remainder of the transport route that would be used by the Project is the A55, which the Environmental Statement traffic and transport assessment concludes would have sufficient capacity and therefore minimal associated effects (the exception being existing congestion issues at Britannia Bridge linking to the mainland).
- B.5.12 The HIA considers the following effects of the Project in detail (for this topic, these are the effects most likely to be associated with changes in health outcomes [RD48]; [RD49]; [RD50]; [RD51]):
- road safety (see volume C); and
 - health trip journey times (e.g. to a hospital) (see volume C).

B.6 Demand for medical and healthcare services

Potential health and well-being effects

- B.6.1 This section describes the demand for medical and healthcare services associated with the construction of the Project.
- B.6.2 Healthcare services on the Isle of Anglesey are provided by the BCUHB. The BCUHB provides the full range of primary, community, mental health and acute hospital services for a population of around 678,000 people across the six counties of north Wales [RD52].
- B.6.3 The Welsh Ambulance Service NHS Trust (WAS) provides pre-hospital emergency care and treatment throughout Wales [RD53] and works closely with BCUHB to ensure that patients, service users and staff receive high standards of care [RD54].
- B.6.4 PHW is the national public health agency in Wales and exists to protect and improve health and well-being and reduce health inequalities for people in Wales. PHW, health boards and local authorities work closely together to promote public health and jointly identify and set the local strategic agenda in partnership with communities, housing, education, police, fire and rescue and the voluntary sector [RD55].
- B.6.5 The BCUHB area is a prime tourist destination, predominantly for visitors from the north-west of England/Merseyside (Liverpool and Manchester), who stay in coastal resorts such as Llandudno, Rhyl, Prestatyn, Ynys Môn and the Llŷn Peninsula. The large increase in the number of visitors, especially in the summer months, leads to increased pressure on health care resources and on NHS organisations in north Wales [RD54].
- B.6.6 There are two main pathways by which the Project could affect demand for services:
- changing the needs of the local population; or
 - changing the availability of services due to the influx of workers.

Community need for health services

- B.6.7 As described in the subsequent section of the HIA and in Environmental Statement chapter C1 (Application Reference Number: 6.3.1), the Project would increase employment, training and economic activity, as well as supporting community projects and infrastructure improvements. Many of these measures would complement BCUHB and PHW initiatives that promote health and well-being, including:
- providing the workforce with outdoor social areas including sports pitches (multi-use games areas), outdoor seating and open space (see Environmental Statement chapter A2 (project overview and introduction to the developments) (Application Reference Number: 6.1.2));
 - promoting healthier lifestyles through no-smoking policies to both home-based and non-home-based workers (see HIA section C.7);
 - providing sexual health care and awareness programmes to the workforce (see HIA sections C.6 and C.7); and
 - addressing socio-economic deprivation, inequality and associated pockets of poor health through education and employment initiatives (see HIA sections C.9 and C.10).
- B.6.8 The Project is therefore likely to have a net beneficial influence on public health. Thus, an increase in need for health services across north Wales is not considered likely. There is however a need for local service planning to be cognisant of small area effects for particularly vulnerable sub-populations. People who live close to the Wylfa Newydd Development Area have expressed concern about the construction (see HIA sections D.2 to D.5) and some have expressed concern about risk associated with nuclear facilities (see HIA section C.11).

Workforce demand for health services

- B.6.9 The construction workforce could create additional demand on health service capacity on the Isle of Anglesey and the mainland. The baseline appendix in volume M shows that there is no spare capacity for primary care. Horizon would therefore provide healthcare services for the construction workforce so that access to healthcare services for people living and working on the Isle of Anglesey would not be affected. The WLIA (Application Reference Number: 8.21) notes the importance of Welsh-speaking staff in GP surgeries and other health services. This is set out as a priority in the Welsh Government's More than Just Words strategy [RD56] which underlines a commitment to ensure that Welsh speakers receive health services in their first language.
- B.6.10 Horizon would comply with all relevant legislation to protect health and to eliminate work related ill-health. It would promote measures for the protection of health and the maintenance of a healthy workforce, and, where appropriate, will align with health promotion initiatives run by Welsh Government, BCUHB, PHW or the voluntary sector. Due to the nature and location of the Project, Horizon would provide the workforce with emergency care and treatment for illness 24 hours a day and 7 days a week. There is a sound business case for Horizon in ensuring that workers can access the healthcare services they need without inconvenience or excessive time off work.

- B.6.11 Detailed health service planning will be undertaken with the BCUHB. The HIA work for the Project has contributed to that service planning to ensure that a robust process is in place to mitigate potential adverse community effects. Health service planning is an ongoing matter beyond the application for development consent submission.
- B.6.12 During construction, the delivery of medical and healthcare facilities for the peak of circa 9,000 construction workforce would have both on-site (at the Wylfa Newydd Development Area) and off-site components.
- A Site Campus Medical Centre would provide occupational and primary care health services. Occupational hygiene would be provided across the site. Facilities on the Power Station site would treat minor injuries. Serious injuries would receive initial trauma care on-site followed by ambulance or helicopter transfer to hospital.
 - Horizon would thus make use of hospital services at the Ysbyty Gwynedd, Bangor, such as emergency care and secondary care. Use by the workforce of community services, such as dentists and pharmacies on the Isle of Anglesey, is of interest as Horizon is concerned not to reduce access to these services for communities. Services provided on-site would reduce impact on community facilities. Families and dependants of the workforce would not use any on-site facilities.
- B.6.13 Providing care effectively and proportionately as the workforce changes is a matter for detailed planning.
- B.6.14 The HIA considers the following effects of the Project in detail (for this topic, these are the effects most likely to be associated with changes in health outcomes):
- NHS capacity during construction (see volume C); and
 - communicable disease during construction (see volume C).
- B.6.15 The analysis does not examine financial aspects of the proposed approach as these will be considered during the detailed planning.

B.7 Lifestyle and behaviour

Potential health and well-being effects

- B.7.1 While other sections of this assessment consider the wider social, economic and physical environment, this section considers the implications of individual choice for health and well-being.
- B.7.2 Some behaviours can harm health and well-being [RD57]; [RD58]. Examples of these behaviours include smoking, the misuse of drugs or alcohol and unprotected sex [RD59]; [RD60]; [RD61]; [RD62]; [RD63]. These are subject to wider influences, but they are also about individual choice. Effects need not be limited to the individual and can extend to:
- partners, family and friends;
 - those in the immediate vicinity; or
 - wider society.

- B.7.3 The focus here is on the ways that the Project would influence, or constrain, choices that people make about their own lifestyle and behaviour. The main way in which changes could be brought about is if the presence or the behaviour of the construction workforce influences community or individual-level behaviour in those communities. These changes could, therefore, be linked to changes in physical health and mental health, and they could be beneficial or adverse. This topic links with the discussion of community identity, social networks and culture (see B.8). This topic also links with the WLIA (Application Reference Number: 8.21) as the changes brought about as a result of the presence or behaviour of the construction workforce could also impact on the Welsh language.
- B.7.4 The HIA thus considers ways in which the Project may affect the extent to which communities are healthy and safe, and looks in particular at safeguarding, substance abuse and tobacco (see volume C). For this topic, these are the effects most likely to be associated with changes in health outcomes.
- B.7.5 A view was shared in the workshop at the Valley Hotel in Anglesey on 11 October 2016 (with people over 50) (see volume N, section N.3) that, during the construction at the Wylfa Newydd Development Area, the arrival of the construction workforce could lead to higher crime rates. It was noted that steps are needed to address fears people are attributing to the incoming workforce. Some people remembered the construction of the Existing Power Station and the Anglesey Aluminium Plant and described both beneficial and challenging aspects associated with the arrival and presence of that construction workforce.
- B.7.6 Similar findings are reported by Horizon's Community Involvement Officers, who over eight months engaged over 2,390 people [RD64] (see volume N, section N.3). The Community Involvement Officers state that adverse effects on mental health is a potential effect of a construction workforce on smaller communities in terms of community safety and anti-social behaviour.

B.8 Community identity, social networks and culture

Potential health and well-being effects

- B.8.1 This topic describes the ways that changes in community identity, social networks and culture associated with the construction of the Project might affect population health and well-being [RD65]; [RD66]; [RD67]; [RD68]; [RD69]. During construction, there would be disturbance to the Wylfa Newydd Development Area and the landscape would change. These physical changes to the landscape are described in Environmental Statement chapter D10 (landscape and visual) (Application Reference Number: 6.4.10). Changes in the settlements that host the construction workforce could affect sense of identity, social networks and culture [RD70]. These are considered below.
- B.8.2 These changes are considered with reference to the Welsh Government definition of community cohesion [RD71]: "...in its simplest form [this is] the term used to describe how everyone in a geographical area lives alongside each other with mutual understanding and respect." The Welsh Government definition is all-encompassing and multi-dimensional. It also highlights:

- a strong sense of belonging;
 - communities that are safe, vibrant and resilient when tensions occur;
 - the ability to function and grow in harmony together; and
 - communities where people feel confident that they belong and are comfortable mixing and interacting with others, particularly with different people with different protected characteristics.
- B.8.3 The Welsh Government states that integration is a key contributor to cohesion. Integration enables new and existing residents to adjust to, and to live harmoniously with, one another. The vision of an integrated and cohesive society is based on three foundations and on three ways of living together. The three foundations are given as:
- people from different backgrounds having similar life opportunities;
 - people knowing their rights and responsibilities; and
 - people trusting one another and trusting local institutions to act fairly.
- B.8.4 The three ways of living together are given as:
- a shared future vision and sense of belonging;
 - a focus on what new and existing communities have in common, alongside a recognition of the value of diversity; and
 - strong and positive relationships between people from different backgrounds.
- B.8.5 This assessment focuses on the ways of living together that the Welsh Government give as the basis for integration. A community survey commissioned by Horizon has been undertaken of 509 randomly selected members of the public on the Isle of Anglesey between late September and October 2016 (see volume L for summary results relevant to HIA topics, volume N for the role of the community survey as part of HIA consultation and volume Q for the full results and methods of the community survey).
- B.8.6 It is noted that a smaller scale of on-site accommodation was proposed when the community survey was undertaken. The Project design now allows for accommodating circa 4,000 construction workers in temporary workers' accommodation at the Wylfa Newydd Development Area (i.e. the Site Campus). The population that would be expected to show the most pronounced variation in responses due to this change would be those living near Cemaes. Although the Site Campus change is acknowledged as a limitation, it is not expected to change the general messages from the community survey (and therefore not change the HIA findings). This is because at the time of the survey there were alternative proposals for temporary workers' accommodation within a similar geographic area of north-west Anglesey (previous proposals for accommodation near Amlwch and Rhosgoch of circa 2,500 workers with a further circa 500 on-site). Although the number accommodated in the area at peak has therefore increased from circa 3,000 to circa 4,000, the change is primarily a variation in location (within approximately five miles) rather than an unaccounted for new element. Secondly, the Site Campus change would be expected to strengthen rather than reverse the reported views expressed by the people near Cemaes (as

they are already generally more sceptical of the Project than the general population of Anglesey). Given these factors it is considered appropriate for the community survey to continue to inform the HIA and it would not be proportionate to either disregard, or to re-run, the community survey.

B.8.7 The assessment looks at the following factors from the results of the community survey:

- identification with local community;
- strength of social networks based on face-to-face contact;
- emotional attachment to the Welsh way of life;
- emotional attachment to place of residence;
- strength of community cohesion;
- feelings about how the current community cohesion baseline might change;
- feelings about workers' integration;
- feelings about workers' effect on community identity;
- support for the Project;
- emotional response to the Project; and
- potential effect of the Project on emotional attachment to place of residence.

B.8.8 The HIA considers the following effects of the Project in detail (for this topic, these are the effects most likely to be associated with changes in health outcomes):

- effects on social networks and culture (see volume C);
- changes to local context and identity (see volume D); and
- night-time lighting effects (see volume D).

B.9 Employment, income and economic development

Potential health and well-being effects

Construction

B.9.1 Employment is an important determinant of health and well-being both directly and indirectly by making health-promoting resources available to an employee and any dependants [RD72]; [RD73]; [RD74]; [RD75]; [RD76]. The socio-economic benefits associated with employment are improved living conditions and the potential to make healthier choices, e.g. eating a healthier diet and undertaking more physical activity. If members of the community are employed, this can also generate indirect economic activity.

B.9.2 Environmental Statement chapter C1 (Application Reference Number: 6.3.1) provides an assessment of the Project's expected employment and economic effects (direct and indirect).

B.9.3 The HIA considers in detail the following ways in which changes in jobs and investment associated with the construction of the Project might affect

population health (for this topic, these are the effects most likely to be associated with changes in health outcomes):

- supporting local people to access construction jobs (see volume C);
- labour churn (current workers leaving due to better job opportunities) (see volume C); and
- workers spending locally (indirectly benefiting the local economy) (see volume C).

Operation

- B.9.4 The expected 60-year operational period of the Power Station offers potential for long-term benefits from permanent employment. The 850 positions being created are expected to be high quality with good career progression and remuneration. Ultimately, almost all of the 850 positions are expected to be filled by people living on the Isle of Anglesey. Health benefits from such employment to existing residents would be contingent on existing residents, particularly young people, being able to compete successfully for these roles. There would be limited local benefit from migration to Anglesey to fill these roles. The education and training aspects of such employment are considered separately in section B.10. Horizon's Jobs and Skills Strategy (Application Reference Number: 8.3) would be used to support the goal of maximising the local contribution to the Power Station workforce.
- B.9.5 Higher levels of employment would benefit working-age people over the expected 60-year operational period of the Power Station. The current and future working-age population would be able to provide a good level of care and support to their dependants. Good-quality local jobs enable young people to remain on the Isle of Anglesey. Health outcomes for older people are indirectly expected be beneficial if local young people (the future working-age population) are able to take up the 850 good-quality jobs associated with the operation of the Power Station.
- B.9.6 The outage workforce offers less potential for local community employment as this is a specialist workforce which is typically mobile, working to a programme of planned outages across many facilities. This does not preclude the opportunity for young people to explore this as a career path made accessible by the local training opportunities and apprenticeships. (The operational outage workforce of circa 1,000 non-home-based workers would be required to refuel each reactor approximately every 18 months, for a period of around 25–30 days on each occasion. Every 10 years, this would be extended to a 45-day shutdown.)
- B.9.7 The concept of under-employment (as opposed to unemployment) may be important to the overall benefits of the operational employment opportunities available. The term relates to the situation where a job post is held by an overqualified person. This may be relatively common at present on the Isle of Anglesey due to the limited number of senior roles available and lifestyle choices rather than career progression driving residence on the Isle of Anglesey. The creation of senior or specialist opportunities by the Power Station may result in people currently under-employed moving to roles that are more appropriate. Not only would this be expected to be beneficial for health and well-being for those individuals, but there would also be knock-on

employment benefits as their vacated positions were filled by people themselves overdue for promotion or seeking entry-level employment. Ultimately, this could lead to a net increase in employment (with health and well-being benefits) and importantly also enhanced health and well-being benefits from better-quality employment due to a good fit between roles and the people filling them.

- B.9.8 The HIA considers in detail supporting local people to access operational employment opportunities (see volume C). For this topic, this is the effect most likely to be associated with changes in health outcomes.

B.10 Education and training

Potential health and well-being effects

Construction

- B.10.1 Linked to the discussion of employment, income and economic development, the level of education and training in the population is a key determinant of the level of benefit that can be derived locally from the construction employment opportunities offered by the Project [RD77]; [RD78]; [RD79].
- B.10.2 In general, jobs that require high levels of skills are better remunerated with benefits for health and well-being in relation to greater choice in, and additional resources for, expenditure on health-promoting goods, services and activities. Benefits may directly accrue for both the individual employed and their dependants. Entry to certain well-paid career paths or management roles may have qualification thresholds, which it is important for the local population to identify in order for them to obtain the relevant qualifications if they desire to compete for these roles.
- B.10.3 The Project is part of a trend in expanding demand for technical skills in energy research, development and provision linked to the Isle of Anglesey Energy Programme. This market promotes a general drive to upskill the working-age population. The population segment with the greatest potential to gain is young people (including young adults) who in the run-up to the construction of the Project would be making key career and educational decisions. It is important that in making these decisions young people are aware of the opportunities that would be locally available, particularly in the more skilled professions that are locally in short supply. Ongoing engagement and consultation with young people on the Isle of Anglesey and in north Wales is important if local benefits are to be realised.
- B.10.4 The procurement process is lengthy and would be progressed early if development consent for the Project were granted. To compete with established external suppliers, the necessary local upskilling and capacity building would need to start now rather than await the certainty of the consenting determination. In the context of the Isle of Anglesey Energy Programme, the benefits of an upskilled, collectively presented workforce and supply chain are clear, regardless of the consenting determination of the Project. This includes the opportunity to reduce gender inequalities through positive use of training and recruitment programmes for women into science and technology.

- B.10.5 During construction, there are important on-the-job career progression benefits for those able to meet the entry requirements for qualifications and be suitably presented for selection during the procurement process (see discussion on employment opportunities in section B.9).
- B.10.6 A major population health and well-being benefit during construction could be expected from the presence of the Project as a large regional employer. The current skills profile of the population is a limiting factor. The level of demand introduced by the Project during construction is expected to be greater than local supply. The Environmental Statement chapter C1 (socio-economics) (Application Reference Number: 6.3.1) sets out labour market, skills and occupation profiles showing relevant skills to be well represented in north Wales.
- B.10.7 The HIA considers in detail upskilling local people for skilled construction roles (the roles with the greatest health benefits) (see volume C). For this topic, this is the effect most likely to be associated with changes in health outcomes.

Operation

- B.10.8 During operation, the majority of the 850 new jobs are expected to be filled by people living on the Isle of Anglesey. Ensuring that existing residents are in a position to compete for these roles would be important in realising local health and well-being benefits. Horizon would support existing residents, particularly young people, through its Jobs and Skills Strategy (Application Reference Number: 8.3) to gain the qualifications and experience to successfully compete for the operational jobs. Apprenticeships supported by the Jobs and Skills Strategy (Application Reference Number: 8.3) would be an important pathway for locally resident young people to get into highly skilled careers on the island. The general out-migration of younger people from Anglesey is noted in Environmental Statement chapter C1 (Application Reference Number: 6.3.1), with further detail on the labour market provided in appendix C1-2 (socio-economic technical appendix) (Application Reference Number: 6.3.9). The reasons for this out-migration are complex and not just due to a lack of availability of jobs on the Isle of Anglesey. However, the support offered by Horizon through apprenticeships could contribute to reversing this trend by retaining young people on the Isle of Anglesey in high-tech industry.
- B.10.9 The HIA considers in detail supporting local people with their career choices, apprenticeships and progression (see volume C). For this topic, this is the effect most likely to be associated with changes in health outcomes.

B.11 Physical activity

Potential health and well-being effects

- B.11.1 Changes in physical activity due to the Project may improve or worsen physical health (e.g. cardiovascular health) and mental health conditions associated with obesity (e.g. stress, anxiety or depression) [RD80]; [RD81]; [RD82]; [RD83]; [RD84]; [RD85]; [RD86]. Well-being may also be improved through exercise and helping people to cope with other changes that could cause stress and anxiety.

- B.11.2 Physical activity is an important determinant of both physical and mental health. The level of benefit obtained is determined by the frequency, duration and intensity of physical activity. Setting has also been shown to be important, with some evidence of enhanced benefits for health and well-being if physical activity is undertaken in a safe, natural setting. The links to well-being associated with physical activity are likely to play an important role in instigating wider beneficial health behaviours, as well as raising resilience to coping with stress and anxiety for individuals. Conversely, should a population become less physically active, it may have less resilience in coping with stress and anxiety. For example, in relation to disturbance or understanding of risks associated with the Project.
- B.11.3 In the Community Survey (of 509 randomly selected members of the public on the Isle of Anglesey between late September and October 2016, see volume N section N.3), the five most popular things about living on the Isle of Anglesey were given as:
- beautiful scenery and landscape (54%);
 - the peace and quiet (49%);
 - being in the countryside (35%);
 - being by the seaside (28%); and
 - being near friends and family (20%).
- B.11.4 Effects may relate to routes of local to national importance, e.g. effects from the diversion of the Copper Trail and Wales Coast Path. Views of Project activities may affect people's decision to use the surrounding areas for physical activity, e.g. Public Rights of Way west of Tregele or Cemaes. The HIA analysis of changes in physical activity draws on the Environmental Statement assessments, applying a health lens to consider the wider well-being opportunities. For detail on effects to specific routes or views, refer to the relevant chapters from volume B to H in the Environmental Statement (Application Reference Number: 6.2 to 6.8) chapters on public access and recreation and landscape and visual effects.
- B.11.5 The eight-year construction stage has particular implications for the experience of young people and of older people in the area. Children born now to parents living in proximity to the Wylfa Newydd Development Area could spend most of their childhood in the neighbourhood of a construction zone; older people may not remain in the community long enough to see many of the benefits that are likely to accrue from the Project. For both these population groups, there is the potential for disproportionate effects relating to the use and perception of outdoor space throughout either formative childhood years, or the final years of life. During both these periods, an individual's capacity for adaptive behaviours (e.g. seeking out other landscape or outdoor spaces) is reduced due to higher levels of dependence on parents, relatives or carers, and to a greater reliance on public transport, which is associated with long travel times in the local area.
- B.11.6 The HIA considers the following effects of the Project in detail (for this topic, these are the effects most likely to be associated with changes in health outcomes):

- promoting use of active travel diversions (e.g. walking and cycling routes) (see volume D); and
- alternatives for the most affected communities to be physically active (see volume D).

B.11.7 Road safety issues with regard to active travel are discussed under transport effects in section B.5.

B.12 Public understanding of risk

Potential health and well-being effects

- B.12.1 Risk perception – or an individual's perceived susceptibility to a threat – is a key determinant of health behaviour [RD87]. This is despite risk perceptions – the public's expectations of negative health effects – not being well-correlated with the actual expected distributions for negative health effects [RD88]. This assessment uses the term 'understanding' in preference to 'perception'. An understanding of a topic or an issue is something that can develop, and can be debated and shared. The term 'perception' can imply that views that do not align with scientific analysis are given less credence [RD89]. A shared understanding of issues and an increased acceptance of institutions, or trust between them and the public, can decrease anxiety [RD90]. It can also increase the effectiveness of protective measures established by health, and other, institutions.
- B.12.2 The section directs the reader to the analysis of radiological emissions as conducted in Environmental Statement chapter D14 (Application Reference Number: 6.4.14). It then considers the links between population health and well-being and the public understanding of risk. The stages of the Project for which this is most pertinent are the operation stages.
- B.12.3 Construction commenced on the Existing Power Station in 1963, and it was in operation between 1971 and 2015. Communities living alongside the Wylfa Newydd Development Area are familiar with living next to a nuclear facility. Research with other communities living alongside Nuclear Power Stations [RD91] demonstrates that people have a detailed understanding of the attendant hazards and risks, and tend to see them through a dominant frame of 'ordinariness'. The understanding of risk that people describe tends not to fall into broad categorisations (i.e. pro- or anti-nuclear). There are intricate social and psychological processes continually at work and different factors that influence/underpin local residents' understanding of risk. For example, during consultation, discussions about safety covered matters such as the arrival and presence of the construction workforce as well as safety issues associated with nuclear generation.
- B.12.4 Risk management and communication are complex tasks relying on variables such as timely and correct information, empathy, candour, public trust in authorities and effective policies [RD90].

Licensing and safety procedures

- B.12.5 The design of nuclear power plants has improved since the first UK plant began to operate in 1956. The radiation dose to workers and members of the

public has reduced accordingly. The limit to which members of the public can be exposed is 1mSv (millisievert) per year. Exposures from the latest generation of nuclear plants are typically a maximum of between 0.5% and 2.5% of 1mSv per year. Typical predicted values for the third-generation sites currently under construction are around the 0.5% level or 5µSv (microsieverts) per year to the most exposed member of the public. This is below the Environment Agency's potential threshold level, of 10µSv, for further consideration [RD34]. The level of exposures predicted from the current designs of Nuclear Power Stations would not significantly affect human health.

- B.12.6 Safety is core to Horizon's business. At each step in the process, from design to construction and through to operation, the Power Station has been, and would continue to be, scrutinised by the regulators. The design includes detailed embedded mitigation. Permission to operate would be dependent on licensing and continual monitoring. These steps reduce risks to health and well-being. The remaining, or residual, risks are small; they are either:
- low in probability (such as unplanned events); or
 - low in magnitude (such as regulated emissions).
- B.12.7 Information on the reactor technology that would be used by the Power Station was compiled by the Department of Energy and Climate Change. This includes consideration of radiological health detriment [RD92, chapter 6] and of safety, security and safeguards [RD92, chapter 9]. This information formed part of the application for use of this technology, and the UK Advanced Boiling Water Reactor has been approved for use [RD93].
- B.12.8 The HIA considers in detail the understanding of risk about, and expectations of, the Power Station (see volume C). For this topic, this is the effect most likely to be associated with changes in health outcomes.

B.13 Energy generation: demand and affordability

Potential health and well-being effects

- B.13.1 This topic describes the ways that changes in energy generation to meet demand and maintain affordability associated with the operation of the Power Station might affect population health and well-being [RD94]; [RD95]; [RD96]; [RD97].
- B.13.2 The HIA scope of this issue reflects the need to balance the noted adverse construction effects at the Wylfa Newydd Development Area with an appreciation that the operational outputs of the Power Station would have a wide-ranging benefit for the health and well-being of the whole of the UK.
- B.13.3 In the UK, there is a high degree of reliance on electricity supply to maintain public health. This includes power to safely cook and refrigerate food, regulate the temperature and lighting of homes and schools, operate health and social care services, maintain economic productivity and employment, and operate technologies that improve quality of life. Sustained interruption of supply or rapid increases in costs would both be expected to result in reductions in health and well-being outcomes at the national level.
- B.13.4 The Power Station would offer advantages in continuity of generation and scale of supply that would make it an attractive option for the UK energy

generation mix. This consistency would meet demand and maintain affordability, with the consequent safeguarding of public health. The planned operational life of the Power Station is 60 years, with a nominal gross electrical capacity of 3.1GWe (3,100MWe) (power for approximately five and a half million homes).

- B.13.5 The HIA considers in detail the national health benefit of an uninterrupted and affordable electricity supply (see volume C). For this topic, this is the effect most likely to be associated with changes in health outcomes.

B.14 Energy generation: low carbon technology

Potential health and well-being effects

- B.14.1 This topic describes the ways that changes in energy generation through low carbon technology associated with the operation of the Power Station might affect population health and well-being [RD98]; [RD99]; [RD100].
- B.14.2 Climate change is associated with changes in health outcomes, generally for the worse. There are important global inequalities in the effects of climate change, with the greatest adverse effects on health expected in the poorest and least economically developed populations. In contrast, populations that benefit from rapid social and economic development are expected to experience reduced (but not eliminated) adverse effects to health from climate change. Changes in health outcomes related to climate change are therefore expected to be relatively small in the UK.
- B.14.3 When considering health and well-being, there is a global responsibility to reduce the effect of climate-altering pollutants that are expected to reduce health outcomes in low- and middle-income countries. Such outcomes are summarised by the Intergovernmental Panel on Climate Change (IPCC) [RD99]:
- greater risk of injury, disease and death due to more intense heatwaves and fires;
 - increased risk of undernutrition resulting from diminished food production in poor regions;
 - consequences for health of lost work capacity and reduced labour productivity in vulnerable populations; and
 - increased risks of food, water and vector borne diseases.
- B.14.4 The IPCC notes that the energy sector can play an important part in determining the risks of disease and injury resulting from climate change [RD99]. The IPCC states that there are opportunities to achieve co-benefits from actions that reduce emissions of climate-altering pollutants and at the same time improve health. This includes a shift to cleaner energy sources.
- B.14.5 The *Climate Change Act 2008* established the world's first legally binding climate-change target, requiring an 80% reduction in greenhouse gas emissions from 1990 levels by 2050. Meeting this target would require the UK to drastically reduce its dependence on fossil fuels.
- B.14.6 Nuclear Power Stations produce few carbon dioxide emissions directly from electricity generation. In 2011, the IPCC synthesized evidence from a

comprehensive review of published Life Cycle Assessments, covering all regions of the world, to produce a comparison of carbon dioxide emissions from different electricity generation technologies [RD101, table A.ii.4]. This showed that emissions from Nuclear Power Stations have a median figure of 16gCO₂/kWh, which is comparable to those from renewable resources and significantly lower than those from electricity generated from fossil fuels.

- B.14.7 The Power Station should reduce the UK's emissions by 8.25 million tonnes of CO₂ each year, or 495 million tonnes of CO₂ over the proposed 60-year operational stage. This is based on the assumption that Combined-Cycle Gas Turbine plant (without carbon capture and storage) would be required to provide the electrical output of the Power Station if it were not constructed, and lifetime cycle assessments for Combined-Cycle Gas Turbine plant indicate an approximate emissions output of 365gCO₂/kWh [RD102]. In justifying the decision to approve the UK Advanced Boiling Water Reactor, the Government is clear about the importance of this technology for reducing carbon emissions [RD92].
- B.14.8 The HIA considers in detail the global health benefit from reducing the effect of climate change (see volume C). For this topic, this is the effect most likely to be associated with changes in health outcomes.

C Project-wide effects

C.1 Introduction

- C.1.1 This volume describes the assessment of potential project-wide health and well-being effects.
- C.1.2 Please refer to the HIA appendix in volume L for the technical basis for the assessment, which sets out a summary of methodologies and criteria that have guided the assessment, including definitions; scientific literature and baseline conditions; local health priorities; consultation responses; and regulatory standards and/or policy context.
- C.1.3 This volume discusses the potential effects by HIA topic. For each, there is a consideration of the unmitigated effect, followed by a consideration of mitigation or enhancement and finally a conclusion on the residual effect.
- C.1.4 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.
- C.1.5 Cumulative effects are discussed in volume I.

C.2 Air quality

Emissions from vehicles transporting materials and people on the local road network during construction

Assessment of effects

- C.2.1 Additional construction stage road traffic of the Project may cause higher levels of emissions of pollutants from road vehicles (e.g. cars, vans, buses and HGVs) travelling on the local road network. Such transport relates to the movement of materials, wastes and people.
- C.2.2 The greatest effects are expected to be from nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}).
- C.2.3 The affected roads on Isle of Anglesey include:
 - the A5025 from the junction with Valley to the junction with the A55 (Junction 3), including the short section of the A5 between the A5025 and the A55;
 - A55 between Junction 2 and the Britannia bridge (west of Junction 8A); and
 - A5153 and Parc Cybi between A55 Junction 2.
- C.2.4 The affected roads on the mainland include:
 - A55 on mainland Wales from the Britannia Bridge towards the A494 to the west of Chester; and
 - A487 south of the A55 (Junction 9) towards Caernarfon.
- C.2.5 The baseline air quality at community locations in proximity to the A5025, A55, A5 and A487 is generally good, and concentrations of pollutants are well below

the relevant statutory thresholds (see Environmental Statement chapter C4 (air quality effects of traffic) (Application Reference Number: 6.3.4)).

- C.2.6 Exposure to elevated concentrations of NO₂ has been linked with a range of respiratory symptoms including bronchoconstriction, increased bronchial reactivity, airway inflammation and decreases in immune defence leading to increased susceptibility to respiratory infection. Controlled exposure studies assessing the health effects of short-term exposures to NO₂ show health effects at lower levels more consistently in asthmatics compared to non-asthmatics [RD103].
- C.2.7 Particulate matter is a complex mixture of organic and inorganic substances. Particles found in ambient air range in size from a few nanometres (nm) to several hundred micrometres (µm), or microns, in diameter. PM₁₀ refers to particulate matter that is generally less than 10 millionths of a metre (10 micrometres (µm)) in diameter. PM_{2.5} refers to particles less than 2.5µm in diameter. Although it is believed that much of the health effect of PM is due to fine particulates (PM_{2.5}), coarse particulates (PM_{2.5-10}) cannot be considered as harmless, hence there are guidelines and targets for both PM_{2.5} and PM₁₀ [RD103].
- C.2.8 Ambient airborne particulate matter is an important environmental pollutant for many different cardiopulmonary diseases and lung cancer. The evidence shows a strong relationship between particulate matter for both short-term and long-term health effects [RD104]. For this reason, statutory limit values are in place for PM₁₀ and PM_{2.5}.
- C.2.9 Severe short-term particulate matter exposure effects include increases in hospital admissions and a greater risk of premature mortality for people already suffering from serious respiratory and cardiovascular illness [RD103]. There are also less severe effects of short-term exposure during pollution episodes, such as worsening of asthma symptoms and a general feeling of being unwell leading to a lower level of activity [RD103]. The Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7) sets out how statutory standards for PM₁₀ and PM_{2.5} would be met and levels reduced even below these as far as reasonably practicable.
- C.2.10 The severe effects of long-term exposures to particulate matter (e.g. increased levels of fatal cardiovascular and respiratory diseases, including lung cancer) are associated with urban settings with higher concentrations of airborne particles [RD105]. Such outcomes are not applicable to the rural setting of the Wylfa Newydd Development Area and the changes in concentrations of particulate matter (within statutory thresholds) due to the Project.
- C.2.11 Some pollutants do not have a threshold below which there is no change in health outcomes, e.g. concentrations of nitrogen dioxide or fine particulate matter [RD103]; [RD106]. In these cases, the significance that this assessment gives to potential effects is informed by the local context and by statutory air quality standards which set limits that are considered to be acceptable. Whilst there may be some health effect, it is not a level of effect that should be a deciding factor in determining the application for development consent.
- C.2.12 The geographical population group that may be affected is the population near the local road network (site-specific).

C.2.13 The population subgroups with particular sensitivities (other than proximity) are:

- young people;
- older people; and
- people with existing poor health.

C.2.14 The unmitigated effect has the potential to be minor adverse.

Mitigation and enhancement

C.2.15 The HIA has informed, and it has taken into consideration, relevant mitigation to reduce levels as low as reasonably practicable, as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the relevant chapters from volume B-H in the Environmental Statement (Application Reference Number: 6.2 to 6.8).

C.2.16 No further HIA additional mitigation measures are considered necessary.

Residual effects

Magnitude

C.2.17 The mitigation described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3) is expected to reduce the potential magnitude of emissions of pollutants from road vehicles travelling on the local road network. The good baseline air quality is also relevant to the potential for air quality levels that could be of concern.

C.2.18 Although many people within the site-specific study area may be exposed to low concentrations of dispersing road vehicle emissions on the local road network, such exposure is expected to be below UK Air Quality Objective (AQO) levels, represent a relatively small change from baseline levels and no exceptional circumstances have been identified e.g. in relation to local topography that constrains dispersion within communities. At these levels, only a small change in population risk factors for air quality effects to health and well-being would be expected. The magnitude of potential health effects is therefore expected to be small.

Sensitivity

C.2.19 Most people would not be sensitive as a result of their location as they would live, work or study at a distance from the local road network at which emissions would benefit from high levels of dispersion, reducing exposure. Furthermore, most people enjoy good respiratory health (e.g. are not asthmatic) and are not at a life stage (e.g. infant or frail elderly) for which lower levels of emissions could be of concern. The general population sensitivity to emissions of pollutants from road vehicles travelling on the local road network is therefore considered to be low.

C.2.20 For groups vulnerable to changes in exhaust emissions, higher levels of sensitivity would be expected. Vulnerability in this case is particularly linked to

living very close to the local road network; regularly using footpaths close to the local road network; spending more time in affected dwellings (e.g. due to low economic activity, shift work or ill health); age (both young people and older people); or existing poor health (e.g. long-term respiratory conditions such as asthma and COPD). For this part of the population, sensitivity is considered high.

Significance

- C.2.21 As Environmental Statement (Application Reference Number: 6.3.4) modelling indicates that UK AQO levels would not be exceeded on the local road network, the change in air quality and its effects on health are considered to be acceptable for the UK context (criteria for acceptability set out in HIA appendix in volume L). However, as the importance of non-threshold health effects from changes in air quality is a public health issue and has been raised as an issue by local people, the potential for significant health effects due to changes in air quality is not ruled out. A non-threshold health effect is when there is no known exposure threshold level below which adverse health effects may not occur.
- C.2.22 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the local road network.
- C.2.23 For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. This score reflects a non-threshold type effect, meaning that the potential for a slight health effect cannot be ruled out even at very low concentrations.
- C.2.24 The scores reflect the potential for the emission of pollutants from road vehicles (e.g. cars, vans, buses and HGVs) travelling on the local road network to have a direct effect on the severity or incidence of cardiovascular and respiratory health conditions.
- C.2.25 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit). Durations are defined in volume L (section L.2.21).
- C.2.26 This assessment is assigned a high degree of certainty, which reflects a good scientific consensus in this field and the good quality quantitative and qualitative data used in this analysis.
- C.2.27 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

C.3 Noise

Noise from vehicles transporting materials and people on the local road network during construction

Assessment of effects

- C.3.1 Additional construction stage road traffic of the Project may cause higher levels of noise from road vehicles (e.g. cars, vans, buses and HGVs) travelling on

the local road network. Such transport relates to the movement of materials, wastes and people.

- C.3.2 The A5025 Highway Improvements would provide quieter road surfaces and permanent new alignments that move traffic further from most dwellings (and/or into cuttings). These changes would be expected to contribute to a quieter environment, with benefits for population health, particularly in Valley, Llanfachraeth, Llanfaethlu and Cefn Coch. This is a noted long-term benefit of the Project. However, not all dwellings would benefit from the realignments and there is potential for effects beyond the A5025.
- C.3.3 The greatest effects would be expected at dwellings very close to the road, where sleep disturbance could be caused by night-time noise associated with the movement of vehicles to and from the Wylfa Newydd Development Area, e.g. associated with a shift change.
- C.3.4 The affected roads on Isle of Anglesey include:
- the A5025 from the junction with Valley to the junction with the A55 (Junction 3), including the short section of the A5 between the A5025 and the A55;
 - A55 between Junction 2 and the Britannia bridge (west of Junction 8A); and
 - A5153 and Parc Cybi between A55 Junction 2.
- C.3.5 The affected roads on the mainland include:
- A55 on mainland Wales from the Britannia Bridge towards the A494 to the west of Chester; and
 - A487 south of the A55 (Junction 9) towards Caernarfon.
- C.3.6 Transport is the main source of background outdoor noise at community locations in proximity to the A5025, A55, A5 and A487.
- C.3.7 The geographical population group that may be affected is the population near the local road network (site-specific).
- C.3.8 The population subgroups with particular sensitivities (other than proximity) are:
- young people;
 - older people; and
 - people with existing poor health.
- C.3.9 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

- C.3.10 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).
- C.3.11 Further HIA additional mitigation measures are not considered to be required.

Residual effects

- C.3.12 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.
- C.3.13 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

- C.3.14 The mitigation described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3) is expected to reduce the potential magnitude of noise from vehicles transporting materials and people on the local road network.
- C.3.15 The magnitude of noise effects identified in Environmental Statement chapter C5 (noise and vibration effects of traffic) (Application Reference Number: 6.3.5) includes those that may be large; night-time effects are of particular concern. Exceedances of day-time noise levels are also relevant; however, generally there is a higher tolerance of day-time noise compared to night-time noise. The focus for health is accordingly on the predictions of night-time noise disturbance.
- C.3.16 Noise effects are focused on those properties closest to the local road network. Properties at a greater distance or benefiting from barriers to noise (either natural or man-made, such as other buildings) would experience lower levels of noise, reducing the potential for disturbance.
- C.3.17 Occupiers of dwellings closest to the local road network may be exposed to levels of noise (particularly night-time noise) that could reduce their quality of life. There may also be an increase in population risk factors for noise effects to health and well-being. The magnitude of potential health effects is therefore expected to be medium.

Sensitivity

- C.3.18 Existing proximity to the local road network and its baseline noise conditions suggests the majority of people would already have a degree of exposure to road noise. The opening of the A5025 Off-line Highway Improvements may be the greatest level of change, with the majority of affected dwellings expected to experience a net reduction in noise levels. Although road noise levels are expected to increase at some locations during the construction stage, for many people the change would be incremental. The general population level of sensitivity has been scored as low.
- C.3.19 Some people would be more sensitive to changes in noise. For this population, sensitivity is considered high. Vulnerability in this case is particularly linked to living very close to the local road network; age (both young people and older people); existing poor health (e.g. long-term illness); spending more time in affected dwellings (e.g. due to low economic activity, shift work or ill health); or vulnerability due to deprivation or health inequalities.

Significance

- C.3.20 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the local road network.
- C.3.21 For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse.
- C.3.22 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of cardiovascular and mental health conditions (e.g. stress, anxiety or depression), notably due to sleep disturbance associated with night-time noise effects.
- C.3.23 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- C.3.24 This assessment is assigned a medium degree of certainty which reflects that, whilst there is scientific consensus in this field and good quantitative data used in this analysis, the effects are largely subjective in nature.
- C.3.25 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

C.4 Housing

Current tenants leaving due to housing competition during construction

Assessment of effects

- C.4.1 Accommodating part of the construction workforce in existing housing may increase competition for rental properties in some areas. This, in turn, may place financial pressures on existing tenants who are less able to afford higher rental prices. This could cause trade-offs with other spending (e.g. heating), or necessitate moving to housing of lower quality in terms of smaller size, condition or being further from services, jobs and social networks [RD107]; [RD108]; [RD109]; [RD110]; [RD111]. This concern relates to displacement of people in private rental accommodation, particularly people receiving means-tested benefits, and the displacement of potential tourists during peak season.
- C.4.2 This issue is also discussed in the WLIA, which notes that further increases in the costs of housing on the Isle of Anglesey could reduce access to affordable housing during the construction stage for the local Welsh speaking population, especially young people.
- C.4.3 With respect to the displacement of tourism, the benefits of filling off-peak accommodation capacity are generally accepted and considered beneficial. The analysis takes into account the potential for a change in the quality of tourism accommodation due to long occupancy and differing needs of the construction workforce compared to tourists.
- C.4.4 The potential for the displacement of residents on low incomes, such as people on means-tested benefits with private sector landlords, due to an increased demand for accommodation close to the Wylfa Newydd Development Area is

an important concern. An increase in demand for housing might increase the market rent that could be obtained from existing properties. Landlords would be incentivised to offer housing to construction workers who would be able to pay higher rates.

- C.4.5 The health effects that would be expected from displacement of residents on low incomes encompass not only reduced physical and mental health from poor housing, but also reduced opportunities to access employment, education and social opportunities. Individuals and families might be affected and health inequalities could be increased if low socio-economic groups are adversely affected.
- C.4.6 The geographical population group that may be affected is the population of Anglesey and north Wales (local and regional).
- C.4.7 The population subgroup with particular sensitivity (other than proximity) is people living in deprivation, including those on low incomes.
- C.4.8 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

- C.4.9 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).
- C.4.10 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table C-1.

Table C-1 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include the development and implementation of a sensitive lettings policy.	To reduce housing displacement pressure on vulnerable groups e.g. social tenants, minority groups, young people and disabled people.	Implemented through the Construction Worker Accommodation Management Service.
Horizon would establish and chair an external stakeholder group (hereafter Health and Well-being Monitoring Group) that would consider monitoring data relevant to the Project. A set of key topics and indicators would be agreed, but is expected	To monitor routinely collected public health data (existing indicators), relevant to the Project, to determine if any changes in the housing market indicate community accommodation	When appropriate Horizon would facilitate bespoke analysis of routinely collected public health data (existing indicators), relevant to the Project. The information would inform discussion by the Health and Well-being Monitoring Group. If appropriate the

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
to include housing market pressures.	pressures are of concern.	Group would discuss the need for additional mitigation or follow-up investigation.
The Code of Conduct would require construction workers, as part of their orientation, to register with the Worker Accommodation Management Service (even for individuals who chose not to use that service).	To facilitate housing updates to all construction workers and allow monitoring of the number of workers using the service.	Achievement as part of the Code of Conduct. The registration data (summarised and anonymised) would be reported regularly to the IACC.

Residual effects

Magnitude

- C.4.11 The mitigation described in the preceding section is expected to contribute towards reducing the potential magnitude of housing displacement. The housing circumstances of the majority of people on the Isle of Anglesey and in north Wales would not be affected by the Project. The Environmental Statement chapter C1 (Application Reference Number: 6.3.1) socio-economic assessment of housing concludes that, whilst the rental market has sufficient capacity overall, there could be some localised pressure on existing tenants in areas of high demand. The magnitude of effect is therefore expected to be small.

Sensitivity

- C.4.12 Housing pressures are expected to focus on the settlements closer to the Wylfa Newydd Development Area (i.e. with shorter commuting times for workers). This includes settlements across north and west Anglesey. People living in this area are thus of interest. The housing circumstances of the majority of people in this area would not be affected by the Project (e.g. homeowners). For the purposes of scoring the assessment, this group has low sensitivity.
- C.4.13 For some groups, there is the potential for higher levels of sensitivity. This population may be at risk from housing displacement. For this population, the sensitivity is considered high. Vulnerability in this case is particularly linked to being a private rental market tenant with a low income (including those seeking to return to the island having previously moved away).

Significance

- C.4.14 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales.

- C.4.15 For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse.
- C.4.16 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of physical health conditions (e.g. respiratory conditions linked to warmth and indoor air quality) and mental health conditions (e.g. stress, anxiety or depression due to underlying social determinants, such as financial stability and access to employment, education, goods and services).
- C.4.17 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- C.4.18 There is good scientific consensus concerning the links between housing and health and well-being. There are uncertainties regarding the future housing market and the housing preferences of the construction workers. This assessment is, therefore, assigned a medium degree of certainty.

C.5 Transport

Road safety during construction

Assessment of effects

- C.5.1 The proposed new bypasses on the A5025 around the settlements of Valley, Llanfachraeth and Llanrhuuddlad (at Cefn Coch) (Off-line Highway Improvements) would improve road safety within these communities by reducing the volume of traffic passing through. This is a long-term benefit of the Project that is discussed in volume G. Outside these communities, increased numbers of vehicles on the A5025 due to the Project could generally increase accident risk. Although speed limits would not change, the improvements to the A5025 may also allow motorised traffic to potentially travel at a higher average speed. These factors may render the A5025 (outside bypassed communities) less attractive to non-motorised traffic. A road safety audit report (DCO TA Appendix K - Road Safety Audits) (Application Reference Number: 6.3.25) forms part of the Project's application for development consent. Where new junctions or highway changes are proposed, the potential effects on road safety and accidents have been assessed using Road Safety Audits. These audits apply a standard approach to provide an independent assessment of safety issues at the stages of feasibility design, detailed design, construction and implementation.
- C.5.2 The potential for changes to participation in active travel linked to road safety has been considered in relation to the closure of Cemlyn Road (which currently runs on an east-west alignment through the Wylfa Newydd Development Area). The closure would divert the Copper Trail cycle route onto Nanner Road (a parallel minor road to the south). The IACC have undertaken highway improvements on Nanner Road to accommodate the additional traffic on this road, which is narrower than Cemlyn Road. The improvements include passing bays, changing junction priorities and new road layout signs. The implementation of the Nanner Road improvements by the IACC is taken as confirmation by the highway authority that they are satisfied the design is acceptable in safety terms for all user groups (the design being developed

cognisant of the expected closure of Cemlyn Road and diversion of the Copper Trail onto Nanner Road). In line with proportionate assessment, no further HIA scrutiny has been made of road safety on Nanner Road.

- C.5.3 Road safety health effects relate both to actual and perceived risk of incidents that may cause injury or deter active travel [RD48].
- C.5.4 The geographical population groups that may be affected are:
- the population near the local road network (site-specific); and
 - the population of Anglesey and north Wales (local and regional), including visitors to the area.
- C.5.5 The population subgroups with particular sensitivities (other than proximity) are:
- young people; and
 - older people.
- C.5.6 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

- C.5.7 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).
- C.5.8 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table C-2.

Table C-2 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include promoting road safety, car sharing and travel planning by the construction workforce.	To reduce the number of vehicles on the local road network and raise awareness on driving risks.	Implemented throughout the construction stage, for example using orientation training, notice boards, emails, toolbox talks, fliers and website updates.
Horizon would ensure safe pedestrian access is provided at Tregale to access the proposed new alignment of the Wales Coast Path and onward Public Right of Way to Cemaes.	To allow safe access from Tregale across the A5025 to the new alignment of the Wales Coast Path.	Design.

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would establish and chair a Health and Well-being Monitoring Group that would consider monitoring data relevant to the Project. A set of key topics and indicators would be agreed, but is expected to include accident hotspots.	To monitor routinely collected public health data (existing indicators), relevant to the Project, to identify any unforeseen accident hot spots.	When appropriate Horizon would facilitate bespoke analysis of routinely collected public health data (existing indicators), relevant to the Project. The information would inform discussion by the Health and Well-being Monitoring Group. If appropriate the Group would discuss the need for additional mitigation or follow-up investigation.

Residual effects

Magnitude

- C.5.9 The mitigation described in the preceding section is expected to reduce the potential magnitude of adverse road safety effects.
- C.5.10 The A5025 is in proximity to residential communities and the Environmental Statement chapter C2 (Application Reference Number: 6.3.2) on traffic and transport describes it as showing a dispersed but frequent accident history. The Environmental Statement predicts that the general increase in flows at the peak of construction could give rise to slight increases in accident risk for all road users on both the A55 and A5025. This is due to a growth in vehicles, associated with the construction at the Wylfa Newydd Development Area (e.g. buses and HGVs), and faster speeds at some locations due to highway improvements (accident risk and severity being partly a function of speed). The magnitude of the adverse effect is considered small.

Sensitivity

- C.5.11 The greatest effects are expected on the A5025 between Valley and Cemaes. The majority of people would have a low sensitivity due to only occasional use of the affected section of the road network and the ability to adapt to changes in traffic conditions.
- C.5.12 For some groups, there is the potential for higher levels of sensitivity. Vulnerability in this case is linked to increased risk of injuries from road traffic incidents due to speed and volume of traffic; mode of travel, e.g. pedestrians and cyclists; age (young people and older people); use of services accessed from the A5025 (e.g. children, parents and carers using the schools). For these population groups sensitivity is considered high.

Significance

- C.5.13 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of

people) near the A5025 highway and using the wider road network of Anglesey and north Wales.

- C.5.14 For sensitive groups sharing the road network used by the Project (e.g. older and younger people who regularly use the A55 and A5025), the residual effect could range up to minor adverse due to slightly increased road accident risk from more traffic and from faster vehicle speeds.
- C.5.15 The beneficial long-term effect of the A5025 becoming a safer route due to the highway improvements is discussed in volume G. The overall effect is expected to be one of improved road safety. This finding takes account of the road safety audit report (Application Reference Number: 6.3.25) for specific aspects of the Project (e.g. in relation to Associated Developments) and that there would be ongoing road safety audits undertaken during construction and implementation.
- C.5.16 The adverse score reflects the potential for the Project to have a direct effect on the severity or incidence of road accidents. The expected duration of adverse effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- C.5.17 This assessment is assigned a high degree of certainty, which reflects a good scientific consensus in this field and the good quality quantitative and qualitative data used in this analysis.
- C.5.18 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

Health trip journey times (e.g. to a hospital) during construction

Assessment of effects

- C.5.19 The construction traffic associated with the Project may affect journey times, including journeys to healthcare services both on the Isle of Anglesey and on the mainland. For example, the use of road ambulances to access A&E and other hospital-based services that are not available on the Isle of Anglesey could be affected by congestion on Britannia Bridge.
- C.5.20 The modelling undertaken as part of the Environmental Statement chapter C2 (Application Reference Number: 6.3.2) traffic and transport assessment suggests a minimal effect on journey times. The modelling and transport planning has specifically responded to the potential for delays associated with Menai crossings during busy times of day.
- C.5.21 The potential effect on routine or non-emergency access to medical and healthcare facilities is therefore expected to be limited, as construction traffic would be managed, workforce travel plans would be in place and the A5025 would be improved.
- C.5.22 The effect on emergency service response times is expected to follow a similar trend. The priority given by other traffic to blue-light journeys would limit (but not avoid) any increase in journey time (the baseline situation already being of below average ambulance response times in rural areas compared to Wales).

and of queuing traffic at some locations on the local road network during busy times of day).

- C.5.23 The potential health effect from increased journey time relates to time-critical receipt of health care. This is expected to be predominantly emergency trips, which would be blue-light journeys. Any increase in emergency response and journey times should be of concern for health. Any increase in traffic may also discourage people from seeking treatment or cause people to miss appointment times. This may also affect health outcomes (and NHS staff working hours).
- C.5.24 The geographical population group that may be affected is the population of Anglesey (local).
- C.5.25 The population subgroup with particular sensitivities (other than proximity) is people with existing poor health.
- C.5.26 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

- C.5.27 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3). For example, Horizon would comply with the Construction Traffic Management Strategy and the Traffic Incident Management Strategy in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6). This would reduce the potential for road congestion that could affect health trip journey times (e.g. to a hospital) during construction.
- C.5.28 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table C-3.

Table C-3 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would establish and chair a Health and Well-being Monitoring Group that would consider monitoring data relevant to the Project. A set of key topics and indicators would be agreed, but is expected to include access to community healthcare services.	To monitor routinely collected public health data (existing indicators), relevant to the Project, to identify any emergency or non-emergency delayed, missed or discouraged access to community healthcare services (particularly when traveling from Anglesey to services on the mainland).	When appropriate Horizon would facilitate bespoke analysis of routinely collected public health data (existing indicators), relevant to the Project. The information would inform discussion by the Health and Well-being Monitoring Group. If appropriate the Group would discuss the need for additional mitigation or follow-up investigation.

Residual effects

Magnitude

- C.5.29 The mitigation described in the preceding section is expected to reduce the potential magnitude of effects on health trip journey times.
- C.5.30 The comprehensive transport planning described in Environmental Statement chapter C2 (Application Reference Number: 6.3.2) means there are only likely to be slight increases in journey times due to the Project.
- C.5.31 As the majority of emergency, secondary and tertiary healthcare provision for Anglesey is located on the mainland at Bangor, the change in journey times to reach these facilities would affect most people on the Isle of Anglesey. However, the change in journey times is expected to be slight and would be limited to certain times of day and only for the peak years of construction. The magnitude of these infrequent effects is therefore expected to be small.

Sensitivity

- C.5.32 The majority of people on the Isle of Anglesey would not make health-related journeys (emergency or non-emergency) to the mainland at the limited times when the Project contributed to existing delays. Their sensitivity to changes in journey times is therefore considered to be low.
- C.5.33 For some groups, there is the potential for higher levels of sensitivity. This population includes people accessing health services (emergency or non-emergency) using the Menai crossings at times of slightly increased congestion. For this population, sensitivity is considered medium. Vulnerability in this case is particularly linked to people with long-term illnesses (and their carers) who may experience longer non-emergency journey times to hospitals (or other healthcare) on the mainland.
- C.5.34 As ambulance service response times for Anglesey are already above average (largely due to the rural context and distance to A&E services), these services (and the recipients of their care) are particularly sensitive to delays. Sensitivity is therefore scored as high. The health service planning implications of additional congestion, particularly for ambulance service response times are discussed in section C.6.

Significance

- C.5.35 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) on the Isle of Anglesey.
- C.5.36 For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse.
- For emergency journeys, this reflects the fact that blue light ambulance journeys are highly time sensitive, and whilst they are less likely to be affected due to the priority given to them by other traffic, any delay (particularly in arriving at an incident and providing initial treatment) should be of concern.

- For non-emergency journeys by vulnerable groups, this reflects that, whilst some people could miss appointment times or be deterred from travelling at certain times of day, people can be expected to adapt to the changes in traffic conditions. Effects on population health outcomes during the period of adaptation are likely to be limited.
- C.5.37 The scores reflect the potential for the Project to have a direct effect on emergency response times or non-emergency treatment outcomes associated with delays or non-attendance.
- C.5.38 The expected duration of effects would be short term (throughout the peak years of construction stage).
- C.5.39 This assessment is assigned a medium degree of certainty, which reflects the role of road traffic congestion levels unrelated to the Project.
- C.5.40 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

C.6 Demand for medical and healthcare services

NHS capacity during construction

Assessment of effects

- C.6.1 The healthcare needs of the construction workforce must be considered in the context of healthcare on the Isle of Anglesey. Horizon and the BCUHB will consider the ways in which healthcare would be provided to the construction workforce.
- C.6.2 There are legacy opportunities as well as challenges to ensuring that the increase in population does not lead to a reduction in the quality of services, including increased waiting times, impaired treatment and delayed referral.
- C.6.3 The turnover in the workforce (due to the assumed average contract length of 18 months) means that the number of individuals involved with the Project would be higher than the overall workforce size. This has implications in terms of initial assessments and new treatment plans, which in turn effects the required skill mix and number of health staff required. This issue is being taken into consideration as part of the healthcare service planning for the Project, which will conclude after the submission of this HIA Report.

Use of the NHS by the construction workforce

- C.6.4 BCUHB has provided a list of services that may be required by the workforce and their partners and dependants. These are shown in table C-4 and table C-5.

Table C-4 Range of health services that may be required by the workforce

Occupational health	Primary care and community services	Secondary care/ hospital care
Sickness absence	General dental services	Emergency department*
Health surveillance	General medical services	

Primary care and community services	Secondary care/hospital care
Health visitor* School nurse* Community midwifery* District nursing* Community therapy services* Child and adolescent mental health services (CAMHS)*	

* These services can only be provided by the NHS.

- C.6.5 As noted above, the services that make up occupational health and primary and secondary care are not agreed at this stage and would include services from table C-4. Providing care effectively and proportionately as the workforce changes is a matter for detailed planning.
- C.6.6 A forecast has been based upon the approach used in the HIA of Hinkley Point C [RD112], which is reported to be based upon data from the construction of the Olympic Park. It covers acute hospital care, community hospitals, GP services, prescribing, dental, community health and mental health care services. This states that 4.1% of the non-home-based workforce would be treated at the occupational health facility. In turn 5.9% of this cohort would be referred on to the NHS. This suggests that 0.24% of the non-home-based workforce would be referred to the NHS. Based on the Project's workforce profile, this would equate to the greatest demand created by the non-home-based workforce as being 17 patients per year during the peak years of the construction stage.
- C.6.7 This forecast represents the low end of the range. For the London 2012 Olympics and Paralympics, a world leading occupational health and preventative service was provided on the Olympic site. The Olympic and Paralympic site provided a walk-in facility and the speed and ease of the treatment this provided was described as being welcomed by the workers, up to 20% of whom were not registered with a GP [RD113]. In terms of usage, 67% of the construction workers recalled using the Olympic Health service, and 25% had used the walk-in treatment centre [RD113]. The relation is not clear between the percentage of workers that reported using the health services on the Olympic and Paralympic site and the forecast, from the HIA of Hinkley Point C [RD112] that 0.24% of the construction workforce are referred to the NHS. It may be that referrals to the NHS were low due to the availability and use of the Olympic Health service and the walk-in facility. The forecast of a peak referral of 17 patients per year should thus be approached with some caution. If the calculation is taken to be broadly accurate it would suggest that, if mitigated appropriately, the Project would not adversely affect health services. The calculation underlines the importance of:
- a comprehensive occupational health service that removes pressure from the local health economy;
 - ensuring a high level of uptake of on-site health services by all non-home-based workers, i.e. both those living in the Site Campus and those living across Anglesey; and

- establishing mechanisms to ensure that workers from the Project are anonymously identified if and when they use the NHS (having due regard to patient confidentiality and data sharing).

Pharmacy

C.6.8 Horizon would explore mechanisms with local pharmacies to ensure that workers seeking care have safe and prompt access to medicines. This could include a “deliver to Site Campus” solution for prescription medicines. The health care team is likely to include nurse prescribers. Dispensing of pharmaceuticals would be done safely so as to improve health outcomes for the workers. NHS prescriptions are free of charge for [RD114]:

- patients registered with a GP who is based in Wales; or
- patients who live in Wales but are registered with a GP based in England.

Ambulance

C.6.9 Discussions will be initiated with the WAS to ensure that the Project’s requirements are aligned with the expectations and capacity of the NHS ambulance service. Worker data would be monitored and service levels amended accordingly. The level of contribution would be proportionate to the number of workers and increase or decrease in response to demand. The demand expected throughout the construction period would be monitored and data shared with emergency service providers in order to establish likely demand levels.

C.6.10 Paramedic services would be provided in the Wylfa Newydd Development Area. There would be competent emergency response for the main site, providing initial trauma care and minor injury treatment ahead of ambulance or helicopter transfer to hospital. Exact levels of staffing would be confirmed, but there would be at least one qualified paramedic across typical site working hours and this may be increased at peak times.

C.6.11 One ambulance would be based in the Wylfa Newydd Development Area for dedicated use by the Project for emergency transfer on-site only. The ambulance would be located so as to ensure timely access to the whole of the construction site. It is anticipated that any transfer to hospital for emergency treatment would be by NHS emergency ambulance services.

Dentistry

C.6.12 Horizon does not propose specific arrangements for dental care. It is expected that the majority of UK-based workers would remain registered with their permanent dentist provider. It is expected that NHS services would be used for emergency dental services.

Health surveillance

C.6.13 Health surveillance would be conducted across the workforce. This would include employees who are identified as requiring regular health checks as well as workers who are, or may be, exposed to hazardous substances or activities that may cause them harm. This would enable Horizon to check for

early signs of work-related ill-health. Records would be maintained so as to enable statistical information to be supplied from the surveillance.

Use of the NHS by family and dependants of the non-home-based construction workforce

- C.6.14 Some workers would move to the area with family and dependants. These family and dependants would be expected to register with local NHS services. They would not have access to on-site healthcare.
- C.6.15 GP funding follows the population so Horizon would discuss any voluntary contributions to BCUHB for any lag in funding for incoming partners (at peak 285) and dependants (at peak 220) of workers as well as any non-home-based workers who register with a Welsh GP off-site (see table A-1). It is noted that there is not an automatic population adjustor for additional funding to BCUHB or Welsh Government.

Health services during operation

- C.6.16 This is not assessed, but operational staff, including outage staff, require an occupational health service commensurate with the occupational demands of a functioning nuclear generation site. The outage staff would require similar services to non-home-based construction workers.

Affected population

- C.6.17 For all effects within this section, the geographical population groups that may be affected are:
- the population near the Wylfa Newydd Development Area (site-specific effects linked to the Site Campus);
 - the population near or in Holyhead and near Parc Cybi (site-specific effects linked to the gravitating influence of Holyhead amenities); and
 - the population of Anglesey and north Wales (local and regional).
- C.6.18 The group with particular sensitivities (other than proximity) is people with existing poor health. There would be significant major adverse effects if no actions are taken to provide for the healthcare needs of the construction workforce.

Mitigation and enhancement

- C.6.19 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).
- C.6.20 Additional mitigation measures to address potential significant effects are summarised in table C-6.

Table C-6 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon is committed to making appropriate healthcare provision or contributions.	To meet the medical and healthcare needs of the construction workforce.	Achievement through a facility on-site at the Wylfa Newydd Development Area and an appropriate financial contribution to BCUHB.
Horizon is committed to providing appropriate Occupational Health and Hygiene services for the construction and operational workforce.	To promote the health of the workforce and local communities.	Achievement through a facility on-site at the Wylfa Newydd Development Area and agreement on protocols and systems with BCUHB and PHW where appropriate.
Horizon is committed to providing appropriate provision of emergency services for the construction workforce.	To meet the emergency service needs of the construction workforce without adversely affecting community services.	An appropriate financial contribution would be considered for the emergency services for the needs of the construction workforce.
Horizon would establish and chair a Health and Well-being Monitoring Group that would consider monitoring data relevant to the Project. A set of key topics and indicators would be agreed, but is expected to include access to community healthcare services.	To monitor routinely collected public health data (existing indicators), relevant to the Project, to determine if any changes in demand for community NHS services by patients not registered locally are of concern.	When appropriate Horizon would facilitate bespoke analysis of routinely collected public health data (existing indicators), relevant to the Project. The information would inform discussion by the Health and Well-being Monitoring Group. If appropriate the Group would discuss the need for additional mitigation or follow-up investigation.
Horizon would deliver a health and welfare programme, and ensure access is provided, to all of its workers. The central feature of Horizon's health and welfare programme would be the provision of an on-site Site Campus Medical Centre, see	To ensure that local community health and welfare services and resources used by local residents are not adversely affected by the Project.	Achievement through facilities for workers to treat minor injuries on the Power Station Site and primary care services at the Site Campus Medical Centre. The health and welfare programme will be further developed through the process set out in table C-7.

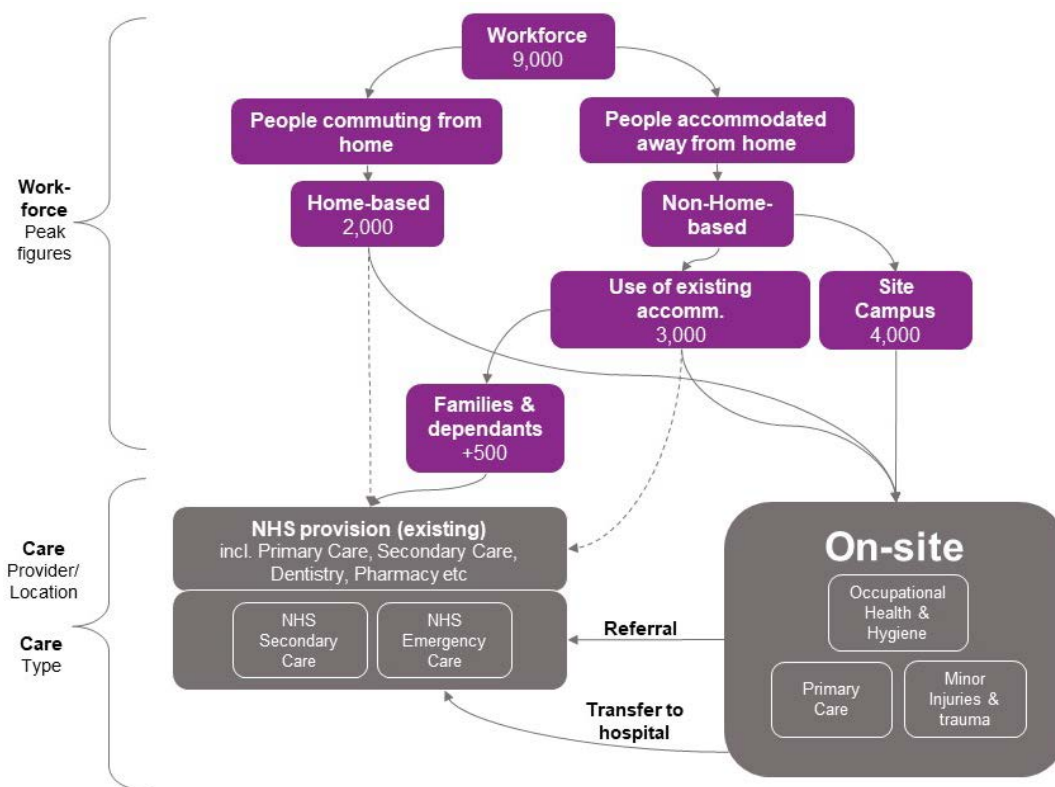
Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
further details below this table.		
Horizon would require construction workers to register with, and, prioritise the use of the on-site medical and healthcare services rather than using the community NHS services.	To reduce the potential for pressure on community NHS services by construction workers.	Achievement through compliance with the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6).

C.6.21 The assessment is also based on:

- the project design, see following discussion of on-site healthcare including the Site Campus Medical Centre; and
- the process for reaching agreement on healthcare shared between Horizon, the BCUHB, PHW, WAS. See following discussion relating to Table C-7.

CI.6.22 Figure C-1 provides an indicative example for assessment purposes of how on-site and off-site healthcare service provision for the construction workforce and their dependants could operate.

Figure C-1 Example of a health service planning strategic approach for the construction workforce



On-site healthcare including the Site Campus Medical Centre

- C.6.23 A facility within the security fence on the Power Station Site would treat minor injuries. This facility would also support first response to incidents and be a staging point for more serious incidents. Serious injuries would receive initial triage and trauma care through on-site paramedics / first responders prior to transfer by NHS ambulance (or their supporting air ambulance) service to hospital.
- C.6.24 There would also be a medical centre on the Site Campus (the Site Campus Medical Centre) which would be similar in concept to a GP surgery. This would be accessible to all construction workers (including sub-contractors), whether they live in the Site Campus, reside locally or travel to the Wylfa Newydd Development Area from the wider area. The Workforce Management Strategy (Application Reference Number: 8.5) directs all personnel (not just those residing on the Site Campus) to use the Site Campus Medical Centre in the first instance, before seeking to use community healthcare services. This is an integral component of Horizon's undertaking to minimise potential adverse impacts on local community health and welfare services and resources used by local residents.
- C.6.25 The Site Campus Medical Centre would include appropriately equipped space and facilities for.
- Primary Care services, including GP services, specialised clinics, out-of-hours care and pharmaceutical services.

- Occupational Health services, including medicals and screening of workers where required.
 - Administrative functions, including medical records and health surveillance systems.
 - Occupational Hygiene facilities and resources, which would then be deployed across the Wylfa Newydd Development Area.
- C.6.26 The Site Campus Medical Centre would be located in close proximity to the amenity block within the ground floor of the first accommodation block to be constructed at the Site Campus (ensuring services are in place before the non-home based workforce arrives). If required, temporary arrangements would be put in place for the small number of workers that would be present before the construction of the Site Campus (it is expected that the Site Campus would likely be operational some two years following grant of development consent). At the peak of construction, the Site Campus Medical Centre could, if required, encompass the entire ground floor of the accommodation block (circa 700m²). The size of the Site Campus Medical Centre, and the services provided therein, would be commensurate with the size and medical needs of the construction workforce.
- C.6.27 Horizon would provide suitable information during site induction for all workers describing how the site healthcare facilities and services would work and can be accessed. Signposting and ease of access to the Site Campus Medical Centre for all construction workers (including those not accommodated at the Site Campus) would be a key feature of the design and access routes (including some parking and shuttle bus services). An appointment booking link for the Site Campus Medical Centre would be provided on the Power Station Site within the site welfare facilities.
- C.6.28 The final design of the Site Campus Medical Centre will be prepared in consultation with the local healthcare authorities / representatives (through the process set out in table C-7) and would be operated by a suitable healthcare service provider. The development process will include defining the final list of services that would make up Site Campus Medical Centre occupational health and primary care (illustrative list included in table C-4).

Process for reaching agreement on healthcare

- C.6.29 The steps below are intended to capture the key actions to enable Horizon and BCUHB and WAST and PHW to discuss, and to reach agreement on, the provision of health services for the construction workforce. The steps are numbered 1 to 5. They were discussed at the meeting on 22/12/17 and have been updated in line with points made at that meeting.
- C.6.30 This will take place within the processes agreed between Horizon and BCUHB, between Horizon and WAST, and between Horizon and PHW for the respective Statements of Common Ground. Other organisations that form the wider health economy will be involved as appropriate.
- C.6.31 As a prelude to these steps Horizon chaired a meeting with BCUHB, WAST and PHW to consider principles underpinning, and scenarios for, the provision of health services for the Wylfa Newydd construction workforce to inform steps 1-5 below.

Table C-7 Process for reaching agreement on healthcare

Step	
1	Horizon will prepare, in consultation with BCUHB, WAST, PHW and the wider local health economy, a specification for health services (on- and off-site). This will include:
a	On-site – facility and services:
i	occupational health and hygiene;
ii	primary care;
iii	minor injuries;
b	Off-site – financial contribution:
i	emergency care;
ii	secondary care.
2	Horizon to issue tender documents for the provision of health services (on-site) and for integration with the local health economy based on the specifications in step 1;
3	Horizon to appoint a provider for health services (on-site) and for integration with the local health economy;
4	Horizon to negotiate s106 agreements for any necessary off-site provisions; and
5	Horizon to work with both the appointed provider and the relevant stakeholders to develop a strategy that scales to workforce numbers and includes:
a	implementation timeframes (including pre-workforce arrival);
b	a detailed on-site facility design;
c	a recruitment strategy for healthcare staff;
d	provision for on-site service delivery; and
e	defined responsibilities and protocols where NHS (and other parts of the local health economy) cross-over/hand-over/integrate with the services provided on-site.
Timeline	
Steps 1 to 4	Planned for prior to application for development consent determination.
Step 5	As soon as reasonably practicable following application for development consent determination.

C.6.32 Table C-7 includes indicative timeframes which would allow funding commitments from Horizon to be delivered with appropriate lead times for estate enhancement, training and recruitment of staff.

Residual effects

Magnitude

- C.6.33 By providing for the workforce health care needs, Horizon would ensure the magnitude of any adverse effect on the residential population would be small. Depending on how services for the construction workforce are delivered, the Project would support upskilling of health care staff to specialise in Project related areas of medicine, nursing and allied health professions and would therefore have long-lasting benefits. The detail of which services would be delivered will be agreed through the process in table C-7. The magnitude of potential beneficial effects has been scored as medium (see discussion of labour churn in section C.9 of this report).

Sensitivity

- C.6.34 The NHS provides essential care to people across Anglesey and north Wales, so the sensitivity of the general population to changes in access to NHS services has been scored as medium, while those who require regular health care are considered to have high sensitivity. GP services have been noted as being liable to additional use by the Project construction workforce and the health professionals who would take on additional workloads should also be considered to have high sensitivity.

Significance

- C.6.35 The residual significance of potential health and well-being effects is thus considered to be negligible for the general population across Anglesey and north Wales. People who require regular health care could experience minor to moderate adverse effects if some of the construction workforce opt to use community NHS services.
- C.6.36 Some moderate beneficial effects can be expected if the Project aligns with the NHS to build local capacity. This relates to the potential for the NHS to provide some of the services at on-site medical and healthcare services at the Wylfa Newydd Development Area (i.e. in-reach services).
- C.6.37 The scores reflect the potential for the Project to have a direct effect on the capacity of NHS healthcare services and, in turn, on physical and mental health.
- C.6.38 The expected duration of any adverse effects would be throughout the construction stage, i.e. medium term. Beneficial effects could be long term, i.e. extending beyond the construction stage.
- C.6.39 This assessment is assigned a low degree of certainty. Detailed models of care need to be agreed between Horizon, the BCUHB, PHW, WAS and other healthcare stakeholders and delivered within an appropriate timeframe.
- C.6.40 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

Communicable disease during construction

Assessment of effects

- C.6.41 The health service provider would collect data on the incidence of communicable disease among the workforce and through links with established reporting systems would enable the identification and management of changes in prevalence.

Population mixing

- C.6.42 The Committee on Medical Aspects of Radiation in the Environment (COMARE) note epidemiological evidence for the involvement of infections in the aetiology of childhood leukaemia [RD115]. COMARE states that the main hypotheses for the aetiology (or causes) of childhood leukaemia are consistent with rural population mixing being an important factor. COMARE characterise it as occurring when:

- there is an influx of a large number of people from urban areas into a rural area; and
- this influx is into a remote area with a population that has not previously experienced much contact with urban populations.

- C.6.43 Population movement through migration, commuting for work, visiting friends and family and for holidays is higher than when the studies were conducted. By ONS classification, Anglesey is considered remote rural yet the population on the Isle of Anglesey has regular surges in population through tourism and, to a more local extent, through the activities of the RAF base at Valley and the Existing Power Station. The population near the Wylfa Newydd Development Area would not be considered to have a greater susceptibility to illnesses than populations in other areas in the UK.

Sexual health

- C.6.44 The BCUHB provides sexual health clinics and screening services in hospital and community settings across north Wales. Sexual health data are routinely collected by PHW. Reports are produced quarterly and annually on observed trends of the rates of sexually transmitted infections and other infections diagnosed in integrated sexual health clinics in Wales [RD116].
- C.6.45 The demand that the construction workforce would place on sexual health clinics is hard to quantify. The on-site health promotion campaigns would provide consistent messages concerning sexual health. Workers would be able to access advice and treatment at the on-site facility, although they may prefer the anonymity of clinics outside the work setting. This issue links with discussion in section C.7.

Affected population

- C.6.46 The geographical population group that may be affected is the population of Anglesey and north Wales (local and regional). The population subgroups with particular sensitivities (other than proximity) are:
- young people;

- old people; and
- people with existing poor health.

C.6.47 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

C.6.48 The mitigation measures in table C-6 would ensure that healthcare services are provided appropriately and efficiently and that unmitigated demand on NHS community services by the construction workforce is avoided. No further additional mitigation is proposed.

Residual effects

Magnitude

C.6.49 The magnitude of any adverse effect on the residential population would be small.

C.6.50 The Site Campus as a concentration of people has the potential to facilitate transition of communicable infections (e.g. influenza and norovirus). However, the transmission risk is inherent to any congregation of people, be it related to work, social or accommodation. As the construction workforce would congregate on the Wylfa Newydd Development Area irrespective of accommodation arrangements, the Site Campus is not considered to pose any additional risk to local communities. If anything, the relatively isolated and self-contained nature of the Site Campus may limit transmission to or from communities. The Site Campus also offers the opportunity for early detection and health promotion. It is in Horizon's interests to avoid workforce illness. There will be communal spaces and facilities at the Site Campus and independent living spaces for each worker (see A.3.13). Protocols for workers who are not able to work due to short-term illness will be developed as part of the occupational health service.

Sensitivity

C.6.51 For the purposes of scoring the assessment, the general population has low sensitivity to most communicable diseases.

C.6.52 For some groups, there is the potential for higher levels of sensitivity. This population would include those more susceptible to contracting infection and those more susceptible to strong adverse reactions to infection. Vulnerability in this case is particularly linked to age (both young and older people) and people with existing poor health (e.g. with suppressed immune systems). For these populations, sensitivity is considered high.

Significance

C.6.53 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales.

C.6.54 For particularly sensitive groups within the affected population, the residual effect would be expected to range from negligible to minor adverse.

Comprehensive occupational surveillance systems make the probability of a communicable disease outbreak very low.

- C.6.55 The scores reflect the potential for the Project to have a direct effect on physical health and well-being. Indirect effects on economic determinants of health may also occur associated with sick leave and childcare.
- C.6.56 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit). However, any particular illness would be short or very short term.
- C.6.57 This assessment is assigned a low degree of certainty. Detailed models of care need to be agreed between Horizon, the BCUHB, PHW, WAS and other healthcare stakeholders and delivered within an appropriate timeframe.
- C.6.58 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

C.7 Lifestyle and behaviour

Healthy and safe communities during construction

Assessment of effects

- C.7.1 This section discusses construction workforce related lifestyle and behaviour, which although strongly associated with the Site Campus (as a geographical concentration of workers), also relates to the wider distribution of construction workers in accommodation across Anglesey and in parts of north Wales.
- C.7.2 The community survey looks at the following factor relevant to this potential health effect (see volume L.3 for more detailed topic discussion of the results, the data and methods for which is provided in volume Q).
- C.7.3 In the community survey, people were asked the extent to which they agreed or disagreed with the statement that the construction workers would behave well in the local area. The responses measured fear of anti-social behaviour. Most people (64%) agreed that the construction workers would behave well in the local area, while 4% disagreed. This question elicited some uncertainty, with approximately 25% of people holding a neutral opinion or being unsure. This indicates that, unless given cause to think otherwise, most people would not be fearful of anti-social behaviour from the workforce. This outlook is indicative of existing high levels of harmonious integration and social interaction in the local community. The ambivalence and uncertainty that was also expressed indicates that some people are suspending judgement until the workers arrive.
- C.7.4 People who engaged with the Horizon Community Involvement Officers reported concerns about mental health across various age ranges [RD64]. People discussed the potential effects of a construction workforce on smaller communities in terms of community safety, anti-social behaviour and inequality of access to public services.

Safeguarding

- C.7.5 The construction workforce would be predominantly male. The majority of the construction workforce would be diligent professionals who would be concerned with fulfilling their contract. There is, however, the potential for an increase in demand for sex work (direct and indirect) which, in turn, can be associated with exploitative behaviour, domestic abuse and substance misuse.
- C.7.6 There is, thus, the potential for increased challenges with respect to adult social services (potential demand for direct and indirect sex work; trafficking) and safeguarding children and adults considered to be 'at risk' and with care and support needs. In assessment terms, the potential for a significant effect is considered to be likely.
- C.7.7 The Project has safety as one of its guiding principles. The site would be a nuclear site, and all staff would be required to have Baseline Personnel Security Standard checks. This involves verification of identity; nationality and immigration status; employment history (past three years) and criminal record. A system would be run across the Project to enable and support employees with concerns to come forward.
- C.7.8 Consultees expressed concern that the construction workforce may provide a market for direct and indirect sex work, and described ongoing work to counter human trafficking on the Isle of Anglesey. Direct sex work refers to services, such as indoor and outdoor prostitution, as well as escort services. Indirect sex work refers to services such as lap dancing, stripping and virtual sex services (over the internet or phone) [RD117]. Women who are trafficked are often engaged in direct and indirect sex work; however, men, women and children can be victims of human trafficking, and the UK is a primary target for traffickers [RD118]. Horizon's Modern Slavery Act 2015 Transparency Statement [RD119] includes identifying areas of potential risk for modern slavery. To this end, Horizon is liaising with the following well-being partners on safeguarding:
- PHW;
 - WAS;
 - North Wales Police;
 - the IACC;
 - North Wales Fire Service;
 - Medrwn Môn; and
 - the Welsh Government.
- C.7.9 The presence of the workforce may increase demand for venues such as bars and betting shops. The provision of new venues would be a matter for the IACC Planning Department, while the licensing of existing venues is a matter for the IACC. Horizon is liaising with North Wales Police to ensure that levels of community safety remain high, and levels of crime remain low.

Substance abuse

- C.7.10 The construction workforce would be professional and hard-working and would be focused on delivering the work safely, to a high specification and on

schedule. It is expected that the workforce would be respectful to the local area and to its residents. Horizon seeks to provide a safe environment for its workers, and also to limit risky and anti-social behaviour.

- C.7.11 Horizon provides clear standards for the conduct of its workforce, these include a Code of behaviour/conduct; Employee Rules; Health and Safety; Drugs, Alcohol and Substance Misuse, etc. Drug and alcohol testing would be an integral part of the occupational health service. Horizon would require Contractors to put in place similar arrangements and enforce a commensurate standard of conduct across the workforce. Horizon would ultimately reserve the right to remove persons from the Project in the event of unacceptable conduct. Health promotion information would be available to the workforce, e.g. at facilities provided for the construction workforce (see the Workforce Management Strategy (Application Reference Number: 8.5)).
- C.7.12 The Site Campus would have self-contained leisure facilities, including a bar serving alcohol, which would reduce adverse effects on community facilities, on licensed venues and people living in the vicinity of these venues.
- C.7.13 Furthermore, the expected shift pattern would stagger leisure time across the week. This is expected to limit the potential for large congregations of off-shift construction workers in a single location at any one time. This would also spread the use of licensed venues over the week, and to reduce the likelihood of a surge during Friday or Saturday evenings.
- C.7.14 Holyhead is likely to be a main attraction for off-shift construction workers. As a larger settlement, it is able to accommodate and manage larger numbers of people.
- C.7.15 As noted above, Horizon is liaising with the North Wales Police to ensure that levels of community safety remain high and levels of crime remain low.

Tobacco

- C.7.16 In the spring and summer of 2015, Operation Fetch [RD120] found that 15% of all tobacco sold in Wales was illicit, nearly half of all smokers in Wales had been offered illicit tobacco and 70% of those using illicit tobacco felt perfectly comfortable doing so. Anglesey Trading Standards provides instructions on how to identify illicit tobacco and what to do if it is found [RD121]. As in previous sections, the presence of the workforce may create a real, or potential, increase in demand for illicit tobacco.
- C.7.17 Smoking cessation would form a part of the occupational hygiene programme for all workers. The construction site and the Site Campus would be smoke-free and designated smoking shelters would be allocated outside the buildings (e.g. within the Site Campus area). Horizon would warn its workforce against purchasing illegal products such as illicit tobacco.

Affected population

- C.7.18 The geographical population groups that may be affected are:
- the population near the Wylfa Newydd Development Area (site-specific effects linked to the Site Campus);

- the population near or in Holyhead and near Parc Cybi (site-specific effects linked to the gravitating influence of Holyhead amenities); and
- the population of Anglesey and north Wales (local and regional effects from use of existing accommodation, e.g. hotels and private rental market).

C.7.19 Young people are assumed to be particularly sensitive. The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

C.7.20 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).

C.7.21 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table C-8.

Table C-8 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include providing an interface with local communities on the management of any worker conduct issues.	To support adaptive management and collaborative working on issues such as the night-time economy, alcohol use, accommodation and community cohesion.	Implemented through outreach and information dissemination work by the Community Involvement Officer leading up to and throughout the construction stage.
Horizon would establish and chair a Health and Well-being Monitoring Group that would consider monitoring data relevant to the Project. A set of key topics and indicators would be agreed, but is expected to include community lifestyles and behaviour.	To monitor routinely collected public health data (existing indicators), relevant to the Project, to identify any changes in issues such as the night-time economy, alcohol use, demand for genitourinary medicine, accommodation and community cohesion that are of concern.	When appropriate Horizon would facilitate bespoke analysis of routinely collected public health data (existing indicators), relevant to the Project. The information would inform discussion by the Health and Well-being Monitoring Group. If appropriate the Group would discuss the need for additional mitigation or follow-up investigation.
Horizon would promote health and well-being, including occupational	To support sustained healthy behaviour and	Achievement through the preparation and implementation of a Code of

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
health and hygiene and good worker conduct.	good conduct by the construction workforce.	Conduct in accordance with the principles in the Workforce Management Strategy (Application Reference Number: 8.5). Reporting of compliance with the Code of Conduct would be undertaken on an annual basis to the Health and Well-being Monitoring Group.
Construction workers (including sub-contractors) would receive training on community relations, language, culture, health, safety and environmental issues.	To support sustained healthy behaviour and good conduct by the construction workforce.	Achievement through the Workforce Management Strategy (Application Reference Number: 8.5).
All personnel and contractors would be receive a copy of the Code of Conduct and would be required to comply with it.	To ensure construction workers are aware of the expectations on their conduct.	Achievement through the Workforce Management Strategy (Application Reference Number: 8.5). Horizon would require construction workers, as part of their orientation, to sign a copy of the code of conduct (acknowledging they have read and understood it).
Horizon would establish and chair a Health and Well-being Monitoring Group that would consider monitoring data relevant to the Project. A set of key topics and indicators would be agreed, but is expected to include safeguarding with regard to vulnerable adults and children.	To monitor routinely collected public health data (existing indicators), relevant to the Project, to identify any changes in issues related to safeguarding that are of concern.	When appropriate Horizon would facilitate bespoke analysis of routinely collected public health data (existing indicators), relevant to the Project. The information would inform discussion by the Health and Well-being Monitoring Group. If appropriate the Group would discuss the need for additional mitigation or follow-up investigation.
In accordance with the Hitachi Group Codes of Conduct and the Horizon	To prevent, to identify and to address any	This would be achieved through using Horizon's normal personnel screening

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Nuclear Power 'Modern Slavery Act 2015 Statement' and through the Workforce Management Strategy, Horizon would safeguard the welfare of its employees and its supply chain and, in relation to the activities of its construction workforce, the general public.	issues related to safeguarding.	and management systems to identify those that may pose a risk to vulnerable adults and children. In such cases where a potential risk is identified, further checks would be carried out.

Residual effects

Magnitude

- C.7.22 The mitigation described in the preceding section is expected to reduce the magnitude effects on lifestyle and behaviour that could affect the extent to which communities are healthy and safe. While this would not completely remove the potential for adverse effects to occur, the magnitude of the potentially adverse effect is considered to be small.

Sensitivity

- C.7.23 The majority of people would have a low sensitivity due to infrequent contact with the construction workforce.
- C.7.24 Sensitivity is considered high for groups who live in, or frequent, areas where off-shift workers may congregate. Sensitive populations also include groups that are poorly represented in outreach work due to high levels of social isolation, such as sex workers. The community survey results (see section N.3) suggests a number of factors that could contribute to increased sensitivity related to this issue:
- A lower proportion of people who were categorised as living near Cemaes or as residing in households with children were likely to agree that the construction workers would behave well in the local area.
- C.7.25 Communities close to the Site Campus (such as Tregele and Cemaes) may therefore be particularly sensitive.

Significance

- C.7.26 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales (including near the Wylfa Newydd Development Area).
- C.7.27 For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. This reflects the relatively isolated and self-contained nature of the Site Campus, and the active ongoing promotion of

healthy lifestyles and respect for local people and the local area amongst the construction workforce. These factors are expected to greatly reduce the potential for any adverse influence on local communities.

- C.7.28 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of community physical health (e.g. smoking, excessive alcohol consumption or sexually transmitted infections) and mental health conditions (e.g. stress, anxiety or depression).
- C.7.29 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- C.7.30 This assessment is assigned a medium degree of certainty, which reflects the complex nature of behaviour change.
- C.7.31 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

C.8 Community identity, social networks and culture

Effects on social networks and culture during construction

Assessment of effects

- C.8.1 This section discusses construction workforce influences on social networks and culture, which although strongly associated with the Site Campus (as a geographical concentration of workers), also relates to the wider distribution of construction workers in accommodation across Anglesey and in parts of north Wales.
- C.8.2 Throughout the construction stage, the community identity, the social networks and culture of the communities across Anglesey and north Wales would be expected to adapt as they host the Project workforce.
- C.8.3 The community survey relevant to this potential health effect (see volume L.3 for more detailed topic discussion of the results, the data and methods for which is provided in volume Q).
- Most people (85%) agreed that they identify with their community. This supports the notion that communities on the Isle of Anglesey are well-established and would be resilient to changes from external factors. Age and Welsh language-speaking status are statistically associated with the extent to which people on the Isle of Anglesey identify with their community.
 - A majority of people (95%) agreed that they have friends, neighbours or family who they often see on the Isle of Anglesey. The survey results indicate the presence of strong social networks on the Isle of Anglesey, which in turn indicates resilience within communities, particularly for vulnerable members of society.
 - Most people (78%) agreed that the Welsh way of life is important to them. The result confirms the importance of the Welsh culture on the Isle of Anglesey.

- The majority of people (92%) agreed that the place where they live means a lot to them. Subjective factors are important in people's reaction to change (i.e. responses are not based solely on objective evidence). This suggests that change may be challenging even though communities are resilient.
 - Most people (81%) think that people on the Isle of Anglesey get along well with each other. This suggests that any incoming workforce would encounter high levels of community cohesion and tight existing networks.
 - A majority (69%) agreed that local people would get along with the construction workers. A lower proportion of people aged 35-54 agreed that local people would get along well with the construction workers, than people in older and younger age groups. Households with children were also less likely than households without children to agree that the local people would get along well with the construction workers. Protecting and enhancing community cohesion is a key area of interest for the Project, and this suggests that communities on the Isle of Anglesey would generally be resilient to changes in community cohesion. People also expressed ambivalence and uncertainty which indicates potential anxiety. Unemployed people are less likely to agree that local people would get along with the construction workers than people from other working status groups. This may reflect concern over competition for jobs between local and non-local people. It also suggests there would be benefits for integration in getting local people into work.
 - The majority of people agreed (78%) that it would help the construction workers to fit in if they understand the local way of life. This underlines the importance of raising awareness about the Welsh way of life in order to assist workers to integrate.
- C.8.4 The relatively isolated and self-contained nature of the Site Campus at the Wylfa Newydd Development Area would reduce influence on local social networks and culture from this part of the workforce. Potential issues relating to the off-shift conduct of the construction workforce are discussed in relation to lifestyle and behaviour effects (see section C.7).
- C.8.5 In rural communities, where existing housing stock would be used for non-home-based construction workers, the effect on community identity, social networks and culture would be expected to be reduced by the fact that construction workers would be dispersed across different areas. These areas are not expected to attract off-shift workers.

Affected population

- C.8.6 The geographical population groups that may be affected are:
- the population near the Wylfa Newydd Development Area (site-specific effects linked to the Site Campus);
 - the population near or in Holyhead and near Parc Cybi (site-specific effects linked to the gravitating influence of Holyhead amenities); and

- the population of Anglesey and north Wales (local and regional effects from use of existing accommodation, e.g. hotels and private rental market).
- C.8.7 The population subgroups with particular sensitivities (other than proximity) are:
- young people; and
 - older people.
- C.8.8 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

- C.8.9 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3). Relevant mitigation relating to community integration also forms part of the Welsh Language and Culture Mitigation and Enhancement Strategy in the WLIA (Application Reference Number: 8.21).
- C.8.10 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table C-9.

Table C-9 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include the facilitation and implementation of mitigation measures, including cultural initiatives, which support health and well-being in the local community.	To reduce the potential for changes in social networks and culture during construction that may affect community cohesion and well-being.	Implemented through outreach and information dissemination work by the Community Involvement Officer throughout the construction stage, including the potential for joint projects between communities and the construction workforce.

Residual effects

- C.8.11 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.
- C.8.12 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

- C.8.13 The mitigation described in the preceding section is expected to reduce the potential magnitude of effects on social networks and culture.
- C.8.14 The use of different housing stocks across Anglesey (and parts of north Wales) and the reasonably isolated location of the Site Campus mean that the potential social and cultural effects on communities are dispersed and thus reduced. The magnitude of effect is therefore considered to be small.

Sensitivity

- C.8.15 The majority of people hosting the construction workforce would have a low sensitivity due to the limited degree to which community resources (e.g. village halls) are likely to be shared with the Project (at the Site Campus, the majority of day-to-day goods and services would be provided by on-site facilities).
- C.8.16 For some groups, there is the potential for higher levels of sensitivity. This includes higher amenity sharing where existing housing stocks are used or close to locations where off-shift populations may gravitate, e.g. to commercial areas of Holyhead. It also includes public spaces or some leisure groups close to the Site Campus (e.g. where a specific interest based activity is not provided separately for the workforce). For these populations, sensitivity is considered high. Vulnerability in this case is particularly linked to intergenerational social interactions between younger and older people where traditions and cultural knowledge are passed on. The WLIA (Application Reference Number: 8.21) notes that even a small influx of non-Welsh speakers may cause social groups to use English rather than Welsh, which could affect young people's attitudes towards the Welsh language and culture. The community survey results (see section N.3) suggests a number of factors that could contribute to increased sensitivity related to this issue:
- Fewer people were likely to identify with their community if they were categorised as being in lower skilled or more junior profession categories.
 - Fewer people were likely to agree that local people would get on well with the construction workers if they were categorised as being unemployed, from households with children or being in the age band of 35-54.

Significance

- C.8.17 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales (including near the Wylfa Newydd Development Area). For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse. This reflects the relatively isolated and self-contained nature of the Site Campus, and the active ongoing promotion of social networks and culture both near the Site Campus and more broadly through the work of Community Involvement Officers. These factors are expected to greatly reduce the potential for any adverse influence on local communities.
- C.8.18 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of mental health conditions (e.g. stress, anxiety or

depression) due to underlying social determinants influencing community cohesion.

- C.8.19 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit). This assessment is assigned a medium degree of certainty, which reflects the subjective nature of attitudes to new people joining a community.
- C.8.20 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

C.9 Employment, income and economic development

Supporting local people to access jobs during construction

Assessment of effects

- C.9.1 The local health opportunity lies in maximising use of workers and businesses from north Wales. Local capacity is limited and fragmented. The Project requires large-scale, high-quality services at a competitive cost.
- C.9.2 Support from Horizon to develop the scale of the local supply chain would help north Wales benefit from other large projects in the future. This would be a legacy benefit.
- C.9.3 Factors of importance in relation to employment opportunities are the total number of jobs, the gender balance and the numbers at particular levels or pay grades [RD122]; [RD123]. Construction industry employment has a high percentage of male employees. Modern plant and machinery would reduce such gender bias. There would be potential inequalities if the locally available employment opportunities were disproportionately lower paid roles, have greater occupational risks or less career development potential. Education and training opportunities are discussed separately in section C.10.
- C.9.4 One of the challenges with regard to employing home-based workers during the construction stage at the Wylfa Newydd Development Area is the limited number of people with the necessary technical skillsets in the local workforce. Local people lacking the necessary technical skillsets would be in direct competition with a skilled but non-local workforce because the Project requires a workforce with the appropriate skills and expertise to maintain the quality of build in the timescales required at a competitive cost.
- C.9.5 In terms of material, plant and machinery supplied to the Project, the challenge for local businesses is the capacity to meet these requirements at a scale and within a timeframe and cost that is commercially competitive with sourcing from further afield. If a large commercially viable employment pool and supply chain existed locally, Horizon would be willing to make use of it.
- C.9.6 The size of the construction workforce means that opportunities in sectors other than construction are also likely to exist, for example in facilities management and in hospitality and catering.
- C.9.7 As well as the benefits to the local economy, a larger home-based workforce component would also reduce transport and housing-associated effects with

net beneficial effects for north Wales. There is an opportunity for people and businesses of north Wales to proactively engage with each other to develop local skills and supply chain options. Whilst this is unlikely to remove the requirement for external specialist workforce elements, the share of the construction spend that would be realised locally would be greatly increased.

- C.9.8 Outsourcing employment and supplier opportunities beyond north Wales would still bring health benefits, but these may be an order of magnitude less for local communities. A collectively presented upskilled local workforce and supply chain would be expected to be in a position to realise greater local benefits from the construction stage of the Project.
- C.9.9 The geographical population group that may be affected is the population of Anglesey and north Wales (local and regional).
- C.9.10 The population subgroups with particular sensitivities (other than proximity) are:
- young people; and
 - people living in deprivation, including those on low incomes.
- C.9.11 The unenhanced beneficial effect has the potential to be minor beneficial.

Mitigation and enhancement

- C.9.12 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).
- C.9.13 Additional HIA mitigation and enhancement measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation and enhancement measures are summarised in table C-10.

Table C-10 Proposed additional mitigation and enhancement measures

Proposed additional mitigation and enhancement measures	Objective	Achievement criteria and reporting requirements
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include promoting local employment opportunities during construction.	To increase the proportion of local workers (home-based) and businesses (supply chain) contracted by the Project during construction.	Implemented through outreach and information dissemination work by the Community Involvement Officer leading up to and throughout the construction stage.

Residual effects

Magnitude

- C.9.14 The support by Horizon described in the preceding section is expected to increase the potential magnitude of local access to construction jobs and procurement.
- C.9.15 The potential magnitude of effect is considered medium, as the high-quality employment potentially available due to the Project could result in those who gain employment, and their families and dependants, receiving a marked improvement in quality of life and a marked reduction in some risk factors associated with poor health and well-being (e.g. fewer people being unemployed).

Sensitivity

- C.9.16 The majority of people would have a low sensitivity due to already being within stable employment that would be unaffected by the Project (or being a dependant of such a person).
- C.9.17 For some groups, there is the potential for higher levels of sensitivity. The health of vulnerable groups is particularly sensitive to employment. Vulnerability in this case relates to people and their dependants who are on a low incomes or who are unemployed.
- C.9.18 People with the technical skills to benefit from direct employment, but who may experience barriers to employment due to being unable to present to the procurement process as part of an offer with sufficient scale or capacity to meet the Project's needs, would also have higher sensitivity.
- C.9.19 For these populations, sensitivity is considered high.

Significance

- C.9.20 With support to the businesses of north Wales to proactively present collective offers as communities of providers, there would be the potential for important beneficial effects on health through greatly expanded direct employment during construction.
- C.9.21 Assuming that local employment and supply chains respond to this opportunity, the residual significance of potential health and well-being effects is considered to be minor beneficial for the general population (the majority of people) of Anglesey and north Wales.
- C.9.22 For particularly sensitive groups within the affected population, the residual effect could range up to major beneficial.
- C.9.23 The scores reflect the potential for the Project to have an indirect effect on the severity or incidence of physical health (e.g. cardiovascular conditions) and mental health conditions (e.g. stress, anxiety or depression) due to underlying social determinants, such as improved socio-economic position, greater job security and facilitating beneficial lifestyle choices (e.g. healthier eating and recreational physical activity, including for dependants). There is also the potential to improve beneficial aspects of well-being through the same underlying social determinants.

- C.9.24 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- C.9.25 This assessment is assigned a medium degree of certainty, which reflects a dependence on the degree to which employment and supply chains on the Isle of Anglesey and in north Wales are able to respond to the opportunity.
- C.9.26 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

Labour churn (the movement of workers between roles) during construction

Assessment of effects

- C.9.27 The Project may offer pay or working-hours that existing employers are not able to match. Some services may be particularly important for health (e.g. quality of health and social care community services may decline if it is harder to retain or recruit staff, including Welsh speakers).
- C.9.28 The movement of the region's existing workers to positions offered by the Project may result in the need to back fill some roles (i.e. labour churn). This is a potential adverse effect that can follow from maximising local employment opportunities from the Project, which is otherwise considered to be beneficial. There would be potential for effects to a wide range of occupations and levels of seniority across north Wales.
- C.9.29 The Project will run an Employment and Skills Service to ensure that information about skills and vacancies are matched (Environmental Statement chapter C.1 (Application Reference Number: 6.3.1) and the Jobs and Skills Strategy (Application Reference Number: 8.3)). This service will be available to all employers on the island. At peak the 902 staff would be required to support the construction workers (see Environmental Statement appendix C1-2 table 2.8 (Application Reference Number: 6.3.9). This breaks down as:
- 511 on-site security, site services and clerical staff; and
 - 392 off-site security, site services and clerical staff.
- C.9.30 Project employment opportunities may offer advantages to individuals in terms of level of income and/or hours of work that could not be matched by social care providers (or other employers) without affecting service quality or availability. Public sector service providers have noted that there is currently a shortage of relatively low-paid care workers and supporting roles (e.g. care home catering) in the social care sector. It was noted that it is a challenge to employ people to these roles even before the need to provide care in Welsh is factored in. For example, one carer typically provides care for up to eight people who receive domiciliary care or up to 15 people who are in a residential or nursing home.
- C.9.31 The effects of labour churn can be both beneficial and adverse, depending on the type of job change and the investment made in the employee. For example, local vacancies could be filled by people currently out of work, thus resulting in a net beneficial effect. Enterprises and employment shifts

continually as changes in markets and technologies open up new opportunities and shrink others.

- C.9.32 Employers who, compared to other locally available jobs, offer low wages or unsociable/uncertain hours may lose employees to the Project and find it harder to recruit. Market pressures created by the Project (directly or indirectly) for medium to long-term improvement in the quality of these jobs may represent an overall beneficial influence. This is not to hold employers on the Isle of Anglesey or in north Wales to the standards of equivalent jobs elsewhere in the UK. Rather, it acknowledges that the Project may generate positive market pressure locally to raise the standard amongst employers who currently offer uncompetitive remuneration or working conditions (by local standards) due to a lack of alternative employment opportunities in the labour market.
- C.9.33 Given high levels of awareness of the Project on the Isle of Anglesey and the lead-in time available before labour churn could generate adverse effects, it is likely that, for the majority of organisations, normal human resource and service planning would respond to ensure key roles were retained (e.g. through incentives, early recruitment or increased training of junior staff). Reductions in service quality and availability are therefore expected to be limited.
- C.9.34 The geographical population group that may be affected is the population of Anglesey and north Wales (local and regional).
- C.9.35 The population subgroups with particular sensitivities (other than proximity) are:
- older people (due to reliance on potentially affected services);
 - people with existing poor health (physical and mental health); and
 - people living in deprivation, including those on low incomes.
- C.9.36 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

- C.9.37 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).
- C.9.38 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table C-11.

Table C-11 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would support IACC and BCUHB in the development of their own Workforce Strategies.	To mitigate the potential for labour churn within the health and social care sector due to the Project's requirements for a facilities management and on-site healthcare workforce.	Achievement through sharing of workforce information, assisting in carrying out any required monitoring, and the provision of an appropriate financial contribution and/or support to the IACC and BCUHB for officer time within those organisations.

Residual effects

Magnitude

- C.9.39 The mitigation described in the preceding section is expected to reduce the potential magnitude of labour churn effects. However, the local health economy may still be affected in a limited way by any peaks in labour churn that could be associated with lags between roles being vacated and new staff being recruited or receiving additional training.
- C.9.40 The potential magnitude of effect is considered small, reflecting that, although appropriately mitigated, short-term vacancies in local health and social care community services may affect the quality of community services for people, with implications for quality of life or even risk factors for health and well-being outcomes.

Sensitivity

- C.9.41 The majority of people across Anglesey and north Wales would have a low sensitivity due to infrequent reliance on community services that affected by short-term reductions in quality due to staff displacement.
- C.9.42 For some groups, there is the potential for higher levels of sensitivity. Vulnerability in this case relates to people and their dependants who are reliant on services affected by labour churn, for example the reliance of older people or people with low incomes on health and social care community services (e.g. from fewer care home staff). Vulnerability may also extend to staff who become overworked. Even where there is no overall shortfall in numbers of staff, a shortage of Welsh-speaking staff would affect levels of care. For these populations, the sensitivity is considered high.

Significance

- C.9.43 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales.
- C.9.44 For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse.

- C.9.45 The scores reflect the potential for the Project to have an indirect effect on health and well-being through the quality of community services. For example, the quality of social care services, which include care homes, day centres, meals and home care, therapies, life coaching, personal assistants, emotional support, classes or courses, and carer respite.
- C.9.46 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- C.9.47 This assessment is assigned a medium degree of certainty, which takes account of the timeframe for partners to develop the workforce strategy.
- C.9.48 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

Workers spending locally (indirectly benefiting the local economy) during construction

Assessment of effects

- C.9.49 Procurement of goods and services by the Project and by the construction workforce would give rise to indirect economic benefits in the local and regional economy. For example, strengthening the economy in Holyhead (which has high levels of deprivation) would support local business growth and the economic prosperity for the working population and their dependants that this generates. The health and well-being benefit would be associated with supporting greater spend on health-promoting goods and services such as heating or healthy food. Such indirect spend would contribute to reducing levels of deprivation.
- C.9.50 Inherent to any economic benefit due to the construction stage of the Project is the decline in such benefit as the Project transitions into the operational stage. As there is a gradual progression through the Project's stages (see section A.3 showing the 'bell-shaped' curve of the construction worker numbers), a marked boom and bust effect is not expected. As the level of indirect economic spend is predictably linked to the Project's build programme, local businesses are in a position to take advantage of the opportunity and to plan for its finite nature.
- C.9.51 A noted tension is between increasing the indirect economic benefit to local communities from construction workers spending locally, but also reducing the potential for adverse social effects associated with the off-shift construction workforce (as discussed in C.7). The Site Campus, where the greatest concentrations of construction workers would be accommodated, would include on-site facilities catering for most day-to-day needs. The potential for indirect economic spend in local communities from this part of the workforce is therefore limited. For workers using existing accommodation (e.g. hotels and the private rental market), the indirect economic benefits close to such accommodation are greater. Mirroring the distribution of such accommodation, this effect would be dispersed across Anglesey and parts of north Wales.
- C.9.52 The geographical population groups that may be affected are:

- the population near or in Holyhead and near Parc Cybi (site-specific effects linked to the gravitating influence of Holyhead amenities); and
 - the population of Anglesey and north Wales (local and regional).
- C.9.53 The population subgroup with particular sensitivities (other than proximity) is people living in deprivation, including those on low incomes.
- C.9.54 The unenhanced beneficial effect has the potential to be minor beneficial.

Mitigation and enhancement

- C.9.55 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).
- C.9.56 No additional HIA mitigation or enhancement measures are proposed.

Residual effects

- C.9.57 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.
- C.9.58 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

- C.9.59 The enhancements described in the preceding section are expected to increase the potential magnitude of economic benefits from workers spending locally.
- C.9.60 The magnitude of change due to economic spending by the construction workforce within communities across Anglesey and parts of north Wales is expected to be small. This reflects that, whilst many people may be affected (e.g. in community services, retail and hospitality), even with enhancement measures only a slight change in community quality of life is likely as a result of the modest contribution to the local economy.

Sensitivity

- C.9.61 The majority of people would have a low sensitivity due to not being economically linked to community services and facilities that may benefit from indirect economic spend by the construction workforce (or being a dependant of such a person). The general population is also expected to have a low sensitivity to the wider indirect benefits of a prosperous local economy (e.g. more vibrant highstreets with fewer vacant shops and thus greater local authority business revenues for local services).
- C.9.62 For some groups, there is the potential for higher levels of sensitivity. Vulnerability in this case relates to people and their dependants with higher levels of deprivation, particularly those on low incomes, who are owners or employees of community services or facilities that are likely to be used by construction workers. Better income or job security for these groups could be

beneficial for health and well-being. For these groups, sensitivity is considered high.

Significance

- C.9.63 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales.
- C.9.64 For particularly sensitive groups within the affected population, the residual effect could range up to minor beneficial.
- C.9.65 The scores reflect the potential for the Project to have an indirect effect on the severity or incidence of physical health (e.g. cardiovascular conditions) and mental health conditions (e.g. stress, anxiety or depression) due to underlying social determinants, such as improved socio-economic position, greater job security and facilitating beneficial lifestyle choices (e.g. healthier eating and recreational physical activity, including for dependants). There is also the potential to improve beneficial aspects of well-being through the same underlying social determinants.
- C.9.66 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- C.9.67 This assessment is assigned a medium degree of certainty, which reflects uncertainty in the spending patterns of construction workers and the dependence on local supply chains to respond to the opportunity of procurement contracts with the Site Campus.
- C.9.68 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

Supporting local people to access jobs during operation

Assessment of effects

- C.9.69 Overall employment associated with the operation of the Power Station is considered to have the potential for long-term health benefits through high-quality employment opportunities for existing residents.
- C.9.70 The expected 60-year operation of the Power Station would provide long-term benefits from the 850 permanent jobs expected to be created. These are expected to be high quality with good career progression and pay. The local health opportunity is from maximising employment of existing residents. This means preparing and supporting young people to compete successfully for these roles.
- C.9.71 The geographical population group that may be affected is the population of Anglesey and north Wales (local and regional).
- C.9.72 The population subgroups with particular sensitivities (other than proximity) are:
- young people; and
 - people living in deprivation, including those on low incomes.

C.9.73 The unenhanced beneficial effect has the potential to be minor beneficial.

Mitigation and enhancement

C.9.74 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).

C.9.75 Additional HIA mitigation and enhancement measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation and enhancement measures are summarised in table C-12.

Table C-12 Proposed additional mitigation and enhancement measures

Proposed additional mitigation and enhancement measures	Objective	Achievement criteria and reporting requirements
Horizon would establish and chair a Health and Well-being Monitoring Group that would consider monitoring data relevant to the Project. A set of key topics and indicators would be agreed, but is expected to include recruitment rates from local communities.	To monitor routinely collected public health data (existing indicators), relevant to the Project, to determine if there is any significant decline in local operational recruitment.	When appropriate Horizon would facilitate bespoke analysis of routinely collected public health data (existing indicators), relevant to the Project. The information would inform discussion by the Health and Well-being Monitoring Group. If appropriate the Group would discuss the need for additional mitigation or follow-up investigation.
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include promoting local employment opportunities during operation,	To increase the proportion of local workers (home-based) and businesses (supply chain) contracted by the Project during operation.	Implemented through outreach and information dissemination work by the Community Involvement Officer leading up to and throughout the operational stage.

Residual effects

C.9.76 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.

C.9.77 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

- C.9.78 The enhancements described in the preceding section are expected to increase the potential magnitude of local access to operational jobs. As the operational period spans several generations, the permanent jobs created by the Project could contribute to young people remaining and thriving on the island. This would be a legacy benefit of the Project.
- C.9.79 The potential magnitude of effect is considered large, as the number of good-quality jobs available due to the Power Station would be a key determinant of health that could raise many people from poverty and have a marked improvement on healthy decision-making behaviours (affecting risk factors for health and well-being, as well as quality of life). Benefits would be expected for both those employed and their dependants.

Sensitivity

- C.9.80 The majority of people would have a low sensitivity due to already being within stable employment that would be unaffected by the Power Station (or being a dependant of such a person).
- C.9.81 For some groups, there is the potential for higher levels of sensitivity. This population would include young people (including their future dependants) and people who are unemployed or underemployed (including their dependants). Vulnerability in this case refers to young people choosing their careers, people on low incomes or who are unemployed, people unable to progress their careers due to a local shortage of senior positions (i.e. being currently overqualified for their jobs) and future young or older people who may rely on those employed by the Project. For these populations, sensitivity is considered high.

Significance

- C.9.82 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) on the Isle of Anglesey and in north Wales.
- C.9.83 For particularly sensitive groups within the affected population, the residual effect could range up to major beneficial for those able to successfully compete for the permanent operational jobs.
- C.9.84 The scores reflect the potential for the Project to have an indirect effect on the severity or incidence of physical health (e.g. cardiovascular conditions) and mental health conditions (e.g. stress, anxiety or depression) due to underlying social determinants, such as improved socio-economic position, greater job security and facilitating beneficial lifestyle choices (e.g. healthier eating and participating in recreational physical activity, including for dependants). There is also the potential to improve beneficial aspects of well-being through the same underlying social determinants.
- C.9.85 The expected duration of effects would be long term (throughout the 60-year operating stage).
- C.9.86 This assessment is assigned a medium degree of certainty which reflects a dependence on the degree to which people on the Isle of Anglesey and in north

Wales (particularly the current generation of young people) are able to respond to the opportunity.

- C.9.87 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

C.10 Education and training

Upskilling local people for construction roles

Assessment of effects

- C.10.1 The Project is part of a trend of increasing demand for technical skills linked to the Isle of Anglesey Energy Programme. Local health opportunities would come through more people having skilled construction qualifications and experience. Upskilling local people in elementary occupations would be particularly beneficial.
- C.10.2 In addition to the benefits from upskilling to obtain construction jobs, on-the-job training and the experience gained through the build would allow many to fast track their careers. Horizon support to upskill the local workforce would help north Wales benefit from other large projects in the future. This would provide a legacy benefit.
- C.10.3 The opportunity for health and well-being lies in creating a greater overlap between the population skills profile with the skills requirements of the Project workforce and supply chain. Increasing the local pool of potential employees with qualifications and experience to meet the demand for skilled employment opportunities (e.g. skilled metal, electrical and electronic trades) offers greater potential for health and well-being benefits from employment than meeting demand for lower paid civils labour roles (e.g. construction and building trades). Targeting the upskilling to employees on the Isle of Anglesey classified as being in elementary occupations [RD124], particularly younger people, would be a key opportunity.
- C.10.4 Horizon estimates that a minimum of 5% of the workforce required for construction would be new entrants – apprentices, graduates and trainees – thereby increasing the opportunities available to school leavers and young people in the area.
- C.10.5 Through its Skills and Jobs Strategy, Horizon would support an upskilling process, but the onus is on education providers to provide appropriate courses and qualifications, and on the people of north Wales to develop the requisite skills and obtain the qualifications to capitalise on the opportunities.
- C.10.6 Changes in education and training due to the Project may improve general well-being, physical health (e.g. cardiovascular conditions) and mental health conditions (e.g. stress, anxiety or depression) due to better self-efficacy, skills mastery and career prospects.
- C.10.7 The geographical population group that may be affected is the population of Anglesey and north Wales (local and regional).
- C.10.8 The population subgroups with particular sensitivities (other than proximity) are:

- young people; and
- people living in deprivation, including those on low incomes.

C.10.9 The unenhanced benefit has the potential to be minor beneficial.

Mitigation and enhancement

C.10.10 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).

C.10.11 Additional HIA mitigation and enhancement measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation and enhancement measures are summarised in table C-13.

Table C-13 Proposed additional mitigation and enhancement measures

Proposed additional mitigation and enhancement measures	Objective	Achievement criteria and reporting requirements
Horizon would encourage education in, and recruitment into, professions that are relevant to the Project. This would have indirect benefits to public sector professions that would regulate the Project.	To encourage capacity in professions relevant to the Project (indirect benefit of improving capacity for roles that have monitoring functions for the Project, such as Environmental Health Officers at the IACC.	Achievement through the Jobs and Skills Strategy (Application Reference Number: 8.3) (including the promotion of science, technology, engineering and mathematics (STEM) subjects and related improvements to secondary school infrastructure) and the outreach and information dissemination work by the Community Involvement Officer leading up to and throughout the construction stage.
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include promoting local education, upskilling and training during construction.	To empower local people through information on career choices, apprenticeships and progression during construction.	Implemented through outreach and information dissemination work by the Community Involvement Officer leading up to and throughout the construction stage.

Residual effects

C.10.12 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.

C.10.13 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

C.10.14 The enhancements described in the preceding section are expected to increase the potential magnitude of construction education and training effects. The intensive and specialist workplace experience and training on offer would leave a legacy of local upskilling within construction-related industries.

C.10.15 The potential magnitude of effect is considered medium, as the educational support and career development that would be available due to the Project (including apprenticeships and on-the-job experience) would be a key determinant of future employment and prosperity. Health benefits linked to better pay and job security would be expected for local people able to take advantage. This could have a marked change in quality of life for many people.

Sensitivity

C.10.16 The majority of people would have a low sensitivity due to career interests that would be unaffected by the Project.

C.10.17 For some groups, there is the potential for higher levels of sensitivity. Vulnerability in this case is particularly linked to having a deprived background, low educational achievement, unemployment or working in elementary occupations. Young adults may especially benefit from career progression opportunities during the Project. For these populations, sensitivity is considered high.

Significance

C.10.18 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) of Anglesey and north Wales.

C.10.19 For particularly sensitive groups within the affected population, the residual effect could range up to moderate beneficial. This group would benefit from being able to develop and fast track their skills and qualifications through the construction at the Wylfa Newydd Development Area. The extent of benefit is considered moderate rather than major due to the more finite period of construction compared to operation.

C.10.20 The scores reflect the potential for the Project to have an indirect effect on the severity or incidence of physical health (e.g. cardiovascular conditions) and mental health conditions (e.g. stress, anxiety or depression) due to underlying social determinants, such as improved socio-economic position, better economic opportunities and fewer financial difficulties. There is also the potential to improve beneficial aspects of well-being through the same underlying social determinants.

C.10.21 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit); longer-term benefits from upskilling may also accrue.

C.10.22 This assessment is assigned a medium degree of certainty, which reflects a dependence on local people, particularly young people, to proactively engage with the educational and career development opportunities that Horizon is supporting.

C.10.23 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

Supporting local people with their career choices, apprenticeships and progression during operation

Assessment of effects

C.10.24 The health opportunity is in helping local people to get the skills and qualifications they need to compete for jobs in the Project. An awareness, particularly by young people through the Skills and Jobs Strategy, that these job opportunities would be available is expected to provide a focus for career-planning and educational choices into more highly skilled professions. A general increase in qualification levels would be expected to translate into generally higher earnings and consequent greater health and well-being benefits for those employed and their dependants. A strong population skills base would also be likely to attract other good-quality job providers to the area, consolidating the benefits for the local economy and population health beyond the lifetime of the Power Station.

C.10.25 The geographical population group that may be affected is the population of Anglesey and north Wales (local and regional).

C.10.26 The population subgroups with particular sensitivities (other than proximity) are:

- young people; and
- people living in deprivation, including those on low incomes.

C.10.27 The unenhanced beneficial effect has the potential to be minor beneficial.

Mitigation and enhancement

C.10.28 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).

C.10.29 Additional HIA mitigation and enhancement measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation and enhancement measures are summarised in table C-14.

Table C-14 Proposed additional mitigation and enhancement measures

Proposed additional mitigation and enhancement measures	Objective	Achievement criteria and reporting requirements
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include being an interface for support to local young people from disadvantaged backgrounds, particularly those with an interest in STEM subjects.	To improve the prospects for locally disadvantaged young people in the decades ahead by offering support in preparing for operational employment opportunities.	Implemented through outreach and information dissemination work by the Community Involvement Officer leading up to and throughout the operational stage.
Horizon would promote STEM subjects and related improvements to secondary school infrastructure.	To support strong education standards for young people on Anglesey so they are better able to compete for operational jobs.	Implemented through the Jobs and Skills Strategy (Application Reference Number: 8.3), and the outreach and information dissemination work by the Community Involvement Officer.
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include promoting local education, upskilling and training during operation.	To empower local people by providing operational job information (including experience and qualification prerequisites).	Implemented through outreach and information dissemination work by the Community Involvement Officer leading up to and throughout the operational stage.

Residual effects

C.10.30 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.

C.10.31 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

C.10.32 The enhancements described in the preceding section are expected to increase the potential magnitude of operational education and training effects. For example, apprenticeships (e.g. linked to Coleg Menai) and educational support by Horizon to existing residents would assist in gaining the necessary qualifications and experience to compete for the Project's operational jobs.

Such opportunities are an important pathway into highly skilled careers on the island.

- C.10.33 The potential magnitude of effect is considered medium, as the educational support and career development (including apprenticeships and on-the-job experience) would be a key determinant of future employment and prosperity. Effects would be expected for many people with marked benefits for quality of life.

Sensitivity

- C.10.34 The majority of people would have career interests that would be unaffected by the Power Station. However, regardless of whether people choose or are able to take up employment with the Project, Horizon's support to local education and training is expected to help local people get good-quality jobs. For the purposes of scoring the assessment, this group has medium sensitivity.
- C.10.35 For some groups, there is the potential for higher levels of sensitivity. This population would include young people, particularly those with barriers to achieving their educational potential (e.g. deprived background), and people with technical career interests for which local education and training support is limited. For this population, sensitivity is considered high.

Significance

- C.10.36 Consequently, the residual significance of potential health and well-being effects is considered to be minor beneficial for the general population (the majority of people), as general education and career support in schools and further education would be expected to provide benefits irrespective of a future employment relationship with the Project. This legacy benefit to the local economy would extend beyond the lifetime of the Project, helping to raise standards of living.
- C.10.37 For particularly sensitive groups taking advantage of the full education and training support that would be provided by Horizon, both in the run-up to competing for the permanent operational jobs and during further on-the-job career development, benefits to health and well-being may range up to moderate beneficial.
- C.10.38 The scores reflect the potential for the Project to have an indirect effect on the severity or incidence of physical health (e.g. cardiovascular conditions) and mental health conditions (e.g. stress, anxiety or depression) due to underlying social determinants, such as improved socio-economic position, better economic opportunities and fewer financial difficulties. There is also the potential to improve beneficial aspects of well-being through the same underlying social determinants.
- C.10.39 The expected duration of effects would be long term (throughout the 60-year operational stage).
- C.10.40 This assessment is assigned a medium degree of certainty which reflects a dependence on the degree to which people on the Isle of Anglesey and in north Wales (particularly the current generation of young people) are able to respond to the opportunity.

C.10.41 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

C.11 Public understanding of risk

The understanding of risk about, and expectations of, the Power Station during operation

Assessment of effects

- C.11.1 Research in the north-west of England suggests that public understanding of risk can be associated with low-grade illnesses (e.g. headaches or hypertension), and can be exacerbated when there is uncertainty [RD125]. The public understanding of risks associated with the Project can thus be linked to physical health, mental health and well-being.
- C.11.2 Public understanding of risk is formed on a wide spectrum of subjective judgments and beliefs. The consultation and engagement conducted for the Project is described in the DCO consultation report (Application Reference Number: 5.1), and, for the HIA, in section N.3. This section draws on findings from:
- the community survey;
 - the Community Involvement Officers' Report [RD64]; and
 - a workshop held with older people in Valley, Anglesey.

Survey results

- C.11.3 The community survey looks at the following factors relevant to this potential health effect (see volume L.3 for more detailed topic discussion of the results, the data and methods for which is provided in volume Q):
- Almost all people (98%) reported that they had heard about the proposals for the Power Station. People's understanding of risk would benefit from this level of information exchange, albeit measured in the survey at the most basic level (i.e. awareness of the Project) and almost half of respondents reported a connection with the Existing Power Station. This result demonstrates the extent of the links that exist between people on the island and nuclear power.
 - Most people (62%) agreed that Nuclear Power Stations are safe and reliable. A clear minority view contradicting this is apparent as is some expression of uncertainty but this result suggests that, in general, people accept nuclear power.
 - Most people (83%) agreed that the Power Station would provide opportunities for local people. There is a high level of expectation amongst respondents for the Project to bring local economic benefits.
 - A majority of people (71%) support having nuclear power on the Isle of Anglesey. 15% do not support the proposition and the rest are uncertain. The majority support for the Project can be taken as a general indicator

that people who were surveyed considered the benefits of the Project to outweigh the risks.

- When asked about the new Power Station and local people's physical health, the majority view was that there is no cause for concern. There were a range of views, including 45% who agreed that the new Power Station would not affect local people's physical health, as well as others who expressed uncertainty and ambivalence on the potential effects of the new Power Station on physical health.
- When asked about the new Power Station and local people's well-being, 47% agreed that the new Power Station would not affect local people's well-being. As with the question on physical health, the majority view is that there is no cause for concern, but there are a range of views, including uncertainty and ambivalence, on the potential effects of the new Power Station on well-being.

C.11.4 The geographical population groups that may be affected are:

- the population near the Wylfa Newydd Development Area; and
- the national population.

C.11.5 Opinions on nuclear power as a source of energy generation are not geographically bound and so the national population are considered alongside people close to the Wylfa Newydd Development Area.

C.11.6 The population sub-group with particular sensitivities (other than proximity) is people living in deprivation, including those on low incomes.

C.11.7 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

C.11.8 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).

C.11.9 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table C-15.

Table C-15 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would appoint a bi-lingual Community Involvement Officer who would be a key interface between the local community, key stakeholders and Horizon management. The Community Involvement Officer would be responsible for disseminating	To maintain outreach and dialogue with local communities and the workforce.	Implemented through outreach and information dissemination work during the construction and operational stages

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
information about construction and operational safety.		by the Community Involvement Officer.

Residual effects

C.11.10 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.

C.11.11 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

C.11.12 The mitigation described in the preceding section is expected to reduce the potential magnitude of adverse effects associated with the public understanding of risk.

C.11.13 The Project is a high-profile application for development consent associated with strong community views. The potential magnitude of effect is considered medium. This score reflects the community survey results, which show that, whilst most people are aware of the Project and the majority are supportive of it, a sizable minority have concerns or show uncertainty.

Sensitivity

C.11.14 The majority of people would have a low sensitivity due to their general support for the Project which indicates that their understanding of risk is that the benefits outweigh the risks (e.g. linked to the Existing Power Station or nuclear power in general). This category is expected to include the majority of people outside of Anglesey (e.g. nationally).

C.11.15 For some groups, there is the potential for higher levels of sensitivity. Vulnerability in this case is particularly linked to the proportion of people who have expectations that their physical or mental health and well-being would be adversely affected by the Project. Vulnerability may also extend to those who on the same issue are ambivalent or unsure. People on low incomes are less able to move house. If they also do not support the Project they would be more sensitive. For these groups, sensitivity is considered high. The community survey results (see section N.3) suggests a number of factors that could contribute to increased sensitivity related to this issue:

- People in households where the main earner is in a higher or intermediate managerial/administrative/professional occupation are more sceptical of nuclear power.
- Although a majority of people near Cemaes agree that they supported having nuclear power on the Isle of Anglesey, the proportion of people that agree is lower than in other areas of Anglesey.
- Fewer people were likely to agree that Power Station would not affect local people's physical health if they were categorised as being

unemployed, aged 18-54, Welsh speakers, living in households with children, or being in generally higher skilled or more senior profession categories.

- Fewer people were likely to agree that Power Station would not affect local people's well-being if they were categorised as being aged 18-54, Welsh speakers, or living in households with children.
- People who reported through their responses that they felt part of the community had more positive attitudes towards the physical health and well-being implications of the Project.

Significance

- C.11.16 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the Wylfa Newydd Development Area or nationally in Wales.
- C.11.17 For particularly sensitive groups within the affected population, the residual effect could range up to moderate adverse. This score reflects the important mitigating role of ongoing transparency, information sharing and dialogue about any concerns.
- C.11.18 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of physical health (e.g. headaches or blood pressure) and mental health conditions (e.g. anxiety or depression).
- C.11.19 The expected duration of effects would be long term (throughout the 60-year operational stage). Over this period, the majority of people would be expected to respond positively to a good regulatory safety record.
- C.11.20 This assessment is assigned a medium degree of certainty, which reflects that the understanding of risk and the balancing of risk and benefit has both objective and subjective components that affect health and well-being.
- C.11.21 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

C.12 Energy generation: demand and affordability

The national health benefit of an uninterrupted and affordable electricity supply during operation

Assessment of effects

- C.12.1 The UK is reliant on electricity for healthy lifestyles and the economy that provides jobs and services. Sustained interruption of supply or rapid increases in costs would not be beneficial for population health across the UK. Continuity of electricity supply and affordability are therefore prerequisites to many aspects of healthy living and healthcare support.
- C.12.2 The geographical population group that may be affected is the national population (Wales and the wider UK).
- C.12.3 The population subgroups with particular sensitivities are:

- young people;
- older people;
- people with existing poor health; and
- people living in deprivation, including those on low incomes.

C.12.4 Should the Project not proceed for whatever reason, other energy-generating projects would be required to meet the national energy demand. In such a scenario, it is probable there would be delays (affecting the national capacity margin), as well as less certainty in baseload and costs. A scenario without the Project may therefore have the potential to be minor adverse.

Mitigation and enhancement

C.12.5 Being an inherent benefit of the Project, there is no requirement for mitigation or additional enhancement.

Residual effects

C.12.6 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

C.12.7 The planned operational life of the Power Station is 60 years, with a predictable electrical output equivalent to powering around five and a half million homes (there are approximately 27 million homes in the UK [RD126]) . The Project would thus help meet UK demand and maintain affordability.

C.12.8 The potential magnitude of effect is considered small, as the Power Station would be one of a large number of generating sources contributing to maintaining the UK capacity margin. Consequently, the score reflects the potential for a slight change in risk factors for health and well-being due to interrupted or less affordable electricity supply.

Sensitivity

C.12.9 The majority of people would have a medium sensitivity due to limited capacity for coping strategies to manage sudden reductions in affordability or sustained interruption of electricity supplies (electricity supply being a fundamental prerequisite to many aspects of healthy living and healthcare support).

C.12.10 For some groups, there is the potential for higher levels of sensitivity. Vulnerability in this case is particularly linked to people with low incomes, age (both young and older people are less able to cope with temperature extremes if homes are not correctly heated or cooled) and people requiring emergency healthcare who could be affected by power cuts (most hospitals have backup generators for this reason). For these populations, sensitivity is considered high.

Significance

C.12.11 Consequently, the residual significance of potential health and well-being effects is considered to be minor beneficial for the general population (the majority of people) in the UK.

- C.12.12 For particularly sensitive groups within the affected population who are less able to cope with power cuts or price increases, the residual effect could range up to moderate beneficial, reflecting that, although a modest effect, the reach is national, thus constituting an important public health contribution.
- C.12.13 The scores reflect the potential for the Project to have direct and indirect effects in safeguarding physical health (e.g. safe food, safe homes, essential services and infrastructure) and mental health (e.g. stress, anxiety or depression) if supplies are limited or threatened.
- C.12.14 The expected duration of effects would be long term (throughout the 60-year operational stage).
- C.12.15 This assessment is assigned a medium degree of certainty which reflects a dependence on national and international energy markets and levels of energy demand.
- C.12.16 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

C.13 Energy generation: low carbon technology

The global health benefit from reducing the effect of climate change during operation

Assessment of effects

- C.13.1 Changes in energy sector carbon emissions due to the Project may reduce the potential health effects of climate change. These include heat-related disorders (e.g. heat stress and lower work capacity), respiratory disorders (e.g. worsened asthma), infectious diseases, food insecurity (e.g. lower crop yields) and mental stress associated with natural disasters.
- C.13.2 Nuclear power produces low levels of carbon dioxide from electricity generation. The opportunity for health and well-being is one of global responsibility to reduce the effects of climate change for the poorest members of society. The contribution of the Project to reducing UK carbon dioxide emissions would have modest but global benefits for health.
- C.13.3 The geographical population group that may be affected is the international population.
- C.13.4 The population subgroups with particular sensitivities (other than proximity) are people living in deprivation, including those on low incomes.
- C.13.5 Should the Project not proceed for whatever reason, other energy-generating projects would be required to meet the national energy demand. In such a scenario, it is probable there would be a mix of energy-generating technologies used to provide equivalent electrical output to the Power Station. This mix is unlikely to be exclusively low carbon (as these have limitations in baseload electricity output). A scenario without the Project may therefore have the potential to be minor adverse.

Mitigation and enhancement

- C.13.6 Being an inherent benefit of the Project, there is no requirement for mitigation or additional enhancement.

Residual effects

- C.13.7 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

- C.13.8 Compared to a modern fossil fuel power station, the Power Station is expected to reduce the UK's emissions by 8.25 million tonnes of carbon dioxide each year, or 495 million tonnes of carbon dioxide over its proposed 60-year operational stage. The Project would thus contribute to reducing health effects and health inequalities associated with climate change.
- C.13.9 Due to the Power Station's contribution to reducing greenhouse gas emissions, the potential magnitude of effect is considered medium. This score reflects that many people could be affected nationally and internationally.

Sensitivity

- C.13.10 The effects of a changing climate are global. The benefit from using low carbon technology would be to reduce greenhouse gas emissions and thus mitigate against further increases to the earth's surface temperature. The area of effect is thus regional, national and global.
- C.13.11 The UK is a developed economy and has comparatively high resilience and capacity to adapt, so in general the UK population can be considered to be of low sensitivity.
- C.13.12 Adverse effects would fall most heavily on the poorest and most vulnerable members and regions of society (globally), including older people, children and low-income families. There would be a disproportionate effect on the most disadvantaged in society that is likely to further contribute to health inequalities [RD100]. For this population, sensitivity is considered high.
- C.13.13 Although people in the UK are generally less vulnerable, as they are able to get support to cope with the effects of climate change, some may still be at greater risk (e.g. low incomes or age making it harder to cope with heatwaves or flooding). For such groups, sensitivity is also considered high.

Significance

- C.13.14 Consequently, the residual significance of potential health and well-being effects are considered to be negligible for the general population (the majority of people) globally. For particularly sensitive groups within the affected population, the residual effect could range up to moderate beneficial, reflecting that, although a modest effect, the reach is international, thus constituting an important public health contribution.
- C.13.15 The scores reflect the potential for the Project to have a direct effect in reducing the severity and incidence of the health effects of climate change (e.g. injury,

disease and death from heatwaves and fires; undernutrition from reduced food production; and increased risks of food-, water- and vector-borne diseases). Reducing the severity and incidence of these outcomes would also safeguard against associated mental health effects (e.g. stress, anxiety or depression).

C.13.16 The expected duration of effects would be long term (throughout the 60-year operational stage).

C.13.17 This assessment is assigned a medium degree of certainty which reflects that, whilst there is a good scientific consensus in this field, successfully reducing the effects of climate change depends on a concerted and sustained international response across policies and projects.

C.13.18 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

D WNDA Development

D.1 Introduction

- D.1.1 This volume describes the assessment of potential health and well-being effects resulting from the construction at the Wylfa Newydd Development Area. Such construction activities include the Power Station, the Site Campus, other on-site development and Marine Works.
- D.1.2 Please refer to the HIA appendix in volume L for the technical basis for the assessment which sets out a summary of methodologies and criteria that have guided the assessment, including definitions, scientific literature and baseline conditions, local health priorities, consultation responses and regulatory standards and/or policy context.
- D.1.3 This volume discusses the potential effects by HIA topic. For each, there is a consideration of the unmitigated effect, followed by a consideration of mitigation and finally a conclusion on the residual effect.
- D.1.4 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.
- D.1.5 Cumulative effects are discussed in volume I.

D.2 Air quality

Vehicle and machinery emissions on the Wylfa Newydd Development Area during construction

Assessment of effects

- D.2.1 The construction at the Wylfa Newydd Development Area would result in a decrease in air quality due to emissions from vehicles and machinery on-site. The greatest effects are expected to be from nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}).
- D.2.2 A description of potential health effects associated with a reduction in air quality is set out in section C.2.
- D.2.3 The geographical population group that may be affected is the population near the Wylfa Newydd Development Area (site-specific).
- D.2.4 The population subgroups with particular sensitivities (other than proximity) are:
- young people;
 - older people; and
 - people with existing poor health.
- D.2.5 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

- D.2.6 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application

Reference Number: 8.6), relevant sub-Codes of Construction Practice (Application Reference Number: 8.7 to 8.12) and the Environmental Statement (Application Reference Number: 6.10.3).

- D.2.7 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table D-1.

Table D-1 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would establish and chair a Health and Well-being Monitoring Group that would consider monitoring data relevant to the Project. A set of key topics and indicators would be agreed, but is expected to include respiratory health.	To monitor routinely collected public health data (existing indicators), to determine if any changes in levels of respiratory health near the Wylfa Newydd Development Area are of concern.	When appropriate Horizon would facilitate bespoke analysis of routinely collected public health data (existing indicators), relevant to the Project. The information would inform discussion by the Health and Well-being Monitoring Group. If appropriate the Group would discuss the need for additional mitigation or follow-up investigation.
Information relating to air pollutant concentrations would be provided to residents.	To empower local people through information on how they can respond if concerned about air pollutant concentrations e.g. during periods of weather that are more likely to retain pollutants at ground level.	Achievement through information disseminated by the Community Involvement Officers.

Residual effects

Magnitude

- D.2.8 The mitigation described in the preceding section is expected to reduce the potential magnitude of vehicle and machinery emissions from the Wylfa Newydd Development Area. The good baseline air quality is also relevant to the potential for air quality levels that could be of concern.
- D.2.9 Although people within the site-specific study area may be exposed to low concentrations of dispersing vehicle and machinery emissions from the Wylfa Newydd Development Area, such exposure is expected to be below UK AQO levels. This is a relatively small change from baseline levels, and no exceptional circumstances have been identified, e.g. in relation to local topography that constrains dispersion within communities. At these levels, only

a small change in population risk factors for air quality effects to health and well-being would be expected.

- D.2.10 The modelling in Environmental Statement chapter D5 (air quality (excluding emissions from traffic)) (Application Reference Number: 6.4.5) predicts that with appropriate mitigation and monitoring in place the Project would not exceed UK AQO levels, including those for short-term nitrogen dioxide concentrations close to the Wylfa Newydd Development Area. The mitigation described in the Environmental Statement includes the use of plant or machinery which complies with the EU Stage IV non-road mobile machinery emission standards, as well as an active emissions monitoring and management strategy at key locations.
- D.2.11 The magnitude of potential health effects is therefore expected to be medium. This score reflects that concentration of pollutants would be increased above baseline levels and that such an increase is of relevance to non-threshold health effects even where UK AQO levels are met. The HIA methodology on scoring magnitude is set out in table L-2, these definitions underpin the difference between the HIA and Environmental Statement scoring on this issue.

Sensitivity

- D.2.12 The general population sensitivity to vehicle and machinery emissions is considered to be low as most people live, work or study at a distance from sources of emissions that would benefit from high levels of dispersion, reducing exposure. Furthermore, most people (other than vulnerable groups discussed below) enjoy good respiratory health.
- D.2.13 For groups that are vulnerable to changes in exhaust emissions, higher levels of sensitivity would be expected. Vulnerability in this case is particularly linked to living close to sources of emissions (and this includes construction workers accommodated at the Site Campus); to regular use of footpaths close to sources of emissions; to spending more time in affected dwellings (e.g. due to low economic activity, shift work or ill health); to age (both young people and older people); or to existing poor health (e.g. long-term respiratory conditions such as asthma and COPD). For these groups sensitivity is considered high.
- D.2.14 The baseline for the closest GP surgery to the Wylfa Newydd Development Area (Canolfan Iechyd Amlwch) shows above average rates for asthma and COPD, compared to the rest of Anglesey and Wales (see table M-7). This data comes with caveats due to lack of standardisation between comparators; these are discussed in the HIA appendix in volume L. The baseline does not constitute exceptional circumstances but it does support a finding of increased sensitivity for assessment purposes.

Significance

- D.2.15 Different factors (see section L.3) are taken into account when considering the residual significance of potential health and well-being effects for vehicle and machinery emissions on the Wylfa Newydd Development Area during construction.
- Acceptability: the modelling in Environmental Statement chapter D5 (Application Reference Number: 6.4.5) indicates that UK AQO levels

would not be exceeded. No exceptional circumstances in relation to health vulnerability or environmental conditions that could amplify effects have been identified. Therefore, the changes in air quality are considered to be acceptable for the UK context (criteria for acceptability set out in HIA appendix in volume L).

- Importance: non-threshold health effects from changes in air quality is an important public health issue which has been raised in consultation by local stakeholders and by local people. The potential for significant health effects due to changes in air quality is not ruled out

- D.2.16 Consequently, the residual significance of potential health and well-being effects is considered to be minor adverse for the general population (the majority of people) near the Wylfa Newydd Development Area.
- D.2.17 For particularly sensitive groups within the affected population, the residual effect could range up to moderate adverse. This score reflects the fact that health effects, including non-threshold type effects, cannot be ruled out at the predicted concentrations (including construction workers accommodated at the Site Campus).
- D.2.18 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of cardiovascular and respiratory health conditions.
- D.2.19 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- D.2.20 This assessment is assigned a high degree of certainty, which reflects a good scientific consensus in this field and the good quality quantitative and qualitative data used in this analysis.
- D.2.21 For both local communities (e.g. Tregele and Cemaes) and construction workers accommodated at the Site Campus, Horizon would implement measures to reduce air pollutant emissions associated with the Project, which could potentially be associated with significant adverse effects on health and quality of life, as low as reasonably practicable. Further mitigation, e.g. a greater proportion of vehicles and machinery meeting EU Stage IV emissions standards, would affect the viability of the Project.
- D.2.22 The HIA findings on this issue (which differ from those reported in Environmental Statement chapter D5 (Application Reference Number: 6.4.5)) reflect the emerging scientific literature and the position of local health stakeholders. The Environmental Statement position (with a not-significant residual effect finding for human receptors) reflects statutory requirements.
- D.2.23 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

Dust generated by construction activities, excavation and earth movements during construction

Assessment of effects

- D.2.24 Dust levels are expected to be raised by the construction activities, with effects greatest during periods of hot, dry weather with moderate west to east winds.

- D.2.25 The potential for adverse effects associated with dust are relevant to both nuisance from dust deposition and respiratory effects of particulate matter [RD127]; [RD128]; [RD129]. The particulate matter contribution from vehicle and plant emissions would not be expected to lead to an exceedance of AQO thresholds. The contribution from mobilisation of dust during earth movements is potentially of concern to public health. Inhalation of fine particulate matter can carry the particles deep into the lungs where there can be respiratory and toxicological effects depending on the nature of the particles [RD130].
- D.2.26 Fine particulate matter can travel long distances (many miles) as an aerosol suspension, although as distances increase dispersion will generally reduce concentrations and therefore risk of harm (depending on atmospheric and weather conditions, PM₁₀ may travel distances of 20km or 30km) [RD131]. However, due to dispersion, potential health effects are not expected beyond the communities closest the Wylfa Newydd Development Area.
- D.2.27 Dust effects, both respiratory and non-respiratory nuisance, are expected to be greatest during periods of hot, dry weather with moderate west to east winds. At such times, the potential for mobilisation of dusts would be high. This is also the time when residents and young people (in or out of school (Ysgol Gynradd Cemaes)) would be likely to be using outdoor spaces. Such conditions are most likely during summer months. Hot weather in the UK during this time is generally associated with high-pressure systems. Such systems typically have lower wind speeds. The combination of conditions for adverse dust effects is therefore expected to be limited.
- D.2.28 Activities with the greatest potential for localised dust creation, such as the rock crushing and concrete batching facilities, would be the subject of detailed targeted dust suppression. The location of these facilities away from community receptors is also expected to contribute to reduced potential for adverse effects. More diffuse sources of dust, such as from soil movements and mounding, are also expected to be controlled (e.g. by reducing activity when monitoring at receptors exceeds concentration levels agreed with the IACC Environmental Health Officers).
- D.2.29 Adherence to measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7) would keep dust to a minimum.
- D.2.30 The geographical population group that may be affected is the population near the Wylfa Newydd Development Area (site-specific).
- D.2.31 The population subgroups with particular sensitivities (other than proximity) are:
- young people;
 - older people; and
 - people with existing poor health.
- D.2.32 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

- D.2.33 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7) and the Environmental Statement (Application Reference Number: 6.10.3). For example, Horizon would comply with the dust and air quality management strategy in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6). This would reduce concentrations of dust, including during periods of weather typical of an increased likelihood of dust events.
- D.2.34 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table D-2.

Table D-2 Proposed additional health mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Information relating to dust concentrations would be provided to residents.	To empower local people through information on how they can respond if concerned about dust concentrations.	Achievement through information disseminated by the Community Involvement Officers.
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include providing support and a communication channel for people experiencing elevated levels of emissions (nuisance).	To reduce the potential for changes in dust levels during construction to affect health and well-being.	Implemented through outreach work throughout the construction stage by the Community Involvement Officer.

Residual effects

Magnitude

- D.2.35 The mitigation described in the preceding section is expected to reduce the potential magnitude of dust generated by construction activities, excavation and earth movements.
- D.2.36 Levels of fine dust particles are expected to be within UK AQO thresholds. Occasionally, weather conditions may coincide with construction activities to generate high levels of dust. This could cause annoyance, and for people with existing poor health, higher levels of fine dust in the air could worsen some conditions (e.g. asthma).
- D.2.37 Coarser (larger and heavier) fractions of dust are expected to rapidly reduce in concentration with distance from source due to precipitation. The potential

for nuisance-type dust effects is therefore expected to be occasional and limited to a few people. For finer fractions of dust precipitation rates would be slower, affecting a wider area and thus more people. However, exposure is expected to be low due to the finer dust particles dispersing (reducing in concentration) with increased distance. Only a small change in population risk factors for dust effects to health and well-being would be expected. The magnitude of potential health effects is therefore expected to be small.

Sensitivity

- D.2.38 The summary baseline statistics for this area suggest that the majority of people report good existing health and that they have day-time activities that would limit their exposure (i.e. take them away from the area of potential effect). The general population's sensitivity to dust effects is therefore considered to be low [RD132] and relate primarily to reduced well-being associated with nuisance dust.
- D.2.39 For groups vulnerable to respiratory effects of dust, higher levels of sensitivity would be expected. Vulnerability in this case is the same as for 'vehicle and machinery emissions on the Wylfa Newydd Development Area', discussed above. For this part of the population, sensitivity is considered high.

Significance

- D.2.40 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the Wylfa Newydd Development Area.
- D.2.41 For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse.
- D.2.42 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of cardiovascular and respiratory health conditions.
- D.2.43 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- D.2.44 This assessment is assigned a medium degree of certainty, which reflects a dependence on meteorological conditions.
- D.2.45 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

D.3 Noise

Vehicle and machinery noise on the Wylfa Newydd Development Area during construction

Assessment of effects

- D.3.1 During the earlier stages of construction, the dominant adverse effect is expected to be from the movement of large excavators and earth-moving vehicles. This is predominantly a day-time effect. The health effects are expected to relate to reductions in well-being due to increased annoyance from

intrusive sounds that interfere with performing day-time activities. There is some potential for disrupted sleep to those who normally rest during the day-time, e.g. shift workers. Educational outcomes for pupils at Ysgol Gynradd Cemaes (the primary school at Cemaes) could also potentially be affected. The earth bund that would be created from excavated soil would reduce the potential for adverse effects once in place.

- D.3.2 During the later stages of construction, the night-time working of the main building works would dominate health effects. WHO guide values for night-time noise may be exceeded. This is of concern to public health. As the elevation of the buildings increases, it would become increasingly difficult for noise barrier type solutions to operate. The health effects are expected to arise from sleep disturbance and could include cardiovascular and cognitive effects.
- D.3.3 Adherence to measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7) would reduce noise levels.
- D.3.4 The opportunities for health and well-being lie in further reducing the potential for adverse effects to the occupants of residential properties affected by construction noise associated with the Wylfa Newydd Development Area.
- D.3.5 The geographical population group that may be affected is the population near the Wylfa Newydd Development Area (site-specific).
- D.3.6 The population subgroups with particular sensitivities (other than proximity) are:
- young people (including at Ysgol Gynradd Cemaes);
 - older people; and
 - people with existing poor health.
- D.3.7 The unmitigated effect has the potential to be major adverse.
- D.3.8 With regard to potential noise effects to construction workers accommodated at the Site Campus Environmental Statement chapter D6 (noise and vibration) (Application Reference Number: 6.4.6) describes the use of acoustic mitigation measures as part of the building design to meet the relevant noise guidelines.

Mitigation and enhancement

- D.3.9 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7) and the Environmental Statement (Application Reference Number: 6.10.3). For example, Horizon would comply with the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7) with regard to noise and nuisance controls. This would reduce levels of noise, particularly at night. Support would also be given to Ysgol Gynradd Cemaes.

- D.3.10 As detailed in the Environmental Statement (Application Reference Number: 6.4.6), further detailed construction noise management and mitigation measures would be the focus of the Section 61 applications under the Control of Pollution Act 1974. These applications would be made to the IACC prior to commencement of all major construction activities. Each application would contain the particulars of the works to be undertaken, the working methods, details of the plant proposed to undertake the works, noise (and vibration if relevant) predictions and the proposed noise-control measures. Applications would be submitted to the IACC for consent. The aim of S61 applications would be to establish that the best practicable means have been employed to control noise emissions. The IACC may attach conditions to each consent, where it is considered that additional measures are required.
- D.3.11 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table D-3.

Table D-3 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would establish and chair a Health and Well-being Monitoring Group that would consider monitoring data relevant to the Project. A set of key topics and indicators would be agreed, but is expected to include sleep disturbance.	To monitor any changes in levels of sleep disturbance near the Wylfa Newydd Development Area that are of concern.	If appropriate the Group would discuss the need for additional mitigation or follow-up investigation.
Information relating to noise levels would be provided to residents.	To empower local people through information on how they can respond if concerned about noise levels.	Achievement through information disseminated by the Community Involvement Officers.
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include providing support and a communication channel for people experiencing elevated levels of disturbance (nuisance).	To reduce the potential for changes in noise levels (particularly at night) during construction that may affect health and well-being.	Implemented through outreach work throughout the construction stage by the Community Involvement Officer.

Residual effects

- D.3.12 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.
- D.3.13 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

- D.3.14 The mitigation described in the preceding section is expected to reduce the potential magnitude of vehicle and machinery noise on the Wylfa Newydd Development Area.
- D.3.15 The magnitude of noise effects identified in Environmental Statement chapter D6 (Application Reference Number: 6.4.6), includes those that may be large; night-time effects are of particular concern. Exceedances of day-time noise levels are also relevant; however, generally there is a higher tolerance of day-time, compared to night-time, noise. The focus for health is accordingly on the current predictions of night-time noise disturbance.
- D.3.16 Many people in the communities closest to the Wylfa Newydd Development Area may be exposed to frequent levels of noise (particularly night-time noise) that could reduce their quality of life. There may also be an increase in population risk factors for noise effects to health and well-being. The magnitude of potential health effects is therefore expected to be large.

Sensitivity

- D.3.17 Noise effects would be focused in the vicinity of the Wylfa Newydd Development Area. People living and working in this area are thus of interest. The assessment assumes that over the construction stage people would adopt coping behaviours. This means that the general population level of sensitivity has been scored as medium.
- D.3.18 Some people would be more sensitive to changes in noise. For this population, sensitivity is considered high. Vulnerability in this case is particularly linked to living close to sources of noise (e.g. in Tregele and Cemaes, but also including construction workers accommodated at the Site Campus); age (both young people and older people); existing poor health (e.g. long-term illness); spending more time in affected dwellings (e.g. due to low economic activity, shift work; or ill health); or vulnerability due to deprivation or health inequalities.

Significance

- D.3.19 Consequently, the residual significance of potential health and well-being effects is considered to be minor adverse for the general population (the majority of people) near the Wylfa Newydd Development Area.
- D.3.20 For particularly sensitive groups within the affected population, the residual effect in relation to health outcomes could range up to moderate adverse.
- D.3.21 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of cardiovascular and mental health conditions (e.g. stress, anxiety or depression), notably due to sleep disturbance associated with night-time noise effects.
- D.3.22 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- D.3.23 This assessment is assigned a medium degree of certainty which reflects that, whilst there is scientific consensus in this field and good quantitative data used in this analysis, the effects are largely subjective in nature.

- D.3.24 These findings take into account the fact that there would be a voluntary strategy to reduce the effects of construction noise arising from activities at the Wylfa Newydd Development Area on qualifying local residential properties. This strategy, known as the Local Noise Mitigation Strategy is described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), and would form part of the overall Neighbourhood Support Scheme.
- D.3.25 The Local Noise Mitigation Strategy is not taken into account by the scoring in the Environmental Statement because it is reliant on voluntary uptake by the community and so whilst a part of the Project, it sits apart from the formal mitigation. In practice, the Local Noise Mitigation Strategy would be expected to reduce the potential significance of adverse noise effects on health.
- D.3.26 The Local Noise Mitigation Strategy would provide noise insulation to residences and/or temporary rehousing to occupants of qualifying residential properties. Horizon would ensure that assessments of eligibility are undertaken with sufficient time to procure and install glazing to properties prior to critical works commencing. The assessments would be based on detailed construction information and reviewed every six to nine months during the Project, in accordance with the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7).
- D.3.27 Such noise insulation and temporary rehousing are regularly deployed during the construction of major infrastructure schemes and would reduce the effects of construction noise to residents whilst the construction works are progressed. Despite the expected benefits for properties that qualify for the measures outlined in the Local Noise Mitigation Strategy, the following is acknowledged.
- There may be cases where internal noise levels are still above desirable levels, even after noise insulation has been installed.
 - Offers for noise insulation would not necessarily be taken up by all the eligible parties.
 - It may not be technically feasible to install noise insulation in all properties.
 - A property would not benefit from the noise insulation if windows were opened, although the provision of acoustically treated ventilation is intended to reduce the need to open windows.
 - Gardens and other outside spaces would not be protected from construction noise effects.
- D.3.28 In addition, it is noted that some of the dwellings most affected by significant noise effects are expected to be in Horizon ownership. This degree of control is expected to limit the potential for those dwellings to be newly occupied by vulnerable groups.
- D.3.29 For local communities (e.g. Tregale and Cemaes) and construction workers accommodated at the Site Campus, Horizon would implement measures to reduce noise levels associated with the Project, which could potentially be associated with significant adverse effects on health and quality of life, as low as reasonably practicable. Further mitigation, e.g. additional restrictions to night-time working, would affect the viability of the Project.

- D.3.30 The HIA findings on this issue (which differ from those reported in Environmental Statement chapter D6 (Application Reference Number: 6.4.6)) reflect a population health approach and the expected benefits of the Local Noise Mitigation Strategy and Section 61 applications under the Control of Pollution Act 1974. The Environmental Statement position (with a major adverse residual effect finding at 321 properties) reflects Welsh noise guidance [RD133]) at an individual property level. The Environmental Statement does not take into account the Local Noise Mitigation Strategy or the fact that additional conditions (determined for particular activities at particular locations) may be attached to Section 61 consents by the IACC.
- D.3.31 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

D.4 Community identity, social networks and culture

Changes to local context and identity during construction

Assessment of effects

- D.4.1 Construction would bring visual change and disturbance to the Wylfa Newydd Development Area. Neighbourhood character may also be affected in areas hosting construction workers (e.g. views of the Site Campus from Cemaes). Changes to local context and identity may trigger heightened emotional responses.
- D.4.2 When the construction activities commence, this could be unsettling for people in Treglele and Cemaes (and isolated dwellings nearby) as it would be the first indication of change. The existing rural setting would begin to be altered. The initial soil stripping works would be small in comparison to the main excavation and construction activities, but the potential effect of this initial change should not be underestimated.
- D.4.3 The construction stage would be a period of intense activity. The ways in which the communities closest to the Wylfa Newydd Development adapt to the construction is of interest. Of particular importance, is the way in which young people and older people are able to prepare for, and adapt to, the construction stage. For these groups, the eight-year construction stage would span an important time in their lives. It is important that construction effects are reduced, and people's quality of life is taken into account. To protect mental health and reduce stress and anxiety, this would include ensuring that people have a sense of control.
- D.4.4 The construction stage soil excavation, movement and mounding and the structures at the Wylfa Newydd Development Area would greatly change many views. As noted above, this may trigger emotional responses for some people. Many visual effects would be relatively localised and, in some areas (such as west of Cemaes), interspersed with respite periods when the use of seeding re-greens the landscape between periods of earth storage and mounding. The construction and operation of the Site Campus would be a relatively small element of the wider and more substantive visual change associated with the main construction activities and buildings, it is therefore not assessed separately.

Feelings about workers' effect on community identity

D.4.5 The community survey investigated

- Feelings about workers' effect on community identity: there was a mix of views, but a higher proportion of people feel that workers would not change community identity in a detrimental way. People living near Cemaes expressed greater levels of concern. Welsh speakers expressed more concern than non-Welsh speakers.
- The potential effect of the Project on emotional attachment to place of residence: across the Isle of Anglesey people who were surveyed said that the Project would have no effect on what their place of residence means to them. Once again, people living near Cemaes were more likely to say that the Project would change how they viewed their place of residence.

Affected population

D.4.6 The geographical population group that may be affected is the population near the Wylfa Newydd Development Area (site-specific).

D.4.7 The population subgroups with particular sensitivities (other than proximity) are:

- young people; and
- older people.

D.4.8 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

D.4.9 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7) and the Environmental Statement (Application Reference Number: 6.10.3).

D.4.10 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table D-4.

Table D-4 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include being a community interface in developing and implementing initiatives to	To reduce the potential for changes in community identity during construction that may affect community cohesion and well-being. For example, working with local community groups and/or schools to design content or artwork for information	Implemented through outreach work throughout the construction stage by the Community Involvement Officer.

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
enhance and celebrate local identity.	boards; or small projects to celebrate, signpost or improve community infrastructure.	

Residual effects

Magnitude

- D.4.11 The mitigation described in the preceding section is expected to reduce the potential magnitude of changes to local context and identity. However, for people living near to the Wylfa Newydd Development Area, there would still be a large change in views and landscape character, as well as noise disturbance. These changes in context and levels of tranquillity are likely to affect people's well-being.
- D.4.12 As the Project would be expected to have a defining influence on the local environmental landscape for many people, which could result in a marked change in quality of life, the potential magnitude of an adverse effect is considered medium.

Sensitivity

- D.4.13 The HIA considers that the majority of people would have a medium sensitivity due to the reasonably high degree to which local views are likely to be shared with, and therefore influenced by, the Wylfa Newydd Development Area.
- D.4.14 For some groups, there is the potential for higher levels of sensitivity. This population would include people or businesses with direct views of the Wylfa Newydd Development Area. For this population, sensitivity is considered high. Vulnerability in this case is particularly linked to living close to the Wylfa Newydd Development Area (e.g. Tregele and Cemaes), and with younger and older people most sensitive to change as the effects would span an important time in their lives. The community survey results (see section N.3) suggest a number of factors that could contribute to increased sensitivity related to this issue:
- People who lived near Cemaes or who described themselves as a Welsh speaker were more likely to agree that the construction workers would change the community so they identify with it less.
 - People who were categorised as being unemployed, permanently not working, living near Cemaes or being in the age band of 35-54 were more likely to feel that the place where they live would mean less to them if the Power Station is built.

Significance

- D.4.15 Consequently, the residual significance of potential health and well-being effects is considered to be minor adverse for the general population (the majority of people) near the Wylfa Newydd Development Area.

- D.4.16 For particularly sensitive groups within the affected population, the residual effect could range up to moderate adverse.
- D.4.17 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of mental health conditions (e.g. stress, anxiety or depression) due to underlying social determinants influencing community cohesion.
- D.4.18 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- D.4.19 This assessment is assigned a medium degree of certainty, which means that, whilst good quantitative data were used in this analysis (Environmental Statement chapter D10 (landscape and visual) (Application Reference Number: 6.4.10)), the effects are largely subjective.
- D.4.20 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

Night-time lighting effects during construction

Assessment of effects

- D.4.21 Night-time lighting for working or security purposes may contribute to a change in local character at the Wylfa Newydd Development Area. Night-time lighting has been raised as a concern by stakeholders in relation to both construction at the Wylfa Newydd Development Area and operation of the Power Station. This section has been informed by the Environmental Statement appendix D10-10, Environmental Lighting Impact Assessment (Application Reference Number: 6.4.67), which covers lighting impacts such as light pollution, glare, light spill and sky glow.
- D.4.22 As well as raising the visibility of the Project, and therefore people's reactions to it, strong lighting can also affect health through sleep disturbance.
- D.4.23 The effects of lighting are thus both in relation to a change in community identity (the main focus of this section) and to sleep disturbance. It is noted that the latter is beyond the main scope of this section, but has been included here to address lighting effects in one place within the report. Sleep disturbance effects link with night-time noise effects, which are discussed in section D.3 of this report. Such links are discussed in the cumulative effects section (volume I of this report).
- D.4.24 The geographical population group that may be affected is:
- the population near the Wylfa Newydd Development Area (site-specific).
- D.4.25 The population subgroups with particular sensitivities (other than proximity) are:
- young people; and
 - older people.
- D.4.26 The Environmental Lighting Impact Assessment (Application Reference Number: 6.4.67) notes that construction lighting at the Wylfa Newydd Development Area would be noticeable at surrounding communities (such as

Tregele and Cemaes), with potential light pollution and sky glow effects. The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

- D.4.27 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7) and the Environmental Statement (Application Reference Number: 6.10.3). This includes the lighting design measures discussed in Environmental Statement appendix D10-10 (Application Reference Number: 6.4.67).
- D.4.28 As described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7), Horizon would adopt good practice lighting standards to prevent overspill onto nearby residential properties where possible.
- D.4.29 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table D-5.

Table D-5 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would provide blackout blinds or alternative mitigation to residents who experience unforeseen cases of sleep disturbance. A mechanism would be put in place for residents to apply for installation of blackout blinds.	To support the avoidance of sleep disturbance associated with any strong lighting spill from the Wylfa Newydd Development Area.	Achievement through a scheme for the small number of homes adjacent to the Wylfa Newydd Development Area with bedroom windows facing onto the site and where sleep disturbance is determined to be an ongoing issue during the construction stage.

Residual effects

- D.4.30 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.
- D.4.31 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

- D.4.32 The mitigation described in the preceding section is expected to reduce the potential magnitude of community identity and sleep disturbance from night-time lighting effects.
- D.4.33 Although there would be lighting of the Wylfa Newydd Development Area, the direction, screening and distances involved mean such lighting would be

unlikely to disturb sleep at dwellings in surrounding communities. The lighting would, however, contribute to the general visual change to the landscape. The magnitude of this change is considered to be small as, although a frequent occurrence for many people, the effect is unlikely to constitute more than a slight change in quality of life.

Sensitivity

- D.4.34 For the majority of people, the night-time is a period of rest when the role of the surrounding landscape context as a determinant of well-being is reduced. For the purposes of scoring the assessment, the general population is considered to have low sensitivity.
- D.4.35 For some groups, there is the potential for higher levels of sensitivity. As with changes to local context and identity, night-time lighting sensitivity is linked to age, with the period of potential effect spanning important life stages for older and younger people (e.g. less able to appreciate starlit night skies). For these groups, sensitivity is considered medium (this scoring reflects that light-related sleep disturbance is not expected, which would have warranted a score of high sensitivity).

Significance

- D.4.36 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the Wylfa Newydd Development Area.
- D.4.37 For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse.
- D.4.38 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of mental health conditions (e.g. stress, anxiety or depression).
- D.4.39 Such night-time visual change may have in-combination cumulative effects with night-time noise, reinforcing links to the Project as the source of disturbance.
- D.4.40 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- D.4.41 This assessment is assigned a medium degree of certainty, which reflects that the effects on night-time views are largely subjective in nature.
- D.4.42 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

D.5 Physical activity

Promoting use of active travel diversions (e.g. walking and cycling routes) during construction

Assessment of effects

- D.5.1 Local people may be less active if footpaths or cycle routes that they regularly use are closed or diverted. Noise, dust and visual appeal may also affect how areas are used for physical activity. The health opportunity is in finding ways to promote alternative or diverted routes so that they are regularly used by people of all ages and abilities.
- D.5.2 During the construction stage of the Project, the closure or diversion of pedestrian and cycle routes in and around the Wylfa Newydd Development Area would have the potential to reduce levels of physical activity in the local population. Although some of the routes are of national significance, notably the Wales Coast Path and Copper Trail (national cycle route), the diversion of relatively short sections (4km to 6km) of these routes is considered unlikely to deter use by those undertaking the full trail, or long sections. A change in physical activity levels for the regional or national population is therefore not expected. Effects to physical activity are therefore expected to be limited to the communities near the Wylfa Newydd Development Area, where only short sections of these longer routes would be regularly used. For this population, the appeal (e.g. setting and tranquillity) of those sections would be of much greater importance to decisions regarding use, as this would encompass the whole journey rather than a small proportion.
- D.5.3 As noted in the baseline (see the HIA appendix in volume M), the population of the Llanbadrig ward (the populations closest to the Wylfa Newydd Development Area) may be particularly sensitive to changes in opportunities for physical activity due to not only proximity but also above average reported obesity levels. Furthermore, travel times to leisure facilities for this population are poor compared to the Welsh average, suggesting a greater reliance on the surrounding environment for physical activity. It is noted that increased traffic on the A5025 or roadworks could also increase travel times to leisure centres at Holyhead and Amlwch (Amlwch Leisure Centre).
- D.5.4 The potentially diverted or closed routes, including Public Rights of Way, the Wales Coast Path and the Copper Trail cycle route, are shown in Environmental Statement chapter D4 (public access and recreation) (Application Reference Number: 6.4.4). Environmental Statement figure D4-3 shows how the affected routes are generally located to the east and south of the Existing Power Station. It is noted that, with the decommissioning of the Existing Power Station, the routes in its vicinity would be expected to experience a reduction in tranquillity and setting due to associated disturbance implicit in such activities. However, the effects of the Project would be notably greater, particularly where routes were closed entirely rather than diverted. The rerouting of the Wales Coast Path and the Copper Trail to the south of the Wylfa Newydd Development Area would maintain continuity of these important routes but would affect their setting. With the closure of other Public Rights of Way to the west of Cemaes, the role of the Wales Coast Path and Copper Trail

diversions in providing appealing opportunities for physical activity would be increased.

- D.5.5 Despite reductions in tranquillity on some Public Rights of Way, the Project is expected to be a topic of interest. Views of the construction, and information about the construction and the wider Project, could be a positive reason to walk or cycle near to the site. Where the Project encourages use of diversions through regularly updated information boards and fun trails for younger age groups, this could increase some people's activity levels, with health benefits.
- D.5.6 The geographical population group that may be affected is the population near the Wylfa Newydd Development Area (site-specific).
- D.5.7 The population subgroups with particular sensitivities (other than proximity) are:
- young people;
 - older people; and
 - people with existing poor health.
- D.5.8 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

- D.5.9 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7) and the Environmental Statement (Application Reference Number: 6.10.3).
- D.5.10 Additional HIA mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are summarised in table D-6.

Table D-6 Proposed additional mitigation measures

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include being a local community interface for planned Public Right of Way diversions, including facilitating and implementing the use of bi-lingual information boards.	To support active community involvement in making paths and cycle ways affected during construction attractive and appealing.	Implemented through outreach work throughout the construction stage by the Community Involvement Officer.
Horizon would establish and chair a Health and Well-being Monitoring Group that would consider	To monitor routinely collected public health data (existing	When appropriate Horizon would facilitate bespoke analysis of routinely collected public health data (existing

Proposed additional mitigation measures	Objective	Achievement criteria and reporting requirements
monitoring data relevant to the Project. A set of key topics and indicators would be agreed, but is expected to include physical activity levels.	indicators), relevant to the Project, to determine if any changes in levels of physical activity or obesity near the Wylfa Newydd Development Area are of concern.	indicators), relevant to the Project. The information would inform discussion by the Health and Well-being Monitoring Group. If appropriate the Group would discuss the need for additional mitigation or follow-up investigation.

Residual effects

- D.5.11 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.
- D.5.12 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

- D.5.13 The mitigation described in the preceding section is expected to reduce the magnitude of potential effects associated with people being discouraged to undertake physical activity.
- D.5.14 The potential magnitude of effect is considered small, as, although there would be reductions in the tranquillity and setting of some routes, diversions and alternative appeal would be provided. A consequent reduction in physical activity of the population is therefore not expected.

Sensitivity

- D.5.15 The majority of people would have a low sensitivity due to only occasional use of active travel routes affected by diversions or closures as an important element in their physical activity. Furthermore, the majority of people would be expected to seek alternative locations for physical activity rather than forego exercise.
- D.5.16 For some groups, there is the potential for higher levels of sensitivity, for example people who are less able to adapt to changes and who have limited access to alternatives (e.g. routes with a tranquil setting). These people may undertake less exercise and therefore forgo the benefits to physical and mental health. This population may include people living in communities where a large proportion of active travel routes would be affected (e.g. Tregele or Cemaes) and young or older people who have higher levels of dependence on carers or public transport to access alternative physical activity opportunities. People (adults and children) who are already overweight or obese would be particularly sensitive to fewer opportunities to be physically active. For these populations, sensitivity is considered high.
- D.5.17 The baseline for the closest GP surgery to the Wylfa Newydd Development Area (Canolfan Iechyd Amlwch) shows above average rates for obesity and

coronary heart disease levels, compared to the rest of Anglesey and Wales (see table M-7). Such data come with caveats due to lack of standardisation between comparators; these are discussed in the HIA appendix in volume L. The baseline data support the view of increased local sensitivity.

Significance

- D.5.18 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the Wylfa Newydd Development Area.
- D.5.19 For particularly sensitive groups within the affected population, the residual effect could range up to minor adverse due to disincentivised physical activity or active travel.
- D.5.20 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of physical health (e.g. cardiovascular health) and mental health conditions (e.g. stress, anxiety or depression) associated with obesity and low levels of physical activity. There is also the potential to improve beneficial aspects of well-being through exercise.
- D.5.21 The expected duration of effects would be medium term (throughout the seven-year Main Construction stage, and further two years completing the second ABWR Unit).
- D.5.22 This assessment is assigned a medium degree of certainty, which reflects subjective factors in how people respond to changes in tranquillity and lifestyle choices associated with modes and frequency of physical activity.
- D.5.23 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

Alternatives for the most affected communities to be physically active during construction

Assessment of effects

- D.5.24 As the Project would affect many routes near Treglele and Cemaes, this population (including residents of isolated dwellings around the Wylfa Newydd Development Area) would benefit from support to be physically active. Local reliance on the Amlwch Leisure Centre is also increased by the Project coinciding with the closure of sports facilities previously provided by the Existing Power Station.
- D.5.25 There is an opportunity to provide additional leisure and active travel infrastructure to sustain and promote physical activity in these communities.
- D.5.26 The geographical population group that may be affected is the population near the Wylfa Newydd Development Area (site-specific).
- D.5.27 The population subgroups with particular sensitivities (other than proximity) are:
- young people;
 - older people; and
 - people with existing poor health.

D.5.28 The unmitigated effect has the potential to be moderate adverse.

Mitigation and enhancement

D.5.29 The HIA has informed, and it has taken into consideration, relevant mitigation as described in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7) and the Environmental Statement (Application Reference Number: 6.10.3).

D.5.30 Consideration has been given to the potential role of the Project's ecological compensation areas as providing alternative locations for physical activity. These areas relate to wetland habitat creation and enhancement works as compensation for any potential impacts on the Tre'r Gof Site of Special Scientific Interest (SSSI). The areas would be located at: Tŷ Du; Cors Gwawr; and Cae canoal-dydd. Their role in physical activity mitigation is considered limited given the ecological objectives of these areas and their distance from the communities most affected by loss of physical activity opportunity near the Wylfa Newydd Development Area.

D.5.31 Additional HIA mitigation and enhancement measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation and enhancement measures are summarised in table D-7.

Table D-7 Proposed additional mitigation and enhancement measures

Proposed additional mitigation and enhancement measures	Objective	Achievement criteria and reporting requirements
Horizon would appoint a bi-lingual Community Involvement Officer whose responsibilities would include being a local community interface promoting local walking, cycling, public transport and leisure facilities.	To encourage local people most affected by the loss of opportunities to be physically active near the Wylfa Newydd Development Area (particularly young people) to remain active.	Implemented through outreach and information dissemination work throughout the construction stage by the Community Involvement Officer.
Horizon would support and enhance active travel access for people using the Copper Trail which currently links to the A5025 in Tregele. At this point Horizon would provide a dedicated cycle way/footpath to Nanner Road.	To support appropriate active travel access for people in Tregele.	Design.

Residual effects

- D.5.32 This section describes the residual effects having taken into account the mitigation and enhancement measures described above.
- D.5.33 The residual significance of population health and well-being effects has been determined using professional judgement informed by the topic-specific methodologies and assessment criteria in the HIA appendix in volume L.

Magnitude

- D.5.34 The enhancements described in the preceding section are expected to increase the opportunities for physical activity in the most affected communities. Such opportunities seek to not just mitigate the potentially adverse effects of the Project discussed in the preceding section, but also use the Project to actively respond to the local health priority of increasing physical activity.
- D.5.35 The magnitude of such beneficial effects is considered to be medium, as the opportunities hold the potential for many people near the Wylfa Newydd Development Area to achieve marked increases in physical activity, reducing their risk factors for poor health and well-being.

Sensitivity

- D.5.36 The majority of people near the Wylfa Newydd Development Area would have a low sensitivity due to only occasional use of the enhanced opportunities to be physically active (e.g. because they already have active lifestyles).
- D.5.37 For some groups, there is the potential for higher levels of sensitivity. For example, the community of Tregale would be particularly likely to benefit from improved active travel links to Cemaes, where the majority of local amenities (including the local primary school) are located, usually accessed by short car journeys. Increasing active travel to school would be an important element of exercise for both children and parents. Amongst those increasing their levels of physical activity, those who are already overweight or obese would be particularly likely to benefit. For these populations, sensitivity is considered high.

Significance

- D.5.38 Consequently, the residual significance of potential health and well-being effects is considered to be negligible for the general population (the majority of people) near the Wylfa Newydd Development Area.
- D.5.39 For particularly sensitive groups within the affected population, the residual effect could be up to moderate beneficial from encouraging greater levels of physical activity.
- D.5.40 The scores reflect the potential for the Project to have a direct effect on the severity or incidence of physical health (e.g. cardiovascular health) and mental health conditions (e.g. stress, anxiety or depression) associated with obesity and low levels of physical activity. There is also the potential to improve beneficial aspects of well-being through exercise.

- D.5.41 The expected duration of effects would be long term (permanent improvements in opportunities for physical activity).
- D.5.42 This assessment is assigned a medium degree of certainty, which reflects uncertainty in lifestyle choices associated with modes and frequency of physical activity.
- D.5.43 See the HIA appendix in volume P for a summary table of significant residual health and well-being effects.

E Off-Site Power Station Facilities: AECC, ESL and MEEG

E.1 Introduction

- E.1.1 This volume describes the assessment of potential health and well-being effects resulting from the construction, operation and decommissioning of the Off-Site Power Station Facilities.
- E.1.2 The volume discusses the HIA design input for the Off-Site Power Station Facilities and the rapid HIA screening process that was undertaken.
- E.1.3 A summary description of the Off-Site Power Station Facilities is provided in volume A; further details are provided in Environmental Statement chapter E1 (proposed development) (Application Reference Number: 6.5.1).
- E.1.4 Cumulative effects are discussed in volume I.
- E.1.5 The full rapid HIA screening statement is set out in volume O.

E.2 Summary of rapid HIA screening statement

- E.2.1 A rapid HIA screening statement has been prepared for the proposed Off-Site Power Station Facilities in Llanfaethlu. The Off-Site Power Station Facilities comprise the MEEG, AECC and ESL.
- E.2.2 The Off-Site Power Station Facilities are an important component for delivery of the Project. The facilities provide supporting infrastructure essential to emergency preparedness and monitoring. By their nature, the facilities are required to be located separate from the Power Station Site. During normal operation, there would be limited activity at the Off-Site Power Station Facilities.
- E.2.3 The design and mitigation for the Off-Site Power Station Facilities has been informed by iterative discussion as part of this rapid HIA screening and the wider HIA work for the Project.
- E.2.4 Those affected by the Off-Site Power Station Facilities are likely to include vulnerable groups. Potentially significant health effects to such groups (and the general public) were considered. The rapid HIA screening concluded that there are no health effects requiring further assessment.
- E.2.5 It was judged that changes due to the Off-Site Power Station Facilities would have some effects on health. Those changes that were judged to be generally beneficial for health, but not likely to be significant, were screened out of further assessment. These would be the potential for the following small operational stage improvements in:
 - perceptions of the neighbourhood due to the Off-Site Power Station Facilities being maintained to a high standard of repair and site tidiness;
 - the frontage of the Off-Site Power Station Facilities allowing for an improved pedestrian access across the entrance; and
 - job opportunities contributing to direct and indirect economic benefits.

- E.2.6 Those potential changes that were judged to be generally adverse for health, but not likely to be significant, were also screened out of further assessment. These were the potential for:
- levels of daytime noise for a few dwellings that may/could lead to annoyance during construction;
 - management of any ground contamination during construction due to existing garage use;
 - operational visual change due to security requirements and occasional surges in activity for training exercises that could affect community identity;
 - operational community uncertainty about the safety of testing undertaken at the ESL, including how potentially contaminated samples would be managed; and
 - construction and operational temporary disruption to pedestrian access near the site entrance that may discourage physical activity (including for the new Llanfaethlu primary school).
- E.2.7 As set out in the Environmental Statement, construction activities would be subject to standard good practice mitigation and measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and Off-Site Power Station Facilities sub-Code of Construction Practice (Application Reference Number: 8.9).
- E.2.8 The siting of an electrical substation at the north-west of the Off-Site Power Station Facilities site is of potential interest in relation to EMF effects in a community context. However, this issue was screened out as there is considered to be an appropriate separation between the substation and the closest dwelling (approximately 10m), so changes in health outcomes are not likely (background EMF levels being typically achieved within two to five meters) [RD180].
- E.2.9 Although screened out, the construction of the Off-Site Power Station Facilities would be expected to contribute to cumulative adverse effects in combination with those from:
- the preceding A5025 Highway Improvements near Llanfaethlu (extending the duration of overall construction type disruption); and
 - the concurrent construction activities at the Wylfa Newydd Development Area (with traffic related effects on the A5025 acting simultaneously).
- E.2.10 Volume I considers cumulative effects (including the Off-Site Power Station Facilities).
- E.2.11 In summary, the conclusion of the rapid HIA screening for the Off-Site Power Station Facilities is that there are no potentially significant health effects that warrant further assessment.
- E.2.12 Notwithstanding this conclusion, a number of opportunities to promote health were identified during the rapid HIA screening process. These have informed wider mitigation measures for the Project and include:

- As fencing and lighting have the potential to change the character of the neighbourhood, a sensitive design ethos would be used. The use of spikes, serrated wire or other aggressive security measures should be avoided, where practicable. Coverage by security lighting and cameras should avoid intruding on neighbouring properties.
 - Horizon would notify occupiers of nearby properties and Llanfaethlu Primary School in advance of works taking place, including the type and duration of the activity. This would ensure occupiers are notified of key construction activities that might result in increased noise or disturbance. Neighbours would also be advised of Horizon's Community Involvement Officer and of the complaints register in the event that they wish to lodge a complaint regarding construction.
 - Prior to training exercises / drills at the Off-Site Power Station Facilities Horizon would notify occupiers of nearby properties and Llanfaethlu Primary School in advance. The nature and timing of training exercises / drills at the Off-Site Power Station Facilities could be widely publicised (particularly in Llanfaethlu and at the new primary school) to avoid adverse effects on community well-being from uncertainty about whether the increase in activity at the site is training or emergency related.
 - Horizon would, where feasible, schedule training exercises / drills at the Off-Site Power Station Facilities to avoid peak drop-off and pick-up times at Llanfaethlu Primary School. This would reduce the potential for any reduction in road safety at times when young people are most active on the road network.
 - Prior to operation of the Off-Site Power Station Facilities Horizon would notify occupiers of nearby properties and Llanfaethlu Primary School in relation to the safe nature of regulated activities at these facilities and regulatory requirements Horizon must follow in operating the facilities. Community information sheets would be circulated at least two weeks before operation of the facilities commences. Information would also be disseminated to people in Llanfaethlu to provide reassurance in relation to the nature of regulated activities at these facilities and the safety of such activities in relation to adjacent dwellings and the new primary school.
- E.2.13 These measures would be secured through the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6), Off-Site Power Station Facilities sub-Code of Construction Practice (Application Reference Number: 8.9) and in relation to the design ethos the Design and Access Statement (Application Reference Number: 8.2.3).

F Park and Ride

F.1 Introduction

- F.1.1 This volume describes the assessment of potential health and well-being effects resulting from the construction, operation and decommissioning of the Park and Ride.
- F.1.2 The volume discusses the HIA design input for the Park and Ride and the rapid HIA screening process that was undertaken.
- F.1.3 A summary description of the Park and Ride at Dalar Hir is provided in volume A; further details are provided in Environmental Statement chapter F1 (proposed development) (Application Reference Number: 6.6.1).
- F.1.4 Cumulative effects are discussed in volume I.
- F.1.5 The full rapid HIA screening statement is set out in volume O.

F.2 Summary of rapid HIA screening statement

- F.2.1 A rapid HIA screening statement has been prepared for the proposed Park and Ride.
- F.2.2 The Park and Ride is an important component for delivery of the Project. The facility is a key component of the Project's Integrated Traffic and Transport Strategy (Environmental Statement appendix C2.5 Transport Assessment, appendix F). The Park and Ride would reduce the number of vehicles using local roads.
- F.2.3 The design and mitigation for the Park and Ride has been informed by iterative discussion as part of this rapid HIA screening and the wider HIA work for the Project.
- F.2.4 Those affected by the Park and Ride are likely to include vulnerable groups. Potentially significant health effects to such groups (and the general public) were considered. The rapid HIA screening concluded that there are no health effects requiring further assessment.
- F.2.5 It was judged that changes due to the Park and Ride would have some effects on health. Those changes that were judged to be generally beneficial for health, but not likely to be significant, were screened out of further assessment. These would be the potential for the following small operational stage improvements:
 - use of the Park and Ride may increase walking as part of regular multi-modal transport, benefiting physical activity;
 - the public transport link to the Park and Ride may further facilitate sustainable and multi-modal travel by workers;
 - small numbers of Park and Ride operative jobs may contribute to direct and indirect economic benefits; and
 - single car families (of local Wylfa Newydd construction workers) may benefit from the drop-off and pick-up facilities, increasing family mobility,

role flexibility and access to education, employment and affordable healthy food.

- F.2.6 The rapid HIA screening notes that operational use of the Park and Ride would reduce additional vehicle movements on the A5025 associated with the Wylfa Newydd construction workforce (mitigating any adverse effect on road safety and health trip journey times). However, for the purposes of rapid HIA screening, and in line with proportionate assessment, the beneficial effect was noted, but screened out as not requiring further assessment here. The Park and Ride's role as embedded mitigation for the Project is discussed in volume C.
- F.2.7 Those potential changes that were judged to be generally adverse for health, but not likely to be significant, were also screened out of further assessment. These were the potential for:
- temporary levels of daytime noise for a few dwellings that may/could lead to annoyance (including a residential care home for the elderly) during construction, operation and decommissioning;
 - visual change, including from night-time lighting, during the 24-hour operation of the Park and Ride;
 - small localised and temporary reductions in road safety near the Park and Ride due to peaks in vehicle movements at shift changes; and
 - temporary construction related reductions in access during junction improvements.
- F.2.8 As set out in the Environmental Statement, construction activities would be subject to standard good practice mitigation and measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and Park and Ride sub-Code of Construction Practice (Application Reference Number: 8.10).
- F.2.9 Being inherently remote from the Wylfa Newydd Development Area, there is limited potential for the construction, operation or decommissioning of the Park and Ride to have cumulative effects with activities at that location or with other elements of the Project. The Park and Ride is accessed directly from roads with high capacity (the A5 and A55), reducing the potential for traffic related cumulative effects. The phasing of the Park and Ride development would mean there would be some overlap in operation of some areas whilst others were still under construction. Effects may be greater for this short period.
- F.2.10 Volume I considers cumulative effects (including the Park and Ride).
- F.2.11 In summary, the conclusion of the rapid HIA screening for the Park and Ride is that there are no potentially significant health effects that warrant further assessment.
- F.2.12 Notwithstanding this conclusion, a number of opportunities to promote health were identified during the rapid HIA screening process. These have informed wider mitigation measures for the Project and include:
- During operation of the Park and Ride, Horizon would provide information at waiting areas to promote health and well-being, including occupational health and hygiene and good worker conduct.

- In relation to the Park and Ride's activities, Horizon would ensure resident, visitor and medical service access to the Gwyddfor Residential Home and Cartio Môn Go Karting centre is maintained at all times throughout the construction, operation and decommissioning period.
- In relation to the Park and Ride's activities, Horizon would ensure access to Ysgol Uwchradd Bodedern (school) is maintained at all times throughout the construction, operation and decommissioning period.
- All Horizon's permanent and temporary signs at the Park and Ride would be in Welsh and English during construction, operation and decommissioning.

F.2.13 These measures would be secured through the Dalar Hir Park and Ride sub-Code of Construction Practice (Application Reference Number: 8.10).

G A5025 Off-line Highway Improvements

G.1 Introduction

- G.1.1 This volume describes the assessment of potential health and well-being effects resulting from the construction of the A5025 Off-line Highway Improvements.
- G.1.2 The volume discusses the HIA design input for the A5025 Off-line Highway Improvements and the rapid HIA screening process that was undertaken.
- G.1.3 A summary description of the A5025 Off-line Highway Improvements is provided in volume A; further details are provided in Environmental Statement chapter G1 (proposed development) (Application Reference Number: 6.7.1).
- G.1.4 Cumulative effects are discussed in volume I.
- G.1.5 The full rapid HIA screening statement is set out in volume O.

G.2 Summary of rapid HIA screening statement

- G.2.1 A rapid HIA screening statement has been prepared for the proposed A5025 Off-line Highway Improvements.
- G.2.2 The A5025 Off-line Highway Improvements are an important component for delivery of the Project. The improvements would reduce potentially adverse transport effects of the Project, particularly for people living near the A5025, and would improve the standard of the existing carriageway.
- G.2.3 The A5025 Off-line Highway Improvements would involve works to upgrade and improve sections of the A5025 beyond the existing highway boundary, including a new four-arm roundabout providing a bypass to the east of Valley; a new bypass to the east of Llanfachraeth village; a new alignment at Llanfaethlu to eliminate two existing substandard bends; and a new bypass at Cefn Coch.
- G.2.4 The A5025 Off-line Highway Improvements are required as part of the wider transport strategy for delivery of the Project, the design and mitigation for which has been informed by iterative discussion as part of this rapid HIA screening and the wider HIA work for the Project.
- G.2.5 Those affected by the A5025 Off-line Highway Improvements are likely to include vulnerable groups. Potentially significant health effects to such groups (and the general public) were considered. For example, in some cases the new alignment brings the road closer to dwelling, such as at Parc Llynnon in Llanfachraeth. The rapid HIA screening concluded that there are no health effects requiring further assessment.
- G.2.6 It was judged that changes due to the A5025 Off-line Highway Improvements would have some effects on health. Those changes that were judged to be generally beneficial for health, but not likely to be significant, were screened out of further assessment. These would be the potential for the following small operational stage improvements:
 - promotion of physical activity through improvements to cycle routes and crossing points on the A5025 for existing Public Rights of Way, improving

physical health (e.g. cardiovascular health) and mental health conditions (e.g. stress, anxiety or depression);

- a greater sense of community identity in bypassed communities as destinations (rather than places passed through), benefiting mental health through underlying social determinants of community cohesion; and
- improved separation from traffic emissions for most dwellings contributing to better air quality, particularly in bypassed communities, supporting reduced risks of adverse respiratory health outcomes.

G.2.7 Furthermore, some beneficial operational changes due to the A5025 Off-line Highway Improvements were considered to have the potential for significant health effects. However, for the purposes of rapid HIA screening and in line with proportionate assessment, these were screened out as not requiring further assessment. These issues were as follows:

- the potential for stronger social networks and greater social support in bypassed communities due to an improved pedestrian environment, providing protective effects for health and health inequalities through factors linked to community cohesion and thus with mental health;
- reduced traffic noise for most dwellings contributing to a quieter environment, particularly in bypassed communities, reducing adverse effects of disturbance on physical and mental health;
- safer conditions for driving (and crossing) the A5025 for all road users, including safer conditions in bypassed communities for pedestrians and cyclists due to less traffic. Reducing risks of serious injuries or fatalities;
- improved journey times for rural community when accessing healthcare, schools and services in larger settlements, reducing access deprivation and supporting receipt of time-critical healthcare; and
- wider economic benefits of an improved highway supporting tourism and a more efficient distribution network for businesses, promoting prosperity and the health promoting lifestyle choices it affords.

G.2.8 Volume I considers these potentially significant health effects.

G.2.9 Those potential changes that were judged to be generally adverse for health, but not likely to be significant, were also screened out of further assessment. These were the potential for:

- temporary construction stage increases in noise, air pollution and travel times;
- temporary construction stage reductions in emergency service response times due to increased road congestion;
- permanent small operational stage increases in traffic related noise and air pollution for a small number of dwellings;
- permanent operational stage change in the viability of local shops in bypassed communities due to a reduction in passing trade (affecting local diet, elderly mobility and physical activity); and

- permanent operational stage increases in views of the new highway (and vehicles) for a small number of dwellings.
- G.2.10 As set out in the Environmental Statement, construction activities would be undertaken by the appointed contractor in line with the good practice mitigation and measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-Code of Construction Practice (Application Reference Number: 8.12).
- G.2.11 In addition, the following adverse effects were noted relating to the use of the operational A5025 Off-line Highway Improvements by the construction stage transport requirements of the Project (e.g. HGVs and buses):
- noise disturbance, including at night;
 - air pollution related to traffic emissions;
 - increased accident risk due to more vehicles on the road; and
 - increased health related journey times due to more vehicles on the road.
- G.2.12 As these effects would be wider than the A5025 Off-line Highway Improvements (being relevant to all sections of the A5025 (and potentially the wider road network)), these issues are noted in this rapid HIA screening statement and are considered further in volume C.
- G.2.13 Although screened out, the operation of the A5025 Off-line Highway Improvements would be expected to contribute to cumulative beneficial effects to road safety in combination with the operation of the A5025 On-line Highway Improvements (the subject of a separate assessment accompanying a *Town and Country Planning Act 1990* planning application for those works).
- G.2.14 Volume I considers cumulative effects (including the A5025 Off-line Highway Improvements).
- G.2.15 In summary, the conclusion of the rapid HIA screening for the A5025 Off-line Highway Improvements is that there are no potentially significant health effects that warrant further assessment.
- G.2.16 Notwithstanding this conclusion, a number of opportunities to promote health were identified during the rapid HIA screening process. These have informed wider mitigation measures for the Project and include:
- At appropriate connecting locations the Off-line Highway Improvements would ensure connectivity for existing pedestrian footway and cycle routes.
 - Horizon would provide notification in advance of (and during) the construction works to indicate expected delay locations and durations to traffic. Notification would be in Welsh and English, for example, notification measures may include: roadside signs on the approaches to the affected areas of the A5025; a regularly updated Project website detailing how the A5025 Off-line Highway Improvements are progressing together with the potential disruption along the route; and leaflets sent to specifically affected local communities or distributed as part of community liaison meetings.

G.2.17 These measures would be secured through the A5025 Off-line Highway Improvements sub-Code of Construction Practice (Application Reference Number: 8.12).

H Logistics Centre

H.1 Introduction

- H.1.1 This volume describes the assessment of potential health and well-being effects resulting from the construction, operation and decommissioning of the Logistics Centre.
- H.1.2 The volume discusses the HIA design input for the Logistics Centre and the rapid HIA screening process that was undertaken.
- H.1.3 A summary description of the Logistics Centre is provided in volume A; further details are provided in chapter H1 of the Environmental Statement (Application Reference Number: 6.8.1).
- H.1.4 Cumulative effects are discussed in volume I.
- H.1.5 The full rapid HIA screening statement is set out in volume O.

H.2 Summary of rapid HIA screening statement

- H.2.1 A rapid HIA screening statement has been prepared for the proposed Logistics Centre.
- H.2.2 The Logistics Centre would be an important component for the delivery of the Project. The facility is a key component of the Project's Integrated Traffic and Transport Strategy (App C2.05 - DCO TA appendix F). The Logistics Centre would be used during the construction stage of the Power Station to control the flow of Project-related traffic along the A5025.
- H.2.3 The Logistics Centre would provide 100 parking bays for use primarily by HGVs. The facility would also include a welfare building for staff and drivers, and security features (such as fencing, barriers, vehicle scanning and CCTV). The site would be fenced and operate 24/7.
- H.2.4 The design and mitigation for the Logistics Centre has been informed by iterative discussion as part of this rapid HIA screening and the wider HIA work for the Project.
- H.2.5 Those affected by the Logistics Centre are likely to include vulnerable groups. Potentially significant health effects to such groups (and the general public) were considered. The rapid HIA screening concluded that there are no health effects requiring further assessment.
- H.2.6 It was judged that changes due to the Logistics Centre would have some effects on health. Those changes that were judged to be generally beneficial for health, but not likely to be significant, were screened out of further assessment. These would be the potential for the following small operational stage improvements:
 - the Logistics Centre offers an opportunity for Project driver respite and vehicle checks, which would be expected to benefit road safety; and
 - the small numbers of jobs associated with the Logistics Centre may contribute to direct and indirect economic benefits.

- H.2.7 The rapid HIA screening notes that operational use of the Logistics Centre would reduce additional vehicle movements on the A5025 associated with material transport for the Project's construction (mitigating any adverse effect on road safety and health-trip journey times). However, for the purposes of rapid HIA screening, and in line with proportionate assessment, the beneficial effect was noted, but screened out as not requiring further assessment here. The Logistics Centre's role as embedded mitigation for the Project is discussed in volume C.
- H.2.8 Those potential changes that were judged to be generally adverse for health, but not likely to be significant, were also screened out of further assessment. These were the potential for:
- temporary early-construction stage reduction in cycle access during site entrance improvements;
 - visual change, including from night-time lighting, during the 24-hour operation of the Logistics Centre;
 - small localised and temporary reductions in road safety near the Logistics Centre due to peaks in vehicle movements; and
 - increases in actual or perceived levels of crime in relation to illicit markets (e.g. people trafficking and prostitution) targeting lorry drivers using the Logistics Centre, including drivers walking from the secure compound of the Logistics Centre to other truck stop amenities in the area.
- H.2.9 As set out in the Environmental Statement, construction activities would be subject to standard good practice mitigation and measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and Logistics Centre sub-Code of Construction Practice (Application Reference Number: 8.11).
- H.2.10 Being remote from the Wylfa Newydd Development Area, there is limited potential for the construction, operation or decommissioning of the Logistics Centre to have cumulative effects with activities at that location or with other elements of the Project. The Logistics Centre would be accessed from roads with high capacity (a purpose-built B-road for Parc Cybi and the A55), reducing the potential for traffic related cumulative effects.
- H.2.11 Volume I considers cumulative effects (including the Logistics Centre).
- H.2.12 In summary, the conclusion of the rapid HIA screening for the Logistics Centre is that there are no potentially significant health effects that warrant further assessment.
- H.2.13 Notwithstanding this conclusion, a number of opportunities to promote health were identified during the rapid HIA screening process. These have informed wider mitigation measures for the Project and include:
- Bilingual Signage would be erected on the Lôn Trefignath as it approaches the site entrance (in both directions) and on the highway at the site entrance and at the site exit to warn pedestrians, cyclists and drivers of the zebra crossing and potential conflicts as traffic moves in and out of the Logistics Centre. Drivers would also be advised, as part of their

job-specific training, of the need to be aware of other road users when entering and exiting the site.

- Prior to, and throughout, the operation of the Logistics Centre, appropriate dialogue would be maintained between Horizon, the contractor, the delivery and logistics supply chain and local safeguarding agencies, including North Wales Police. Discussions would include any individual or coordinated measures appropriate to avoiding risks to vulnerable groups, for example in relation to human trafficking and direct or indirect sex work. Security protocols will be agreed by Horizon and NWP, and other safeguarding agencies, and reviewed regularly. Security staff will be trained in safeguarding issues so that, for example, staff who conduct site and/or vehicle inspections will be aware of signs of illegal activity such as human trafficking.
- During operation of the Logistics Centre, Horizon would provide information at the welfare building to promote health and well-being, including occupational health and hygiene and good worker conduct. The welfare building at the Logistics Centre would include education and awareness-raising materials targeted at the lorry drivers using the Logistics Centre. The materials would cover road safety, cultural and health promotion issues, linking with wider occupational health measures for the Wylfa Newydd Project. Frequently updated multi-media and information leaflets could be used.

H.2.14 These measures would be secured through the Parc Cybi Logistics Centre sub-Code of Construction Practice (Application Reference Number: 8.11) and the Workforce Management Strategy (Application Reference Number: 8.5) in respect of driver awareness.

I Cumulative effects

I.1 Introduction

What are cumulative effects?

- I.1.1 The individual impacts from a single development or project may not result in significant effects on their own but, when combined with other impacts, the effects could become significant. Similarly, individual significant effects may combine with other effects to become more significant. The resultant overall effects arising in either of these circumstances are known as cumulative effects.
- I.1.2 Cumulative effects can arise from different developments (within the same project), or across different projects. The following terminology has been adopted to describe cumulative effects associated with the Wylfa Newydd DCO Project.
- Intra-project: in a complex project involving multiple developments, such as the Wylfa Newydd DCO Project, cumulative effects can arise when a single population is affected by different developments (in the same project) at the same time. For example, noise from the construction at the Wylfa Newydd Development Area and light from construction of the A5025 Off-line Highway Improvements could combine to have a cumulative effect on local residents.
 - Inter-project: cumulative effects can arise when a single resource or receptor is affected by more than one project at the same time. For example, noise from construction of the Wylfa Newydd DCO Project and noise from the construction of a proposed National Grid overhead power line could combine to have a cumulative effect on local residents.

Temporal limits

- I.1.3 Cumulative effects may arise either:
- when the effects to the same receptor occur during the same time period and so result in a cumulative effect of increased significance; or
 - when the effects occur soon after each other and affect the same receptor. In such cases, the increased duration has the potential to increase the significance of effect.

Mitigation

- I.1.4 The starting point for the cumulative effects assessment is to consider the residual effects reported in volumes C to H (i.e. after embedded, good practice and additional mitigation has already been taken into account).
- I.1.5 In cases where the identified cumulative effects would be more significant than the contributing individual effects, additional mitigation measures are identified, where practicable.

- I.1.6 Because mitigation measures identified for cumulative effects would also affect the significance of individual effects, the assessment process becomes iterative. The assessment of individual effects is revisited, taking into account all additional mitigation. Therefore, the assessment sections in volumes C to H of this HIA Report have taken into account all additional mitigation measures, whether proposed to mitigate individual or cumulative effects.
- I.1.7 In order to avoid duplication of reporting, no additional mitigation measures are reported in volume I of this HIA Report.
- I.1.8 It will not always be possible for Horizon to mitigate inter-project cumulative effects without the input of third-party developers.

I.2 Intra-project cumulative effects

- I.2.1 An assessment has been undertaken to evaluate the potential for each of the individual developments within the Wylfa Newydd DCO Project to interact with each other and thereby have intra-project cumulative health effects. The application for development consent covers the following developments which collectively make up the Wylfa Newydd DCO Project and are therefore considered in the intra-project cumulative effects assessment:
- 'Project-wide effects' and effects of the 'WNDA Development' (associated with the Power Station, the Site Campus, other on-site development and Marine Works), see volumes C and D;
 - the Off-Site Power Station Facilities, see volume E;
 - the Park and Ride, see volume F;
 - A5025 Off-line Highway Improvements, see volume G; and
 - the Logistics Centre, see volume H.
- I.2.2 Table I-1 summarises all the intra-project cumulative effect contributions from individual developments across population groups. All residual effects of minor and above significance (both beneficial and adverse) in volumes C to H of this HIA Report are summarised. This includes those issues identified during the rapid HIA screening for volumes E to H that were potentially significant but did not warrant further assessment.
- I.2.3 The entry of 'Y' in table I-1 indicates the particular relevance of certain vulnerable groups to an issue discussed for the relevant geographic population. The 'local and regional' population is noted to include the site-specific populations. Similarly, the 'national and international' population includes site-specific, local and regional populations. The table is laid out accordingly and repetition avoided.
- I.2.4 Table I-2 summarises effects for each geographic population and concludes with a professional judgement of the intra-project cumulative effect scores, i.e. the combined overall residual effects of the Project for each geographic population (noting any particular effects due to combined proximity and vulnerability).
- I.2.5 Table I-3 similarly summarises the effects relevant to each vulnerable group and concludes with a professional judgement of the intra-project cumulative

effect score, i.e. the combined overall residual effect of the Project for each vulnerable group.

- I.2.6 The scores in table I-2 and table I-3 are carried forward into the next section, which considers inter-project cumulative effects. Whilst table I-2 and table I-3 show a range of beneficial and adverse scores, the overall effect for population health, taking account of differing effects across vulnerable groups and geographic levels, of the Project is considered to be beneficial. This encompasses minor to major beneficial effects (predominantly at the local, regional, national and international geographic levels, with many such benefits also extending to site-specific communities) and minor to moderate adverse effects (mainly for some site-specific communities, but also in some cases for the local and regional level). The majority of adverse effects would be during the construction stage. Many of the beneficial effects would start in the construction stage and most would carry on into the operation stage.

Table I-1 Intra-project cumulative effect contributions from individual developments across population groups

Effects of individual developments (brief description and significance)	Geographic population groups						Potentially vulnerable groups			
	Population near the Wylfa Newydd Development Area (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)	Population of Anglesey and north Wales (local and regional)	Population of Wales and beyond the borders of Wales (national and international)	Children and young people	Older people	People with existing poor health (physical and mental health)	People who are deprived, including those on low incomes
Project-wide effects	N/A	Minor adverse effect for vulnerable groups due to increased air pollutant emissions from vehicles transporting materials and people on the local road network during construction	N/A	N/A	N/A	N/A	Y	Y	Y	N/A
	N/A	Minor adverse effect for vulnerable groups due to increased noise from vehicles transporting materials and people on the local road network during construction	N/A	N/A	N/A	N/A	Y	Y	Y	N/A
	The analysis in the column for <i>local and regional effects</i> also encompasses these site-specific geographic levels.				Minor adverse effect for vulnerable groups from current tenants leaving due to housing competition during construction	N/A	N/A	N/A	N/A	Y
	The analysis in the column for <i>local and regional effects</i> also encompasses these site-specific geographic levels. Particularly for the population near the local road network due to proximity between vehicles and people and the frequent shared use of routes.				Minor adverse effect for vulnerable groups due to reduced road safety during construction	N/A	Y	Y	N/A	N/A
	The analysis in the column for <i>local and regional effects</i> also encompasses these site-specific geographic levels.				Minor adverse effect for vulnerable groups due to longer health trip journey times (e.g. to a hospital) during construction	N/A	N/A	N/A	Y	N/A

Effects of individual developments (brief description and significance)	Geographic population groups						Potentially vulnerable groups			
	Population near the Wylfa Newydd Development Area (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)	Population of Anglesey and north Wales (local and regional)	Population of Wales and beyond the borders of Wales (national and international)	Children and young people	Older people	People with existing poor health (physical and mental health)	People who are deprived, including those on low incomes
	The analysis in the column for local and regional effects also encompasses these site-specific geographic levels. Particularly for the population near the Wylfa Newydd Development Area due to Site Campus proximity, and for the population near or in Holyhead and near Parc Cybi due to the gravitating influence of Holyhead amenities.				Minor to moderate adverse effect for vulnerable groups due to pressure on NHS capacity during construction. Alternatively, moderate beneficial effect if the Project aligns with the NHS to build local capacity	N/A	N/A	N/A	Y	N/A
	The analysis in the column for local and regional effects also encompasses these site-specific geographic levels.				Negligible to minor adverse effect for vulnerable groups due to increased communicable disease during construction	N/A	Y	Y	Y	N/A
	The analysis in the column for local and regional effects also encompasses these site-specific geographic levels. Particularly for the population near the Wylfa Newydd Development Area due to its proximity to the Site Campus, and for the population near, or in Holyhead and near Parc Cybi due to the gravitating influence of Holyhead amenities.				Minor adverse effect for vulnerable groups due to less healthy or less safe lifestyles and behaviours during construction	N/A	Y	N/A	N/A	N/A
	The analysis in the column for local and regional effects that also encompasses these site-specific geographic levels. Particularly for the population near the Wylfa Newydd Development Area due to Site Campus proximity, and for the population near or in Holyhead and near Parc Cybi due to gravitating influence of Holyhead amenities.				Minor adverse effect for vulnerable groups due to changes in social networks and culture during construction	N/A	Y	Y	N/A	N/A
	The analysis in the column for local and regional effects also encompasses these site-specific geographic levels.				Minor beneficial effect for general population and major beneficial for vulnerable groups due to supporting local people to access jobs during construction	N/A	Y	N/A	N/A	Y

Effects of individual developments (brief description and significance)	Geographic population groups						Potentially vulnerable groups			
	Population near the Wylfa Newydd Development Area (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)	Population of Anglesey and north Wales (local and regional)	Population of Wales and beyond the borders of Wales (national and international)	Children and young people	Older people	People with existing poor health (physical and mental health)	People who are deprived, including those on low incomes
	The analysis in the column for local and regional effects also encompasses these site-specific geographic levels.				Minor adverse effect for vulnerable groups due to labour churn in health and social care community services (the movement of workers between roles) during construction	N/A	N/A	Y	Y	Y
	The analysis in the column for local and regional effects also encompasses these site-specific geographic levels. Particularly for the population near or in Holyhead and near Parc Cybi due to gravitating influence of Holyhead amenities.				Minor beneficial effect for vulnerable groups due to workers spending locally (indirectly benefiting the local economy) during construction	N/A	N/A	N/A	N/A	Y
	The analysis in the column for local and regional effects also encompasses these site-specific geographic levels.				Major beneficial effect for vulnerable groups from supporting local people to access jobs during operation	N/A	Y	N/A	N/A	Y
	The analysis in the column for local and regional effects also encompasses these site-specific geographic levels.				Moderate beneficial effect for vulnerable groups from upskilling local people for construction roles	N/A	Y	N/A	N/A	Y
	The analysis in the column for local and regional effects also encompasses these site-specific geographic levels.				Minor beneficial effect for general population and a moderate beneficial effect for vulnerable groups from supporting local people with their career choices, apprenticeships and progression during operation	N/A	Y	N/A	N/A	Y

Effects of individual developments (brief description and significance)	Geographic population groups						Potentially vulnerable groups			
	Population near the Wylfa Newydd Development Area (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)	Population of Anglesey and north Wales (local and regional)	Population of Wales and beyond the borders of Wales (national and international)	Children and young people	Older people	People with existing poor health (physical and mental health)	People who are deprived, including those on low incomes
	The analysis in the column for national and international effects also encompasses the site-specific, local and regional geographic levels. Particularly for the population near the Wylfa Newydd Development Area due to Power Station proximity.					Moderate adverse effect for vulnerable groups due to the understanding of risk about, and expectations of, the Power Station during operation	N/A	N/A	N/A	Y
	The analysis in the column for national and international effects also encompasses the site-specific, local and regional geographic levels.					Minor beneficial effect for general population and a moderate beneficial effect for vulnerable groups nationally from the health benefit of an uninterrupted and affordable electricity supply during operation	Y	Y	Y	Y
	The analysis in the column for national and international effects also encompasses the site-specific, local and regional geographic levels.					Moderate beneficial effect for vulnerable groups globally from the health benefit from reducing the effect of climate change during operation	N/A	N/A	N/A	Y
WNDA Development	Minor adverse effect for vulnerable groups due to vehicle and machinery air pollutant emissions on the Wylfa Newydd Development Area during construction	N/A	N/A	N/A	N/A	N/A	Y	Y	Y	N/A
	Minor adverse effect for vulnerable groups due to dust generated by construction activities, excavation and earth movements during construction	N/A	N/A	N/A	N/A	N/A	Y	Y	Y	N/A

Effects of individual developments (brief description and significance)	Geographic population groups						Potentially vulnerable groups			
	Population near the Wylfa Newydd Development Area (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)	Population of Anglesey and north Wales (local and regional)	Population of Wales and beyond the borders of Wales (national and international)	Children and young people	Older people	People with existing poor health (physical and mental health)	People who are deprived, including those on low incomes
	Minor adverse effect for general population and a moderate adverse effect for vulnerable groups due to vehicle and machinery noise on the Wylfa Newydd Development Area during construction	N/A	N/A	N/A	N/A	N/A	Y	Y	Y	N/A
	Minor adverse effect for general population and a moderate adverse effect for vulnerable groups due to changes to local context and identity during construction	N/A	N/A	N/A	N/A	N/A	Y	Y	N/A	N/A
	Minor adverse effect for vulnerable groups due to night-time lighting effects during construction	N/A	N/A	N/A	N/A	N/A	Y	Y	N/A	N/A
	Minor adverse effect for vulnerable groups due to active travel diversions (e.g. walking and cycling routes) during construction	N/A	N/A	N/A	N/A	N/A	Y	Y	Y	N/A
	Moderate beneficial effect for vulnerable groups due to alternative opportunities for the most affected communities to be physically active during construction	N/A	N/A	N/A	N/A	N/A	Y	Y	Y	N/A

Effects of individual developments (brief description and significance)	Geographic population groups						Potentially vulnerable groups			
	Population near the Wylfa Newydd Development Area (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)	Population of Anglesey and north Wales (local and regional)	Population of Wales and beyond the borders of Wales (national and international)	Children and young people	Older people	People with existing poor health (physical and mental health)	People who are deprived, including those on low incomes
Off-Site Power Station Facilities	N/A	No likely significant population health effects expected (see volume E).	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Park and Ride	N/A	Minor beneficial effect for vulnerable groups due to reducing additional vehicle movements on the A5025 associated with the Project's construction (mitigating any adverse effect on road safety and health trip journey times)	No likely significant population health effects expected (see volume F).	N/A	N/A	N/A	Y	Y	N/A	N/A
A5025 Off-line Highway Improvements	N/A	Minor beneficial effect for vulnerable groups due to stronger social networks and greater social support in bypassed communities from an improved pedestrian environment	N/A	N/A	N/A	N/A	N/A	Y	Y	Y
	N/A	Minor beneficial effect for vulnerable groups due to reduced traffic noise for most dwellings contributing to a quieter environment, particularly in bypassed communities	N/A	N/A	N/A	N/A	Y	Y	Y	N/A

Effects of individual developments (brief description and significance)	Geographic population groups						Potentially vulnerable groups			
	Population near the Wylfa Newydd Development Area (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)	Population of Anglesey and north Wales (local and regional)	Population of Wales and beyond the borders of Wales (national and international)	Children and young people	Older people	People with existing poor health (physical and mental health)	People who are deprived, including those on low incomes
	N/A	Minor beneficial effect for vulnerable groups due to safer conditions for driving (and crossing) the A5025 for all road users, including safer conditions in bypassed communities for pedestrians and cyclists due to less traffic	N/A	N/A	N/A	N/A	Y	Y	N/A	N/A
	N/A	Minor beneficial effect for vulnerable groups due to improved journey times for rural community when accessing healthcare, schools and services in larger settlements	N/A	N/A	N/A	N/A	N/A	N/A	Y	N/A
	See analysis in column for local and regional effects that also encompasses these site-specific geographic levels.				Minor beneficial effect for vulnerable groups due to wider economic benefits of an improved highway supporting tourism and a more efficient distribution network for businesses	N/A	Y	Y	Y	Y
Logistics Centre	N/A	Minor beneficial effect for vulnerable groups due to reducing additional vehicle movements on the A5025 associated with the Project's construction (mitigating any adverse effect on road safety and health trip journey times)	N/A	No likely significant population health effects expected (see volume H).	N/A	N/A	Y	Y	N/A	N/A

Table I-2 Intra-project cumulative effect descriptions and scores for geographic population groups

	Geographic population groups					
	Population near the Wylfa Newydd Development Area (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)	Population of Anglesey and north Wales (local and regional)	Population of Wales and beyond the borders of Wales (national and international)
Description of cumulative effect	Cumulative effects relate to the combined population health influences from: - air pollutant, dust and noise emissions on the Wylfa Newydd Development Area; - the presence of construction workers contributing to pressure on NHS capacity near Cemaes; - the presence of off-shift construction workers near Cemaes contributing to less healthy or less safe communities, or to changes in social networks and culture; - visual, economic and cultural changes to local context and identity (including night-time lighting); - changes in physical activity due to both adverse effects of diversions (e.g. walking and cycling routes) and beneficial effects of alternative opportunities being provided; and - mental health is linked to understanding of risk, how the risk and benefit of the Power Station are understood and the expectations of people about the Power Station.	Cumulative effects relate to the combined population health influences from: - reduced road safety, as well as additional air pollutant and noise emissions from Project vehicles on the local road network; - benefits to road safety from the A5025 Highway Improvements, as well as the use of the Park and Ride and Logistics Centre in reducing additional vehicle movements on the A5025; - benefits from the A5025 Highway Improvements in bypassed communities on the A5025 from reduced traffic noise, improved road safety and promoting stronger social networks and greater social support; and - wider benefits from the A5025 Highway Improvements to improved journey times for the rural community when accessing healthcare, schools and services in larger settlements.	No likely significant population health effects are expected at this site-specific location. Cumulative effects are therefore not expected.	Cumulative effects relate to the combined population health influences from: - the presence of construction workers and lorry drivers contributing to pressure on NHS capacity near Holyhead; - the presence of off-shift construction workers and lorry drivers in Holyhead contributing to less healthy or less safe communities, or to changes in social networks and culture; and - beneficial economic effects of workers spending locally in Holyhead.	Cumulative effects relate to the combined population health influences from: - reduced road safety and longer health related journey times due to Project vehicles on the local road network; - the presence of construction workers contributing to pressure on NHS capacity (alternatively, there may be benefits if the Project aligns with the NHS to build local capacity); - the presence of construction workers contributing to housing competition, communicable disease, less healthy or less safe communities and to changes in social networks and culture; - beneficial effects from supporting local people to upskill and access jobs, as well as a potential adverse effect due to labour churn in health and social care community services; and - beneficial economic effects of workers spending locally and of an improved highway network following the A5025 Highway Improvements.	Cumulative effects relate to the combined population health influences from: - mental health stressors linked to how the risks and expectations of the Power Station are understood; - the national health benefit of an uninterrupted and affordable electricity supply; and - the global health benefit from reducing the effect of climate change.
Significance of cumulative effect	For the general population (the majority of people) near the Wylfa Newydd Development Area, the	For the general population (the majority of people) beside the local road network, the overall residual population	As likely significant site-specific population health influences are not expected, the	For the general population (the majority of people) near, or in, Holyhead and near Parc Cybi, the overall	For the general population (the majority of people) of Anglesey and north Wales, the overall residual population	For the general population (the majority of people) of Wales and beyond the borders of Wales, the

	Geographic population groups					
	Population near the Wylfa Newydd Development Area (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)	Population of Anglesey and north Wales (local and regional)	Population of Wales and beyond the borders of Wales (national and international)
	overall residual population health effect from the Project is considered to be up to minor adverse . For relevant vulnerable groups, the combination of proximity to environmental and social change and increased sensitivity to such changes may result in up to a moderate adverse effect (this takes into account local, regional and national effects that would also be experienced at this site-specific location).	health effect from the Project is considered to be negligible . For relevant vulnerable groups, the combination of proximity to roads and increased sensitivity to traffic effects may result in up to a minor adverse effect (this takes into account local, regional and national effects that would also be experienced at this site-specific location).	overall residual population health effect relates to distributed local and regional effects. The effect is considered to be negligible for the general population and up to a minor beneficial effect for relevant vulnerable groups.	residual population health effect from the Project is considered to be negligible . For relevant vulnerable groups (despite some short-term peaks in adverse effects at the busiest construction times), the combination of proximity to new economic opportunities and increased sensitivity to their benefits may result in a minor beneficial effect (this takes into account local, regional and national effects that would also be experienced at this site-specific location).	health effect from the Project is considered to be minor beneficial . For relevant vulnerable groups (despite some short-term peaks in adverse effects at the busiest construction times), the combination of local and regional economic opportunities and increased sensitivity to their benefits may result in a moderate beneficial effect (this takes into account both site-specific and national and international influences).	overall residual population health effect from the Project is considered to be minor beneficial . For relevant vulnerable groups, the combination of affordable, uninterrupted, low-carbon electricity and increased sensitivity to its benefits may result in a moderate beneficial effect (this takes into account both site-specific and local and regional influences).

Table I-3 Intra-project cumulative effect descriptions and scores for potentially vulnerable groups within geographic populations

	Potentially vulnerable groups			
	Children and young people	Older people	People with existing poor health (physical and mental health)	People who are deprived, including those on low incomes
Description of cumulative effect	Cumulative effects relate to the combined population health influences from: - air pollutant, dust and noise emissions on the Wylfa Newydd Development Area; - reduced road safety, as well as additional air pollutant and noise emissions from Project vehicles on the local road network; - the presence of construction workers contributing to less healthy or less safe communities and to changes in social networks and culture; - visual, economic and cultural changes to local context and identity (including night-time lighting); - changes in physical activity due to both adverse effects of diversions (e.g. walking and cycling routes) and beneficial effect of alternative opportunities being provided;	Cumulative effects relate to the combined population health influences from: - air pollutant, dust and noise emissions on the Wylfa Newydd Development Area; - reduced road safety, as well as additional air pollutant and noise emissions from Project vehicles on the local road network; - the presence of construction workers contributing to changes in social networks and culture; - a potential adverse effect due to labour churn in health and social care community services; - visual, economic and cultural changes to local context and identity (including night-time lighting); - changes in physical activity due to both adverse effects of diversions (e.g. walking and cycling routes) and beneficial effect of alternative opportunities being provided;	Cumulative effects relate to the combined population health influences from: - air pollutant, dust and noise emissions on the Wylfa Newydd Development Area; - longer health related journey times as well as additional air pollutant and noise emissions from Project vehicles on the local road network; - the presence of construction workers contributing pressure on NHS capacity (alternatively, there may be benefits if the Project aligns with the NHS to build local capacity); - a potential adverse effect due to labour churn in health and social care community services; - changes in physical activity due to both adverse effects of diversions (e.g.	Cumulative effects relate to the combined population health influences from: - the presence of construction workers contributing to housing competition; - a potential adverse effect due to labour churn in health and social care sectors; - mental health stressors linked to how the risks and expectations of the Power Station are understood; - beneficial effects from supporting local people to upskill and access jobs; - beneficial economic effects of workers spending locally;

	Potentially vulnerable groups			
	Children and young people	Older people	People with existing poor health (physical and mental health)	People who are deprived, including those on low incomes
	- beneficial effects from supporting local people to upskill and access jobs; - benefits to road safety from the A5025 Highway Improvements, as well as the use of the Park and Ride and Logistics Centre in reducing additional vehicle movements on the A5025; - benefits from the A5025 Highway Improvements in bypassed communities from reduced traffic noise; - beneficial wider economic effects of an improved highway network following the A5025 Highway Improvements; and - the national health benefit of an uninterrupted and affordable electricity supply.	- benefits to road safety from the A5025 Highway Improvements, as well as the use of the Park and Ride and Logistics Centre in reducing additional vehicle movements on the A5025; - benefits from the A5025 Highway Improvements in bypassed communities from reduced traffic noise, improved road safety and promoting stronger social networks and greater social support; - beneficial wider economic effects of an improved highway network following the A5025 Highway Improvements; and - the national health benefit of an uninterrupted and affordable electricity supply.	walking and cycling routes) and beneficial effect of alternative opportunities being provided; - benefits from the A5025 Highway Improvements in bypassed communities from reduced traffic noise, improved road safety and promoting stronger social networks and greater social support; - wider benefits of an improved highway network following the A5025 Highway Improvements both to the economy and from improved journey times for rural community when accessing healthcare; and - the national health benefit of an uninterrupted and affordable electricity supply.	- benefits from the A5025 Highway Improvements in bypassed communities from promoting stronger social networks and greater social support; - beneficial wider economic effects of an improved highway network following the A5025 Highway Improvements; - the national health benefit of an uninterrupted and affordable electricity supply; and - the global health benefit from reducing the effect of climate change.
Significance of cumulative effect	Due to developmental stage and other factors (e.g. more time spent outdoors and resting during the day), young people are more sensitive to air pollution and sleep disturbance. Young people are also sensitive to changes in road safety risk, both as road users (pedestrians/cyclists) and as passengers in vehicles. Young people may benefit directly from employment and educational opportunities and indirectly as dependants). The overall residual population health effect from the Project for this group, taking account of differing effects across geographic levels (site-specific, local, regional, national and international), is expected to be up to minor beneficial.	Older peoples' vulnerabilities relate to biological and social factors (e.g. lower bone density and being more prone to injuries from falls, or greater reliance on social networks based on the existing social or landscape context). Older people are less likely to benefit directly from employment and educational opportunities, although they may benefit indirectly if family members gain good quality employment locally. The overall residual population health effect from the Project for this group, taking account of differing effects across geographic levels (site-specific, local, regional, national and international), is expected to be up to minor adverse.	People with existing poor health may be more sensitive to changes in air quality and noise (e.g. worsening asthma or reduced mobility increasing time spent at home). People with multiple or complex long-term health conditions are particularly reliant on, or more frequently use, medical and health-care services. The overall residual population health effect from the Project for this group, taking account of differing effects across geographic levels (site-specific, local, regional, national and international), is expected to be up to minor adverse.	People living in deprivation (including those on low incomes) may be particularly sensitive to housing rental and purchase prices. Beneficial effects are expected for people living in deprivation from employment and educational opportunities. Importantly, such opportunities have the potential to reduce inequalities. The overall residual population health effect from the Project for this group, taking account of differing effects across geographic levels (site-specific, local, regional, national and international), is expected to be up to minor beneficial.

I.3 Inter-project cumulative effects

- I.3.1 An assessment has been undertaken to evaluate the potential for the Wylfa Newydd DCO Project to interact with other projects and thereby have inter-project cumulative health effects.
- I.3.2 A key part of the assessment process for inter-project cumulative effects is to identify those past, present or reasonably foreseeable future projects which could contribute to such cumulative effects.
- I.3.3 Table I-4 sets out the short list of other projects identified. The Environmental Statement chapter I2 (cumulative effects scope) (Application Reference Number: 6.9.2) sets out the longer list considered and the process of selection.
- I.3.4 Table I-5 summarises effects for each geographic population and vulnerable group and concludes with a professional judgement of the inter-project cumulative effect score, i.e. the combined overall residual effect of the Wylfa Newydd DCO Project and all other relevant projects.
- I.3.5 Where scores do not change between intra-project and inter-project columns, this reflects that the beneficial and adverse influences introduced by other projects for a given population tend to cancel each other out, or would not act cumulatively with the Wylfa Newydd DCO Project.
- I.3.6 These cumulative effect scores represent an estimate of the overall combined population health effect from many determinants of health. Such a summary score is considered useful for high level application determination purposes, but should be treated with caution as it does not necessarily represent the expected change in population health. This is because it does not take into account other future factors beyond the described developments (e.g. macro-economic effects, investment decisions, new policy implementations or future health promotion activities). Such factors cannot be anticipated at this time, but it is unlikely that there would be no changes. As decision making in Wales (and on the Isle of Anglesey) is guided by the *Well-being of Future Generations (Wales) Act 2015*, it would be expected that the overall picture would be of change that is of benefit to population health.
- I.3.7 Whilst table I-5 shows a range of beneficial and adverse scores, the overall effect for population health, taking account of differing effects across vulnerable groups and geographic levels, of the Wylfa Newydd DCO Project and all relevant past, current and reasonably foreseeable future projects, that it might interact with, is considered to be beneficial. This encompasses minor to major beneficial effects (at the local, regional, national and international geographic levels, with many such benefits also extending to site-specific communities) and minor to moderate adverse effects (for some site-specific communities). The majority of adverse effects are during the construction stage. For some of the projects the beneficial effects start in the construction stage (e.g. the Wylfa Newydd DCO Project) but for the majority of other projects the beneficial effects start and continue through the operation stage.

Table I-4 Other projects which could contribute to cumulative effects

Ref. No.	Developer	Project title and description
AN01	Magnox Limited	Decommissioning of the Existing Power Station Decommissioning of the Existing Power Station (Wylfa) including defuelling, care and maintenance of the existing facilities followed by decommissioning and final site clearance.
AN02	Orthios Group	Anglesey Eco Park: A 299MWe biomass power station within the existing consented scheme. On-land prawn-growing facility (aquaculture). A large soil-less indoor vegetable growing facility (hydroponics). Home compostable food packaging facility. The Centre of Excellence. Research and development. A deep-water jetty for bulk import.
AN04	Land and Lakes	A leisure village at Penrhos Coastal Park.
AN05	Conygar Stena Line Ltd	Holyhead Waterfront Redevelopment A comprehensive mixed-use development on 1.2km of Holyhead waterfront at Newry Beach and Porth-y-Felin.
AN06	Conygar	Parc Cybi Stage 2 Mixed-use employment developments, primarily distribution and warehousing space on the southern edge of Holyhead alongside the A55.
AN07	National Grid	North Wales Connection Project A new connection for new energy generation in north Wales. Potential new generation includes the proposed Wylfa Newydd DCO Project as well as a number of renewable energy projects.
AN08	TPG Wind Limited (a joint venture between E.ON and Eurus Energy UK Ltd)	Rhyd-y-groes Repower The current Rhyd-y-groes Wind Farm, located near the northern shores of Anglesey in Wales, has 22 turbines with a maximum total power output of 6.6MW. Proposals are to replace the current turbines with up to 11 modern turbines, which could produce up to 9.9MW of renewable energy.

Ref. No.	Developer	Project title and description
AN09	M-Sparc	Menai Science Park A new science park located on the outskirts of Gaerwen. Being developed as a location for industry-facing research projects, Small-Medium Enterprises and Corporates, to drive growth in knowledge-based science in north-west Wales.
AN10	Amlwch liquid natural gas (LNG)	Amlwch LNG Tankers would import liquid gas to a mooring 3km from the Amlwch coast. The gas would then be transferred by an undersea pipeline from the mooring platform to the site near the town of Amlwch, where it would be converted back to natural gas and sent into the UK gas network.
AN11	Minesto	Holyhead Deep 10 MW (and phased development to 80MW) Tidal kite installation off the coast of Holyhead, plus on-land elements and grid connection.
AN13	IACC	Holyhead Primary School New primary school planned to replace Ysgol y Parchedig Thomas Ellis, Ysgol y Parc and Ysgol Llaingoch, on the former Ysgol Cybi site in Holyhead.
AN14	IACC	Llanfaethlu Primary School Plans for a new primary school to replace Ysgol Cylch y Garn, Ysgol Ffrwd Win and Ysgol Llanfachraeth.
AN15	IACC	Llangefni Link Road Scheme The IACC is proposing a new 2.5km link road around the eastern side of Llangefni to enable traffic to more freely access the industrial estate in Coleg Menai and reduce expected traffic in Llangefni town centre.
AN20	Utilities companies (various)	Removal (and in some instances replacement) of services currently in place on the Wylfa Newydd Development Area Plans are in place to remove or replace existing services, e.g. electrical cables, which are currently installed on the Wylfa Newydd Development Area. This work is expected to be carried out by the relevant utilities companies under Permitted Development Rights and funded by Horizon.
AN23	Countryside Renewables	Llanbadrig Solar Farm Development of 220 acres (89ha) of agricultural land at Llanbadrig for the installation of a solar farm with the potential to generate up to 50MW.

Ref. No.	Developer	Project title and description
AN24	Grwp Llandrillo Menai	Coleg Menai Hybrid application for full planning permission for the creation of a new engineering centre, car parking, children's play area and associated works and applying for outline planning permission with some matters reserved for a residential development of 157 dwellings, a hotel and food and beverage facility along with associated car parking and works on land at Coleg Menai, Ffordd y Coleg, Llangejni.
AN25	Dwr Cymru Welsh Water	Wylfa Newydd Potable Water Supply Provision of a potable water supply for the construction and operation of the Power Station, involving abstraction, treatment and supply.
AN30	Stena Line Port Ltd	Holyhead Port Expansion.
GW01	Snowdonia Pumped Hydro Limited	Glyn Rhonwy Pumped Storage Construction and operation of a 600MWh pumped storage scheme, with a generating capacity of 99.9MW, at the Glyn Rhonwy and Chwarel Fawr quarries, near Llanberis, Gwynedd.
GW02	Gwynedd Council	A487 Caernarfon to Bontnewydd Bypass A new 9.8km highway commencing at the Goat roundabout (A499/487 junction) and terminating at the Plas Menai roundabout. The new route will have 22 separate structures including seven bridges.
RI02	Dublin Port Company	Alexandra Basin Redevelopment Project. Extension of infrastructure to open up Dublin Port to larger cruise and cargo ships. The port will dredge the river Liffey to increase the depth of its berths and the entrance channel from 7m to at least 10m. This will eliminate access issues caused by tides and enable large cruise and cargo ships to turn in Alexandra Basin and dock at East Link Bridge, rather than reversing up the Liffey to their berth as they do now.
RI03	Dun Laoghaire Harbour Company (Ireland)	Proposed New Cruise Berth For Large Cruise Ships at Dun Laoghaire Harbour Dun Laoghaire Harbour Company has permission for a cruise berth facility to cater for cruise ships up to 250m long.
NU02	EDF Energy	Hinkley Point C (Somerset) Construction, operation and decommissioning of a new Nuclear Power Station using AREVA ERP technology.

Ref. No.	Developer	Project title and description
NU03	EDF Energy	Sizewell C (Suffolk) Construction, operation and decommissioning of a new Nuclear Power Station using AREVA ERP technology.
NU04	NuGen	Moorside (Cumbria) Construction, operation and decommissioning of a new Nuclear Power Station using Westinghouse AP1000 technology.
-	Horizon TCPA	A5025 On-line Highway Improvements. Horizon are proposing to undertake additional development known as the A5025 On-line Highway Improvements. These works are not covered by the application for development consent and instead are instead the subject of an application for consent under the Town and Country Planning Act 1990. For simplicity of assessment, and having regard for the different consenting routes, this development has been brought into the inter-project assessment rather than the intra-project assessment.

[This page is intentionally blank.]

Table I-5 Inter-project cumulative effects

Receptor	Effect of Wylfa Newydd DCO Project	Effects of short-listed projects	Inter-project cumulative effect	
			Description of cumulative effect	Significance of cumulative effect
Population near the Wylfa Newydd Development Area (Tregele and Cemaes) (site-specific)	Up to minor adverse for the general population Up to moderate adverse for vulnerable groups	In addition to the Wylfa Newydd DCO Project, the projects which are expected to contribute to cumulative effects near the Wylfa Newydd Development Area are Existing Power Station decommissioning (AN01); National Grid North Wales Connection Project (AN07); Rhyd-y-groes Repower Wind Farm upgrade (AN08); Amlwch LNG pipeline (AN10); Utilities works on the Wylfa Newydd Development Area (AN20); Llanbadrig Solar Farm (AN23); Wylfa Newydd Potable Water Supply (AN25); and the A5025 On-line Highway Improvements. For pollution and disturbance, the strongest relationship is with the Existing Power Station decommissioning (AN01). Effects tend to decrease rapidly with distance so the contribution from other projects is likely to be small (transport effects are considered separately in the row below). The projects listed above would also bring lasting visual change to the local landscape of north-west Anglesey, which may affect local identity and the amenity of the environment for social gatherings. Although few views are likely to take in multiple projects, collectively the projects contribute to more industrial elements in the predominantly rural landscape. Adverse social and cultural effects may also arise for the local population from the individual and collective influx of workers to the area. The individual effects of other projects are likely to be minor due to the smaller scale of construction.	• Temporary cumulative emissions and disturbance effects during construction due to temporal overlap of all projects. • Collective air pollutants affecting the severity or incidence of cardiovascular and respiratory health conditions. • Collective noise levels affecting the severity or incidence of cardiovascular and mental health conditions (e.g. stress, anxiety or depression), notably due to sleep disturbance associated with night-time noise effects. • Permanent cumulative industrialisation of a rural area during operation. • Collective environmental, socio-economic and cultural changes in community identity affecting the severity or incidence of mental health conditions (e.g. stress, anxiety or depression) due to underlying social determinants influencing community cohesion.	Up to minor adverse for the general population Up to moderate adverse for vulnerable groups (where proximity and sensitivity coincide)
Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Negligible for the general population Up to minor adverse for vulnerable groups	The other developments are likely to make use of the local road network (A5025, A55, A5 and A487). In addition to the Wylfa Newydd DCO Project, the projects are Existing Power Station decommissioning (AN01); Anglesey Eco Park (AN02); Land and Lakes leisure village (AN04); Holyhead Waterfront Redevelopment (AN05); Parc Cybi Stage 2 employment developments (AN06); National Grid North Wales Connection Project (AN07); Rhyd-y-groes Repower Wind Farm upgrade (AN08); Menai Science Park (AN09); Amlwch LNG pipeline (AN10); Holyhead Deep tidal energy generation (AN11); Holyhead Primary School (AN13); Llanfaethlu Primary School (AN14); Llangefni Link Road Scheme (AN15); Utilities works on the Wylfa Newydd Development Area (AN20); Llanbadrig Solar Farm (AN23); Coleg Menai (AN24); Wylfa Newydd Potable Water Supply (AN25); Holyhead Port Expansion (AN30);	• Temporary cumulative traffic effects during construction due to temporal overlap of all projects. • Collective emission of air pollutants from road vehicles affecting the severity or incidence of cardiovascular and respiratory health conditions. • Collective noise emissions from road vehicles affecting the severity or incidence of cardiovascular and mental health conditions (e.g. stress, anxiety or depression), notably due to sleep disturbance associated with night-time noise effects. • Collective vehicle numbers affecting the severity or incidence of road accidents. • Collective vehicle numbers affecting emergency response times or non-emergency treatment outcomes associated with delays or non-attendance. • No permanent cumulative effect.	Up to minor adverse for the general population Up to moderate adverse for vulnerable groups (where proximity and sensitivity coincide)

Receptor	Effect of Wylfa Newydd DCO Project	Effects of short-listed projects	Inter-project cumulative effect	
			Description of cumulative effect	Significance of cumulative effect
		Glyn Rhonwy Pumped Storage hydro energy (GW01); the A487 Caernarfon to Bontnewydd Bypass (GW02); and the A5025 On-line Highway Improvements. The combined vehicle movements of the projects would be expected to reduce road safety, as well as increasing transport related air pollution and noise for communities beside the local road network. The majority of effects relate to construction and are therefore temporary. The combined traffic on the A5025 is expected to be mitigated to a large degree by the A5025 Highway Improvements. Combined transport effects are expected to be greatest at the Menai crossings, where the number of available lanes reduces. Combined congestion may affect health trip related journey times (emergency and non-emergency), as the main hospital services for Anglesey are based in Bangor. In relation to the Off-Site Power Station Facilities at Llanfaethlu, the Llanfaethlu Primary School (AN14) has been taken into consideration during the rapid HIA screening (see volume E).		
Population near Dalar Hir (site-specific)	Negligible for the general population Up to minor beneficial for vulnerable groups	No other projects in proximity to Dalar Hir have been identified. Effects relating to the use of the A5 and A55 are discussed in relation to the geographic population group for the population near the local road network.	None.	Negligible for the general population Minor beneficial for vulnerable groups (where proximity and sensitivity coincide)
Population near or in Holyhead and near Parc Cybi (site-specific)	Negligible for the general population Up to minor beneficial for vulnerable groups	In addition to the Wylfa Newydd DCO Project, the projects which are expected to contribute to cumulative effects for the population near or in Holyhead and near Parc Cybi are Anglesey Eco Park (AN02); Land and Lakes leisure village (AN04); Holyhead Waterfront Redevelopment (AN05); Parc Cybi Stage 2 employment developments (AN06); Holyhead Deep tidal energy generation (AN11); Holyhead Primary School (AN13) and Holyhead Port Expansion (AN30). These projects are likely to contribute to the size of the workforce who do not usually reside in north Wales. The operation of the Holyhead Waterfront Redevelopment as an off-shift destination could magnify effects locally. Effects relate primarily to the construction workforce, although there may also be effects from operational workers.	• Temporary cumulative socio-economic and community cohesion effects during construction due to temporal overlap of all projects. • Collective workforce spending in communities affecting the severity or incidence of physical health (e.g. cardiovascular conditions) and mental health conditions (e.g. stress, anxiety or depression) due to underlying social determinants, such as improved socio-economic position, greater job security and facilitating beneficial lifestyle choices (e.g. healthier eating and recreational physical activity, including for dependants). There is also the potential to improve beneficial aspects of well-being through the same underlying social determinants. • The collective workforce influences on the extent to which communities are healthy and safe affecting the severity or incidence of community physical health (e.g. smoking, excessive alcohol consumption or sexually	Negligible for the general population Minor adverse for vulnerable groups (where proximity and sensitivity coincide)

Receptor	Effect of Wylfa Newydd DCO Project	Effects of short-listed projects	Inter-project cumulative effect	
			Description of cumulative effect	Significance of cumulative effect
		High housing demand in desirable locations may reduce the affordability of the rental and purchase prices in some areas. The individual housing market pressures from the projects listed above are likely to be minor. Economic benefits would be expected in communities in which workers reside (e.g. rental income) or visit when off-shift (e.g. from use of hospitality, goods and service sectors). The collective workforce from the projects listed above may have adverse social effects in local communities, including changes in exposure to communicable disease and changes in perceptions of social norms for risk taking behaviour, such as alcohol and tobacco use. Such influences are expected to be due to increased worker numbers and the spread of off-shift activities across the week, as opposed to higher than average levels of risk-taking activity among the workforce. The collective workforce may also contribute to greater changes in community identity, social networks and culture within local communities, particularly for areas hosting most workers. The individual effects of other projects are likely to be minor due to much smaller workforces.	transmitted infections) and mental health conditions (e.g. stress, anxiety or depression). • Collective housing market pressure affecting the severity or incidence of physical health conditions (e.g. respiratory conditions linked to warmth and indoor air quality) and mental health conditions (e.g. stress, anxiety or depression due to underlying social determinants, such as financial stability and access to employment, education, goods and services). • Collective changes in community identity, social networks and culture affecting the severity or incidence of mental health conditions (e.g. stress, anxiety or depression) due to underlying social determinants influencing community cohesion. • No permanent cumulative effect.	
Population of Anglesey and north Wales (local and regional)	Up to minor beneficial for the general population Up to moderate beneficial for vulnerable groups	The collective employment and training opportunities from the Wylfa Newydd DCO Project and other projects in north Wales would greatly benefit the populations of Anglesey and north Wales. Linked to this benefit there could also be an increase in short-term labour churn. The overall effect is likely to represent a major benefit if the local people take advantage of the opportunities and the quality of local employment is improved into the long-term. In addition to the Wylfa Newydd DCO Project, the projects which are expected to contribute are Existing Power Station decommissioning (AN01); Anglesey Eco Park (AN02); Land and Lakes leisure village (AN04); Holyhead Waterfront Redevelopment (AN05); Parc Cybi Stage 2 employment developments (AN06); National Grid North Wales Connection Project (AN07); Rhyd-y-groes Repower Wind Farm upgrade (AN08); Menai Science Park (AN09); Amlwch LNG pipeline (AN10); Holyhead Deep tidal energy generation (AN11); Holyhead Primary School (AN13); Llanfaethlu Primary School (AN14); Llangefni Link Road Scheme (AN15); Utilities works on the Wylfa Newydd Development Area (AN20); Llanbadrig Solar Farm (AN23); Coleg Menai	• Temporary cumulative labour churn effects during construction due to temporal overlap of all projects. • Collective labour churn in the health and social care community services affecting health and well-being through reducing the quality of these services. For example, the quality of social care services, which include care homes, day centres, meals and home care, therapies, life coaching, personal assistants, emotional support, classes or courses, and carer respite. • Permanent cumulative effect during operation due to increased employment opportunities and greater understanding of nuclear power. • Collective employment affecting the severity or incidence of physical health (e.g. cardiovascular conditions) and mental health conditions (e.g. stress, anxiety or depression) due to underlying social determinants, such as improved socio-economic position, greater job security and facilitating beneficial lifestyle choices (e.g. healthier eating and participating in recreational physical activity, including for dependants). There is also the potential to improve	Minor beneficial for the general population Major beneficial for vulnerable groups

Receptor	Effect of Wylfa Newydd DCO Project	Effects of short-listed projects	Inter-project cumulative effect	
			Description of cumulative effect	Significance of cumulative effect
		(AN24); Wylfa Newydd Potable Water Supply (AN25); Holyhead Port Expansion (AN30); Glyn Rhonwy Pumped Storage hydro energy (GW01); the A487 Caernarfon to Bontnewydd Bypass (GW02); and the A5025 On-line Highway Improvements. A collective construction workforce that does not usually reside to north Wales would put pressure on already stretched local healthcare services. The Wylfa Newydd DCO Project is mitigating its own effect, however, the benefits of such investment may be undermined (to the detriment of local communities and Wylfa Newydd DCO Project workers) if other projects do not take similar responsibility. Effects relating to public understanding of risk are not geographically bounded. The development of other Nuclear Power Stations at sites in the UK have the potential to raise the profile and level of general dialogue and understanding of nuclear power, including for the people of Anglesey and north Wales. Such general awareness raising is potentially positive for health and well-being. In addition to the Wylfa Newydd DCO Project, the projects which are expected to contribute are Hinkley Point C Nuclear Power Station (Somerset) (NU02); Sizewell C Nuclear Power Station (Suffolk) (NU03); and Moorside Nuclear Power Station (Cumbria) (NU04).	beneficial aspects of well-being through the same underlying social determinants. • Greater dialogue around the understanding of risks associated with Nuclear Power Stations reducing the potential for adverse effects on the severity or incidence of physical health (e.g. headaches or blood pressure) and mental health conditions (e.g. anxiety or depression). • Potential permanent cumulative effect on health services if other projects also support local capacity building. • Collective non home-based workforce demand for healthcare affecting the capacity of NHS healthcare services and, in turn, on physical and mental health.	
Population of Wales and beyond the borders of Wales (national and international)	Up to minor beneficial for the general population Up to moderate beneficial for vulnerable groups	Many of the other planned developments on the Isle of Anglesey and in north Wales relate to energy production. In addition to the Wylfa Newydd DCO Project, these include Anglesey Eco Park (AN02); National Grid North Wales Connection Project (AN07); Rhyd-y-groes Repower Wind Farm upgrade (AN08); Amlwch LNG pipeline (AN10); Holyhead Deep tidal energy generation (AN11); Llanbadrig Solar Farm (AN23); and Glyn Rhonwy Pumped Storage hydro energy (GW01). Furthermore, in England other projects that may contribute to high-capacity, uninterrupted, affordable, low-carbon energy production include Hinkley Point C Nuclear Power Station (Somerset) (NU02); Sizewell C Nuclear Power Station (Suffolk) (NU03); and Moorside Nuclear Power Station (Cumbria) (NU04). These projects would collectively contribute to maintaining a supply of affordable electricity. Such a supply has important national public health benefits. Many of these projects are also low-carbon technologies,	• Permanent cumulative energy supply and affordability effects during operation. • Collective energy generation safeguarding physical health (e.g. safe food, safe homes, essential services and infrastructure) and mental health (e.g. stress, anxiety or depression), which may be reduced if supplies are limited or threatened. • Collective low-carbon energy generation contribution to reducing the severity and incidence of the health effects of climate change (e.g. injury, disease and death from heatwaves and fires; undernutrition from reduced food production; and increased risks of food-, water- and vector-borne diseases). Reducing the severity and incidence of these outcomes would also safeguard against associated mental health effects (e.g. stress, anxiety or depression).	Minor beneficial for the general population Moderate beneficial for vulnerable groups

Receptor	Effect of Wylfa Newydd DCO Project	Effects of short-listed projects	Inter-project cumulative effect	
			Description of cumulative effect	Significance of cumulative effect
		which globally would contribute to reducing adverse health outcomes associated with climate change.		
Children and young people	Up to minor beneficial (overall effect taking account of differing effects across geographic levels)	As air quality and noise disturbance effects tend to decrease rapidly with distance, the inter-project effects relate primarily to the Wylfa Newydd DCO Project, decommissioning of the Existing Power Station and transport emissions from other projects. Generally, the individual effects on traffic from other projects are likely to be minor, being of smaller scale or temporary. Young people are likely to benefit the most from the collective employment and training opportunities of all planned projects. Many of the projects on the Isle of Anglesey are high-tech industries, suggesting well paid technical roles and skills development. Other Nuclear Power Stations in England may give young people in north Wales broader opportunities and a more secure jobs market. This may be important for those considering specialist careers with the Wylfa Newydd DCO Project, but who would be put off if specialisation limited their ability to seek employment elsewhere in the future. Community social interactions with the collective construction workforces of all projects could affect local young adults most. This is based on a worst-case profile of the construction workforces. Effects may include increased exposure to communicable disease and changes in perceptions of social norms for risk taking behaviour, such as alcohol and tobacco use.	• Temporary cumulative disturbance, emissions, traffic employment, socio-economic and community cohesion effects during construction due to temporal overlap of all projects. • Collective health and well-being effects as described for geographic groups in rows above. • Permanent cumulative effect during operation due to increased employment opportunities. • Collective health and well-being effects as described for geographic groups in rows above.	Minor beneficial (overall effect taking account of differing effects across geographic levels)
Older people	Up to minor adverse (overall effect taking account of differing effects across geographic levels)	For older people, inter-project environmental pollution and disturbance effects relate primarily to the Wylfa Newydd DCO Project, decommissioning of the Existing Power Station and transport emissions from other projects. Generally, the individual effects on traffic from other projects are likely to be minor, being of smaller scale or temporary. In areas where a large proportion of workers who do not usually reside in north Wales are hosted, community identity, social networks and culture may change. This could particularly affect older people due to greater reliance on existing social networks and community support.	• Temporary cumulative disturbance, emissions, traffic socio-economic and community cohesion effects during construction due to temporal overlap of all projects. • Collective health and well-being effects as described for geographic groups in rows above.	Minor adverse (overall effect taking account of differing effects across geographic levels)
People with existing poor health (physical and mental health)	Up to minor adverse (overall effect taking account of differing effects across geographic levels)	Greater sensitivity to environment effects (e.g. air quality and noise) relates primarily to the Wylfa Newydd DCO Project, decommissioning of the Existing Power Station and transport emissions from other projects.	• Temporary cumulative disturbance, emissions, traffic, labour churn and health service demand effects during construction due to temporal overlap of all projects.	Minor adverse (overall effect taking account of differing effects across geographic levels)

Receptor	Effect of Wylfa Newydd DCO Project	Effects of short-listed projects	Inter-project cumulative effect	
			Description of cumulative effect	Significance of cumulative effect
		People with multiple or complex long-term health conditions are particularly likely to benefit from the healthcare service improvements that could be provided as part of the Wylfa Newydd DCO Project. They are also the group likely to experience the greatest adverse effects if there is unmitigated pressure from all the other projects on local health services.	• Collective health and well-being effects as described for geographic groups in rows above. • Potential permanent cumulative effect on health services if other projects also support local capacity building. • Collective health and well-being effects as described for geographic groups in rows above.	
People who are deprived, including those on low incomes	Up to minor beneficial (overall effect taking account of differing effects across geographic levels)	Deprived groups may be particularly sensitive to increases in local housing rental and purchase prices. High demand for housing by the combined workforces in desirable locations may act over time to displace existing residents. Beneficial employment, education and investment across all projects may play an important role in reduce inequalities on the Isle of Anglesey and in north Wales. The mix of planned energy generating projects would nationally support uninterrupted and affordable electricity supply. This is likely to benefit the poorest members of society or those with other measures of deprivation (e.g. homes without central heating systems). The contribution by all low-carbon energy generation projects to reducing adverse health outcomes associated with climate change would particularly benefit deprived populations.	• Temporary cumulative housing and employment effects during construction due to temporal overlap of all projects. • Collective health and well-being effects as described for geographic groups in rows above. • Permanent cumulative effect during operation due to increased employment opportunities and low-carbon energy. • Collective health and well-being effects as described for geographic groups in rows above.	Minor beneficial (overall effect taking account of differing effects across geographic levels)

J Health commitments

J.1 Introduction

- J.1.1 This section summarises Horizon's HIA commitments on the mitigation for potential health and well-being effects identified in all volumes and topic-specific sections within this HIA Report. Mitigation measures discussed in other assessment documents (e.g. the Environmental Statement, WLIA and EqIA) may also be relevant to health and well-being outcomes, but are not duplicated here.
- J.1.2 This section also provides some context to how the HIA mitigation would be secured as commitments during the consenting process and delivery of the Project.
- J.1.3 In April 2017 a draft health and well-being mitigation and enhancement strategy for the Project was shared with the Health and Well-Being Focus Group. The document was also shared with the HIA Steering Group in June 2017. Comments on the draft strategy were taken into consideration in developing the mitigation commitments presented in this HIA Report. It is expected that detail of the mitigation will be developed through ongoing stakeholder discussions in relation to Statements of Common Ground.

J.2 Mitigation framework for the HIA

- J.2.1 HIA mitigation would be secured through the following mechanisms:
- the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6);
 - location-specific sub-Codes of Construction Practice (Application Reference Number: 8.7, 8.9, 8.10, 8.11 and 8.12);
 - the Wylfa Newydd Code of Operational Practice (Application Reference Number: 8.13);
 - the Workforce Management Strategy (Application Reference Number: 8.5); and
 - s106 agreements.
- J.2.2 The Wylfa Newydd Code of Construction Practice and location-specific sub-Codes of Construction Practice set out how construction activities would be managed and controlled. Compliance with the Code of Construction Practice and sub-Codes of Construction Practice would be secured through DCO Requirements.
- J.2.3 The Wylfa Newydd Code of Operational Practice sets out the controls that would apply during the operation of the Project. Compliance with the Code of Operational Practice would be secured through DCO Requirements.
- J.2.4 The Workforce Management Strategy sets out the principles that Horizon and its partners would follow to manage and control the workforce. As part of the Workforce Management Strategy, Horizon would be required to develop a Code of Conduct. Workers would then be required to comply with the resulting Code of Conduct through their labour agreements. Compliance with the

Workforce Management Strategy would be secured through DCO Requirements.

- J.2.5 Other HIA commitments would be secured through planning obligations e.g. s106.

J.3 Mitigation Route Map

- J.3.1 A Mitigation Route Map (Application Reference Number: 8.14) is included in the application for development consent as a navigational tool to help readers understand mitigation relied on across the application and how it would be secured. It provides an audit trail of the key measures on which the HIA and other assessment documents (e.g. the Environmental Statement, WLIA and EqlA) rely.
- J.3.2 The Mitigation Route Map fulfils the role of a Health Action Plan and it shows the integration of HIA mitigation with all mitigation and monitoring measures across the Project. The Health and Well-being Monitoring Group, once convened, would set its own agenda and activities informed by its Terms of Reference, this comprehensive HIA Report and the Mitigation Route Map. This integrated approach to securing mitigation and monitoring measures is considered best practice.

J.4 Health commitments

Health Monitoring Group

- J.4.1 Secured by s106 agreements Horizon would establish and chair an external stakeholder group (hereafter Health and Well-being Monitoring Group) that would include members of the health and emergency services to monitor the implementation of the HIA mitigation strategy and provide advice on its delivery. When appropriate, Horizon would facilitate bespoke analysis of routinely collected public health data (existing indicators), relevant to the Project. The information would inform discussion by the Health and Well-being Monitoring Group. If appropriate the Group would discuss the need for additional mitigation or follow-up investigation. To facilitate this process, a set of key topics and indicators would be agreed. The topics would be expected to include the following:
- Access to community healthcare services;
 - Respiratory health;
 - Sleep disturbance;
 - Accident hotspots;
 - Housing market pressures;
 - Recruitment rates from local communities;
 - Safeguarding with regard to vulnerable adults and children; and
 - Community lifestyles, behaviour, community cohesion and physical activity levels.

Community Involvement Officer(s)

- J.4.2 Secured by s106 agreements Horizon would appoint a bi-lingual Community Involvement Officer to develop and implement many of the HIA mitigation measures during construction and operation of the Wylfa Newydd DCO Project. The Community Involvement Officer would be a key interface between the local community, key stakeholders and Horizon management. The Community Involvement Officer would be involved with implementation of HIA measures as well as relevant Environmental Statement, WLIA and EqIA mitigation. Responsibilities would include the facilitation and implementation of mitigation in the following areas during construction and operation.
- Health and wellbeing in the local community
 - Developing a sensitive lettings policy - incorporated in the Construction Worker Accommodation Management Service.
- J.4.3 The Community Involvement Officer would also interface in related areas such as:
- Supporting cultural initiatives to enhance and celebrate local identity.
 - Promotion of education, upskilling, training and local employment opportunities, including support for young people from disadvantaged backgrounds.
 - Providing information about planned PROW diversions to local communities including the use of bi-lingual information boards.
 - Promoting local walking, cycling, public transport, car sharing, travel planning, leisure facilities and road safety initiatives
 - Management of local worker conduct issues.
 - Disseminate information about construction and operational safety.
 - Providing support and a communication channel for people experiencing elevated levels of emissions or disturbance (nuisance).
 - Providing feedback to the management and monitoring groups (including the Health and Well-being Monitoring Group).

Support

- J.4.4 Horizon would support IACC and BCUHB in the development of their own Workforce Strategies to mitigate labour churn within the health and social care sector. Horizon would support the development of these Workforce Strategies through sharing of workforce information, assisting in carrying out any required monitoring, and the provision of an appropriate financial contribution and/or support to the IACC and BCUHB for officer time within those organisations. This measure would be secured through s106 agreements.
- J.4.5 Horizon would provide blackout blinds or alternative mitigation to residents who experience unforeseen cases of sleep disturbance. A mechanism would be put in place for residents to apply for installation of blackout blinds. This measure would be secured through s106 agreements.
- J.4.6 Through the Jobs and Skills Strategy (Application Reference Number: 8.3), and the work of the Community Involvement Officer, Horizon would encourage

education in, and recruitment into, professions that are relevant to the Project. This would include the promotion of STEM subjects and related improvements to secondary school infrastructure. This would have indirect benefits to public sector professions that would regulate the Project. This measure would be secured through s106 agreements.

Healthcare

- J.4.7 Horizon is committed to providing appropriate Occupational Health and Hygiene services for the construction and operational workforce. This would be completed in agreement with BCUHB and PHW where appropriate. This measure would be secured through s106 agreements.
- J.4.8 Horizon is committed to making appropriate healthcare provision or contributions to meet the medical and healthcare needs of the construction workforce. This measure would be secured through s106 agreements.
- J.4.9 Horizon is committed to providing appropriate provision of emergency services for the construction workforce. An appropriate financial contribution would be considered for the emergency services for the needs of the construction workforce. Reporting to be agreed. This measure would be secured through s106 agreements.
- J.4.10 Horizon would promote health and well-being, including occupational health and hygiene and good worker conduct through the preparation and implementation of a Code of Conduct in accordance with the principles in the Workforce Management Strategy. Reporting of compliance with the Code of Conduct would be undertaken on an annual basis to the Health and Well-being Monitoring Group. This measure would be secured through the Workforce Management Strategy (Application Reference Number: 8.5).
- J.4.11 Horizon would deliver a health and welfare programme, and ensure access is provided, to all of its workers. This programme would ensure that local community health and welfare services and resources used by local residents are not adversely affected by the Project.

On-site healthcare including the Site Campus Medical Centre

- J.4.12 A facility within the security fence on the Power Station Site would treat minor injuries. This facility would also support first response to incidents and be a staging point for more serious incidents. Serious injuries would receive initial triage and trauma care through on-site paramedics / first responders prior to transfer by NHS ambulance (or their supporting air ambulance) service to hospital.
- J.4.13 There would also be a medical centre on the Site Campus (the Site Campus Medical Centre) which would be similar in concept to a GP surgery. This would be accessible to all construction workers (including sub-contractors), whether they live in the Site Campus, reside locally or travel to the Wylfa Newydd Development Area from the wider area. The Workforce Management Strategy (Application Reference Number: 8.5) directs all personnel (not just those residing on the Site Campus) to use the Site Campus Medical Centre in the first instance, before seeking to use community healthcare services. This is an integral component of Horizon's undertaking to minimise potential adverse

impacts on local community health and welfare services and resources used by local residents.

- J.4.14 The Site Campus Medical Centre would include appropriately equipped space and facilities for:
- Primary Care services, including GP services, specialised clinics, out-of-hours care and pharmaceutical services.
 - Occupational Health services, including medicals and screening of workers where required.
 - Administrative functions, including medical records and health surveillance systems.
 - Occupational Hygiene facilities and resources, which would then be deployed across the Wylfa Newydd Development Area.
- J.4.15 The Site Campus Medical Centre would be located in close proximity to the amenity block within the ground floor of the first accommodation block to be constructed at the Site Campus (ensuring services are in place before the non-home based workforce arrives). If required, temporary arrangements would be put in place for the small number of workers that would be present before the construction of the Site Campus (it is expected that the Site Campus would likely be operational some two years following grant of development consent). At the peak of construction, the Site Campus Medical Centre could, if required, encompass the entire ground floor of the accommodation block (circa 700m²). The size of the Site Campus Medical Centre, and the services provided therein, would be commensurate with the size and medical needs of the construction workforce.
- J.4.16 Horizon would provide suitable information during site induction for all workers describing how the site healthcare facilities and services would work and can be accessed. Signposting and ease of access to the Site Campus Medical Centre for all construction workers (including those not accommodated at the Site Campus) would be a key feature of the design and access routes (including some parking and shuttle bus services). An appointment booking link for the Site Campus Medical Centre would be provided on the Power Station Site within the site welfare facilities.
- J.4.17 The final design of the Site Campus Medical Centre will be prepared in consultation with the local healthcare authorities / representatives and would be operated by a suitable healthcare service provider. The development process will include defining the final list of services that would make up Site Campus Medical Centre occupational health and primary care (illustrative list included in table C-4).
- J.4.18 This measure would be secured through s106 agreements, DCO Requirement and the Workforce Management Strategy (Application Reference Number: 8.5) (in respect of all workers being required to use the facilities in the first instance).

Construction Practices

- J.4.19 Horizon would comply with the Codes of Construction Practice with regard to dust, noise, congestion and nuisance controls. This measure would be

secured through the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and DCO Requirement.

- J.4.20 Horizon would require construction workers to register with, and, prioritise the use of the on-site medical and healthcare services rather than using the community NHS services. This measure would be secured through the Workforce Management Strategy (Application Reference Number: 8.5).
- J.4.21 As part of the Workforce Management Strategy (Application Reference Number: 8.5) construction workers (including sub-contractors) would receive training on community relations, language, culture, health, safety and environmental issues.
- J.4.22 All personnel and contractors would receive a copy of the Code of Conduct and would be required to comply with it. Horizon would require construction workers, as part of their orientation, to sign a copy of the code of conduct (acknowledging they have read and understood it). The Requirement to prepare the Code of Conduct in accordance with the principles in the Workforce Management Strategy would be a pre-commencement DCO requirement. Contractors would be obliged to implement and comply with the Code of Conduct. This would be secured through contractual agreements between Horizon and its contractors; as well as the contractors and the individual workers. This measure would be secured through the Workforce Management Strategy (Application Reference Number: 8.5).
- J.4.23 The Code of Conduct would require construction workers, as part of their orientation, to register with the Worker Accommodation Management Service (even if not used) in order to facilitate housing updates to all construction workers and allow monitoring of the number of workers using the service. The registration data (summarised and anonymised) would be reported regularly to the IACC. The Requirement to prepare the Code of Conduct in accordance with the principles in the Workforce Management Strategy would be a pre-commencement DCO requirement. Contractors would be obliged to implement and comply with the Code of Conduct would be secured through contractual agreements between Horizon and its contractors; as well as the contractors and the individual workers. This measure would be secured through the Workforce Management Strategy (Application Reference Number: 8.5) and s106 agreements.
- J.4.24 Information regarding air pollutant concentrations would be provided to residents. Achievement through information pack developed by the Community Involvement Officers. This measure would be secured through the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6).
- J.4.25 Horizon, through its Community Involvement Officer, would provide information packs to nearby residents which would include information on (where appropriate):
- the potential for short-term peaks in air pollution concentrations;
 - the potential for dust concentrations;
 - anticipated noise and construction activities;

- any mitigation that will be put in place to manage these peaks and concentrations (if practical); and
- details of the Community Involvement Officer and avenues to register any complaints.
- This measure would be secured through the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6).

Design

- J.4.26 Horizon would ensure safe pedestrian access is provided at Tregele to access the proposed new alignment of the Wales Coast Path and onward Public Right of Way to Cemaes. This measure would be secured through the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6).
- J.4.27 Horizon would support and enhance active travel access for people using the Copper Trail which currently links to the A5025 in Tregele. At this point Horizon would provide a dedicated cycle way/footpath to Nanner Road. This measure would be secured through the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6).

Safeguarding

- J.4.28 In accordance with the Hitachi Group Code of Conduct [RD134] and the Horizon Nuclear Power 'Modern Slavery Act 2015 Statement' [RD119] and through the Workforce Management Strategy, Horizon would safeguard the welfare of its employees and its supply chain and, in relation to the activities of its construction workforce, the general public. This would be achieved through using Horizon's normal personnel screening and management systems to identify those that may pose a risk to vulnerable adults and children. In such cases where a potential risk is identified, further checks would be carried out. This measure would be secured through the Workforce Management Strategy (Application Reference Number: 8.5).

Rapid HIA mitigation

- J.4.29 See volumes E, F, G and H of this HIA Report for mitigation measures that were included as part of the Project in response to opportunities to promote health that were identified during the rapid HIA screening processes.

K References

K.1 Schedule of references and notes

Table K-1 Schedule of references and notes

ID	Reference or note
RD1	WHIASU. (2012) Health Impact Assessment: a practical guide. (Wales Health Impact Assessment Support Unit, Cardiff, Wales). < http://bit.ly/1PpcTtv (Cy) & http://bit.ly/WH8g9F (En)>
RD2	World Health Organization. (1998) Health Promotion Glossary. (Geneva). < http://bit.ly/1qKk3ka >
RD3	Betsi Cadwaladr University Health Board. (2010) Environmental Impact Assessment Scoping Report. Proposed Nuclear Power Station, Wylfa, Anglesey, North Wales (2009). (Infrastructure Planning Commission. Scoping opinion. Proposed nuclear power station at Wylfa, Anglesey). < http://bit.ly/1kZHczz >
RD4	Isle of Anglesey County Council. (2014) New Nuclear Build at Wylfa: Supplementary Planning Guidance. < http://bit.ly/1YKSrL7 >
RD5	NHS Direct Wales. (2015) <i>Local services. GPs - Frequently Asked Questions</i> , < http://bit.ly/1OUjktJ >.
RD6	Department of Energy and Climate Change. (2011) <i>National Policy Statements for energy infrastructure</i> , < http://bit.ly/1hq2yDU >.
RD7	Department of Energy and Climate Change. (2011) Overarching National Policy Statement for Energy (EN-1). (The Stationery Office, London). < http://bit.ly/1VEhcVG >
RD8	Department of Energy and Climate Change. (2011) National Policy Statement for Nuclear Power Generation (EN-6). (The Stationery Office, London). < http://bit.ly/SjDgv8 >
RD9	Department of Energy and Climate Change. (2011) National Policy Statement for Electricity Networks Infrastructure (EN-5). (The Stationery Office, London). < http://bit.ly/2g77uOM >
RD10	Horizon Nuclear Power. (2017) Radioactive Substances Regulation – Environmental Permit Application.
RD11	World Health Organization Regional Office for Europe. (2013) Health 2020: a European policy framework and strategy for the 21st century. (Copenhagen, Denmark). < http://bit.ly/1zopCoi >
RD12	Department of Health. (2014) Living Well for Longer: National Support for Local Action to Reduce Premature Avoidable Mortality. (London). < http://bit.ly/1OFuzG7 >
RD13	Nuclear Decommissioning Authority. (2010) UK Strategy for the Management of Solid Low Level Radioactive Waste from the Nuclear Industry. < http://bit.ly/1XpoL5o >
RD14	Llywodraeth Cymru. (2014) Review of Welsh Government Policy on the Management and Disposal of Higher Activity Radioactive Waste. Report No. Consultation document. < http://bit.ly/1MKfMnR >
RD15	Cynulliad Cenediaethol Cymru. (2015) Environment (Wales) Bill. < http://bit.ly/1Z7tkTQ >

ID	Reference or note
RD16	Cynulliad Cenediaethol Cymru. (2014) <i>The Strategy for Older People in Wales 2013-2023</i> , < http://bit.ly/1Q4Pe47 >.
RD17	Llywodraeth Cymru and NHS Wales. (2013) Delivering Local Health Care - Accelerating the pace of change. < http://bit.ly/1ONmwY3 >
RD18	Llywodraeth Cymru and Public Health Wales. (2016) Public Health Outcomes Framework. < http://bit.ly/2eJWXuk [Cy] and http://bit.ly/2ejBdal [En]>
RD19	Cynulliad Cenediaethol Cymru. (2015) The Well-being of Future Generations (Wales) Act. (Cardiff). < http://bit.ly/29FM8pG >
RD20	Llywodraeth Cymru. (2016) How to measure a nation's progress. National indicators for Wales. < http://bit.ly/2fQlkZ0 [Cy] and http://bit.ly/2fAsikl [En]>
RD21	Llywodraeth Cymru. (2016) Planning Policy Wales. Report No. Edition 8. < http://bit.ly/1mBBdlT (Cy) & http://bit.ly/1OaomO8 (En)>
RD22	Llywodraeth Cymru. (2008) Wales Spatial Plan. People, Places, Futures. The Wales Spatial Plan 2008 Update. < http://bit.ly/2gCkfm7 (Cy) & http://bit.ly/2yJq6Ru (En)>
RD23	Betsi Cadwaladr University Health Board and Public Health Wales. (2012) Local Public Health Strategic Framework. < http://bit.ly/1Nsk8Tp >
RD24	Isle of Anglesey County Council. (2013) Single Integrated Plan 2013 - 25. < http://bit.ly/1R2T0eF >
RD25	Anglesey and Gwynedd Partnership. (2013) Strengthening communities in Anglesey and Gwynedd: a single integrated plan for Anglesey and Gwynedd (2013-2017). < http://bit.ly/1PMuujF >
RD26	Isle of Anglesey County Council. (2010 (Last updated 2014)) Public Protection Service Enforcement Policy. < http://bit.ly/1PMuzUq >
RD27	Isle of Anglesey County Council. (2008) Strategy for older people on Anglesey. < http://bit.ly/1k04hl6 >
RD28	Isle of Anglesey County Council. (2010) Anglesey Life. < http://bit.ly/1R2VPfC >
RD29	Isle of Anglesey County Council. (2012) Destination Management Action Plan. < http://bit.ly/1TniZy8 >
RD30	Isle of Anglesey County Council and Gwynedd Council. (2017) The Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026. < http://bit.ly/2z5bEUt [Cy] and http://bit.ly/2xlOPqJ [En]>
RD31	Isle of Anglesey. (2010) Isle of Anglesey Health Impact Assessment Tool.
RD32	Cooke, A. <i>et al.</i> (2011) Mental well-being impact assessment: a toolkit for well-being. (Members of the National MWIA Collaborative (England)). < http://bit.ly/1k7DLTR >
RD33	Higgins, M. <i>et al.</i> (2015) Health Impact Assessment of rural development: a guide. (Scottish Health and Inequalities Impact Assessment Network and Scottish Public Health Network (ScotPHN), Edinburgh). < http://bit.ly/1N2B8Ph >

ID	Reference or note
RD34	Environment Agency <i>et al.</i> (2012) Principles for the Assessment of Prospective Public Doses arising from Authorised Discharges of Radioactive Waste to the Environment. Radioactive Substances Regulation under the Radioactive Substances Act (RSA-93) or under the Environmental Permitting Regulations (EPR-10). < http://bit.ly/1GSybNk >
RD35	Horizon Nuclear Power. (2014) Wylfa Newydd Project: Health Impact Assessment scoping report. (Horizon Nuclear Power Wylfa Limited). < http://consultation.horizonnuclearpower.com/download/documents/13 >
RD36	Röösli, M. (2011) Non-cancer effects of chemical agents on children's health. <i>Prog.Biophys.Mol.Biol.</i> 107 , 315-322 < https://doi.org/10.1016/j.pbiomolbio.2011.08.006 >
RD37	Forbes, L. J. <i>et al.</i> (2009) Chronic exposure to outdoor air pollution and lung function in adults. <i>Thorax</i> 64 , 657-663 < https://doi.org/10.1136/thx.2008.109389 >
RD38	Gowers, A. M. <i>et al.</i> (2012) Does outdoor air pollution induce new cases of asthma? Biological plausibility and evidence; a review. <i>Respirology</i> . 17 , 887-898 < https://doi.org/10.1111/j.1440-1843.2012.02195.x >
RD39	Mustafic, H. <i>et al.</i> (2012) Main air pollutants and myocardial infarction: a systematic review and meta-analysis. <i>JAMA</i> 307 , 713-721 < https://doi.org/10.1001/jama.2012.126 >
RD40	Public Health Wales. (2013) Smoking Cessation Profile: Betsi Cadwaladr University Health Board 2012/2013. < http://bit.ly/1hgo5fP >
RD41	Basner, M. <i>et al.</i> (2014) Auditory and non-auditory effects of noise on health. <i>Lancet</i> 383 , 1325-1332 < https://doi.org/10.1016/S0140-6736(13)61613-X >
RD42	World Health Organization Regional Office for Europe. (2011) Burden of disease from environmental noise. Quantification of healthy life years lost in Europe. (EEA, European Communities, Copenhagen, Denmark). < http://bit.ly/1P2uXP9 >
RD43	Babisch, W. (2014) Updated exposure-response relationship between road traffic noise and coronary heart diseases: a meta-analysis. <i>Noise and Health</i> 16 , 1-9 < https://doi.org/10.4103/1463-1741.127847 >
RD44	Ndrepepa, A. and Twardella, D. (2011) Relationship between noise annoyance from road traffic noise and cardiovascular diseases: a meta-analysis. <i>Noise Health</i> 13 , 251-259 < https://doi.org/10.4103/1463-1741.80163 >
RD45	van Kamp, I. and Davies, H. (2013) Noise and health in vulnerable groups: a review. <i>Noise Health</i> 15 , 153-159 < https://doi.org/10.4103/1463-1741.112361 >
RD46	Szalma, J. L. and Hancock, P. A. (2011) Noise effects on human performance: a meta-analytic synthesis. <i>Psychol.Bull.</i> 137 , 682-707 < https://doi.org/10.1037/a0023987 >
RD47	Brown, A. L. and van Kamp, I. (2017) WHO Environmental Noise Guidelines for the European Region: A Systematic Review of Transport Noise Interventions and Their Impacts on Health. <i>International Journal of</i>

ID	Reference or note
	<i>Environmental Research and Public Health</i> 14 , 873 < https://doi.org/10.3390/ijerph14080873 >
RD48	Thomson, H. <i>et al.</i> (2008) Assessing the unintended health impacts of road transport policies and interventions: translating research evidence for use in policy and practice. <i>BMC.Public Health</i> 8 , 339 < https://doi.org/10.1186/1471-2458-8-339 >
RD49	Mindell, J. S. and Karlsen, S. (2012) Community severance and health: what do we actually know? <i>J.Urban.Health</i> 89 , 232-246 < https://doi.org/10.1007/s11524-011-9637-7 >
RD50	National Institute for Health & Clinical Excellence. (2010) Preventing unintentional road injuries among the under-15s. (National Institute for Health and Clinical Excellence, London). < http://bit.ly/1krN3dh >
RD51	Lustenberger, T. <i>et al.</i> (2010) Bicyclists injured by automobiles: relationship of age to injury type and severity--a national trauma databank analysis. <i>J.Trauma</i> 69 , 1120-1125 < https://doi.org/10.1097/TA.0b013e3181d0f68b >
RD52	Betsi Cadwaladr University Health Board. (2016) About us. < http://www.wales.nhs.uk/sitesplus/861/page/84723 >
RD53	Welsh Ambulance Service NHS Trust. (2017) About us. < http://www.ambulance.wales.nhs.uk/Default.aspx?pageld=1&lan=cy [Cy] and www.ambulance.wales.nhs.uk/Default.aspx?pageld=8&lan=en [En]>
RD54	Welsh Ambulance Service NHS Trust and Betsi Cadwaladr University Health Board. (2015) Integrated Quality Report. < http://bit.ly/2rOuRFJ >
RD55	Public Health Wales. (2017) About us. < http://www.wales.nhs.uk/sitesplus/888/tudalen/90088 [Cy] and http://www.wales.nhs.uk/sitesplus/888/page/88654 [En]>
RD56	Llywodraeth Cymru. (2016) Follow-on strategic framework for Welsh language services in health, social services and social care 2016 -2019. < http://bit.ly/2typybT [Cy] and http://bit.ly/2uz16Hx [En]>
RD57	Turner, C. <i>et al.</i> (2004) Injury and risk-taking behavior—a systematic review. <i>Accident Analysis & Prevention</i> 36 , 93-101 < https://doi.org/10.1016/S0001-4575(02)00131-8 >
RD58	Womack, S. D. <i>et al.</i> (2013) Sleep loss and risk-taking behavior: a review of the literature. <i>Behav Sleep Med</i> 11 , 343-359 < https://doi.org/10.1080/15402002.2012.703628 >
RD59	Bagnardi, V. <i>et al.</i> (2015) Alcohol consumption and site-specific cancer risk: a comprehensive dose-response meta-analysis. <i>Br J Cancer</i> 112 , 580-593 < https://doi.org/10.1038/bjc.2014.579 >
RD60	Fircanis, S. <i>et al.</i> (2014) The relation between cigarette smoking and risk of acute myeloid leukemia: an updated meta-analysis of epidemiological studies. <i>Am J Hematol</i> 89 , E125-132 < https://doi.org/10.1002/ajh.23744 >
RD61	Devries, K. M. <i>et al.</i> (2014) Intimate partner violence victimization and alcohol consumption in women: a systematic review and meta-analysis. <i>Addiction</i> 109 , 379-391 < https://doi.org/10.1111/add.12393 >

ID	Reference or note
RD62	Scott-Sheldon, L. A. J. <i>et al.</i> (2015) Alcohol Use Predicts Sexual Decision-Making: A Systematic Review and Meta-Analysis of the Experimental Literature. <i>AIDS Behav</i> , 1-21 < https://doi.org/10.1007/s10461-015-1108-9 >
RD63	Probst, C. <i>et al.</i> (2014) Socioeconomic differences in alcohol-attributable mortality compared with all-cause mortality: a systematic review and meta-analysis. <i>Int J Epidemiol</i> 43 , 1314-1327 < https://doi.org/10.1093/ije/dyu043 >
RD64	Horizon Nuclear Power <i>et al.</i> (2017) Community Involvement Officers Report. < http://bit.ly/2sMFI4i [Cy] and http://bit.ly/2tx1fLB [En]>
RD65	Egan, M. <i>et al.</i> (2008) Psychosocial risk factors in home and community settings and their associations with population health and health inequalities: a systematic meta-review. <i>BMC Public Health</i> 8 , 239 < https://doi.org/10.1186/1471-2458-8-239 >
RD66	Health Development Agency. (2004) Social Capital. (London). < http://bit.ly/1J5yFWI >
RD67	Murayama, H. <i>et al.</i> (2012) Social capital and health: a review of prospective multilevel studies. <i>Journal of epidemiology / Japan Epidemiological Association</i> 22 , 179-187
RD68	Vyncke, V. <i>et al.</i> (2013) Does neighbourhood social capital aid in levelling the social gradient in the health and well-being of children and adolescents? A literature review. <i>BMC Public Health</i> 13 , 65 < https://doi.org/10.1186/1471-2458-13-65 >
RD69	Sellström, E. and Bremberg, S. (2006) Review Article: The significance of neighbourhood context to child and adolescent health and well-being: A systematic review of multilevel studies. <i>Scandinavian Journal of Public Health</i> 34 , 544-554 < https://doi.org/10.1080/14034940600551251 >
RD70	Baldwin, C. (2015) Assessing impacts on people's relationships to place and community in health impact assessment: an anthropological approach. <i>Impact Assessment and Project Appraisal</i> 33 , 154-159 < https://doi.org/10.1080/14615517.2014.983725 >
RD71	Llywodraeth Cymru. (2014) <i>Community Cohesion National Delivery Plan 2014-16</i> , < http://bit.ly/2claOoY [Cy] and http://bit.ly/2c3Q4QF [En]>.
RD72	van der Noordt, M. <i>et al.</i> (2014) Health effects of employment: a systematic review of prospective studies. <i>Occup Environ Med</i> 71 , 730-736 < https://doi.org/10.1136/oemed-2013-101891 >
RD73	Mirvis, D. M. <i>et al.</i> (2008) Health as an economic engine: evidence for the importance of health in economic development. <i>Journal of Health and Human Services Administration</i> 31 , 30-57 < https://doi.org/10.2307/25790728 >
RD74	Herbig, B. <i>et al.</i> (2013) Health in the long-term unemployed. <i>Dtsch Arztebl Int</i> 110 , 413-419 < https://doi.org/10.3238/arztebl.2013.0413 >
RD75	van Rijn, R. M. <i>et al.</i> (2014) Influence of poor health on exit from paid employment: a systematic review. <i>Occup Environ Med</i> 71 , 295-301 < https://doi.org/10.1136/oemed-2013-101591 >

ID	Reference or note
RD76	Golics, C. J. <i>et al.</i> (2013) The impact of disease on family members: a critical aspect of medical care. <i>J R Soc Med</i> 106 , 399-407 < https://doi.org/10.1177/0141076812472616 >
RD77	Lindeboom, M. <i>et al.</i> (2009) Parental education and child health: evidence from a schooling reform. <i>J Health Econ</i> 28 , 109-131 < https://doi.org/10.1016/j.jhealeco.2008.08.003 >
RD78	Berkman, N. D. <i>et al.</i> (2011) Low health literacy and health outcomes: an updated systematic review. <i>Ann Intern Med</i> 155 , 97-107 < https://doi.org/10.7326/0003-4819-155-2-201107190-00005 >
RD79	Riglin, L. <i>et al.</i> (2014) The relationship between emotional problems and subsequent school attainment: a meta-analysis. <i>J Adolesc</i> 37 , 335-346 < https://doi.org/10.1016/j.adolescence.2014.02.010 >
RD80	Huai, P. <i>et al.</i> (2013) Physical activity and risk of hypertension: a meta-analysis of prospective cohort studies. <i>Hypertension</i> 62 , 1021-1026 < https://doi.org/10.1161/HYPERTENSIONAHA.113.01965 >
RD81	Pal, S. <i>et al.</i> (2013) Potential benefits of exercise on blood pressure and vascular function. <i>J Am Soc Hypertens</i> 7 , 494-506 < https://doi.org/10.1016/j.jash.2013.07.004 >
RD82	Yen, I. H. <i>et al.</i> (2014) How design of places promotes or inhibits mobility of older adults: realist synthesis of 20 years of research. <i>J Aging Health</i> 26 , 1340-1372 < https://doi.org/10.1177/0898264314527610 >
RD83	Rosenbaum, S. <i>et al.</i> (2014) Physical activity interventions for people with mental illness: a systematic review and meta-analysis. <i>J Clin Psychiatry</i> 75 , 964-974 < https://doi.org/10.4088/JCP.13r08765 >
RD84	Mammen, G. and Faulkner, G. (2013) Physical activity and the prevention of depression: a systematic review of prospective studies. <i>Am J Prev Med</i> 45 , 649-657 < https://doi.org/10.1016/j.amepre.2013.08.001 >
RD85	Oxley, J. and Whelan, M. (2008) It cannot be all about safety: the benefits of prolonged mobility. <i>Traffic.Inj.Prev.</i> 9 , 367-378 < https://doi.org/10.1080/15389580801895285 >
RD86	Wu, S. <i>et al.</i> (2015) Socio-economic position as an intervention against overweight and obesity in children: a systematic review and meta-analysis. <i>Sci Rep</i> 5 , 11354 < https://doi.org/10.1038/srep11354 >
RD87	Ferrer, R. and Klein, W. M. (2015) Risk perceptions and health behavior. <i>Curr Opin Psychol</i> 5 , 85-89 < https://doi.org/10.1016/j.copsyc.2015.03.012 >
RD88	Renn, O. (1997) <i>Mental health, stress and risk perception: insights from psychological research</i> in Health impacts of large releases of radionuclides (eds John V. Lake, Gregory R. Bock, and Gail Cardew) Ch. 15, 205-231 (John Wiley & Sons).
RD89	The term risk perception is common in the literature and will be used when findings are quoted from a study that uses the term.
RD90	World Health Organization Regional Office for Europe. (2013) Health and Environment: communicating the risks. (Copenhagen). < http://bit.ly/1FS1QLi >

ID	Reference or note
RD91	Pidgeon, N. F. <i>et al.</i> (2008) Living with nuclear power in Britain: a mixed-methods study. (Cardiff University and the University of East Anglia). < http://bit.ly/1TMAGdM >
RD92	Department of Energy and Climate Change. (2014) The Justification of Practices Involving Ionising Radiation Regulations 2004. The Secretary of State's decision as Justifying Authority on the Regulatory Justification of the UK Advanced Boiling Water Reactor (UK ABWR). < http://bit.ly/1JWkgWz >
RD93	HM Government of Great Britain. (2015) The Justification Decision (Generation of Electricity by the UK ABWR Nuclear Reactor) Regulations 2015. < http://bit.ly/1PkKetY >
RD94	Smith, K. R. <i>et al.</i> (2013) Energy and human health. <i>Annu Rev Public Health</i> 34 , 159-188 < https://doi.org/10.1146/annurev-publhealth-031912-114404 >
RD95	Liddell, C. and Morris, C. (2010) Fuel poverty and human health: A review of recent evidence. <i>Energy Policy</i> 38 , 2987-2997 < https://doi.org/10.1016/j.enpol.2010.01.037 >
RD96	Romm, J. J. and Ervin, C. A. (1996) How energy policies affect public health. <i>Public Health Reports</i> 111 , 390-399
RD97	Public Health England and UCL Institute of Health Equity. (2014) Local action on health inequalities: fuel poverty and cold home-related health problems. < http://bit.ly/1VD2Yd1 >
RD98	Patz, J. A. <i>et al.</i> (2014) Climate change: challenges and opportunities for global health. <i>JAMA</i> 312 , 1565-1580 < https://doi.org/10.1001/jama.2014.13186 >
RD99	Smith, K. R. <i>et al.</i> (2014) <i>Human health: impacts, adaptation, and co-benefits</i> in Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel of Climate Change (eds V.R. Barros <i>et al.</i>) Ch. 11, 709-754 (Cambridge University Press).
RD100	Nichols, A. <i>et al.</i> (2009) Health, Climate Change and Sustainability: A systematic Review and Thematic Analysis of the Literature. <i>Environmental Health Insights</i> 3 , 63-88
RD101	Moomaw, W. <i>et al.</i> (2011) <i>Annex II: Methodology</i> in IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation (eds O. Edenhofer <i>et al.</i>) (Cambridge University Press).
RD102	Parliamentary Office of Science and Technology. (2011) Carbon Footprint of Electricity Generation. Report No. Update Number 383. < http://bit.ly/1WbzZNO >
RD103	COMEAP. (2011) Review of the UK Air Quality Index. (Department of Health). < http://bit.ly/qFCdNH >
RD104	Valavanidis, A. <i>et al.</i> (2008) Airborne particulate matter and human health: toxicological assessment and importance of size and composition of particles for oxidative damage and carcinogenic mechanisms. <i>J.Environ.Sci.Health C.Environ.Carcinog.Ecotoxicol.Rev.</i> 26 , 339-362 < https://doi.org/10.1080/10590500802494538 >

ID	Reference or note
RD105	HM Government of Great Britain & Northern Ireland. (1956) Clean Air Act. < http://bit.ly/1MaxPFD >
RD106	World Health Organization Regional Office for Europe. (2013) Review of evidence on health aspects of air pollution - REVIHAAP project: final technical report. (Copenhagen, Denmark). < http://bit.ly/SbuOOv >
RD107	Thomson, H. et al. (2013) Housing improvements for health and associated socio-economic outcomes. <i>Cochrane Database Syst.Rev</i> 2 , CD008657 < https://doi.org/10.1002/14651858.CD008657.pub2 >
RD108	Braubach, M. et al. (2011) Environmental burden of disease associated with inadequate housing. A method guide to the quantification of health effects of selected housing risks in the WHO European Region (World Health Organization Europe, Copenhagen, Denmark). < http://bit.ly/16y3Lgc >
RD109	Miller, W. D. et al. (2011) Healthy homes and communities: putting the pieces together. <i>Am.J.Prev.Med.</i> 40 , S48-S57 < https://doi.org/10.1016/j.amepre.2010.09.024 >
RD110	Anderson, L. M. et al. (2003) Providing affordable family housing and reducing residential segregation by income. A systematic review. <i>Am.J.Prev.Med.</i> 24 , 47-67
RD111	Truong, K. D. and Ma, S. (2006) A systematic review of relations between neighborhoods and mental health. <i>J.Ment.Health Policy Econ.</i> 9 , 137-154
RD112	EDF Energy. (2010) Hinkley Point C: Development Consent Order Application. Health Impact Assessment. < http://bit.ly/1Ud5PYT >
RD113	Tyers, C. and Hicks, B. (2012) Occupational health provision on the Olympic Park and athletes' village. Report No. RR921, (Prepared by the Institute for Employment Studies for, and jointly funded by, the Health and Safety Executive and the Olympic Delivery Authority). < www.hse.gov.uk/research/rrpdf/rr921.pdf >
RD114	Llywodraeth Cymru. (2015) <i>Free prescriptions in Wales</i> , < http://gov.wales/topics/health/nhswales/prescriptions/?skip=1&lang=cy [Cy] and http://gov.wales/topics/health/nhswales/prescriptions/?lang=en [En]>.
RD115	COMARE. (2016) Further consideration of the incidence of cancers around the nuclear installations at Sellafield and Dounreay. (Produced by Public Health England for the Committee on Medical Aspects of Radiation in the Environment). < http://bit.ly/2eBrhlq >
RD116	Public Health Wales. (2017) HIV: Data & Reports for Wales. < http://www.wales.nhs.uk/sitesplus/888/tudalen/88751 [Cy] and http://www.wales.nhs.uk/sitesplus/888/page/88731 [En]>
RD117	Balfour, R. and Allen, J. R. (2014) A Review of the Literature on Sex Workers and Social Exclusion. (UCL Institute of Health Equity for Inclusion Health, Department of Health). < http://bit.ly/29TWgJs >
RD118	GRETA. (2012) Report concerning the implementation of the Council of Europe Convention on Action against Trafficking in Human Beings by the United Kingdom. (Group of Experts on Action against Trafficking in

ID	Reference or note
RD119	Human Beings (GRETA) for the Council of Europe, Directorate General of Human Rights and Rule of Law, Strasbourg). < http://bit.ly/1MSrVqN > Horizon Nuclear Power. (2017) Modern Slavery Act 2015 Statement. < www.horizonnuclearpower.com/files/downloads/Modern-Slavery-Act-Transparency-Statement.pdf >
RD120	Wales Heads of Trading Standards. (2016) Operation Fetch: Illicit Tobacco Detection in Wales. < http://bit.ly/2reQzSc >
RD121	Isle of Anglesey County Council. (2014) Illicit tobacco. < http://bit.ly/2rllDd [Cy] and http://bit.ly/2rYmtnk [En]>
RD122	Campos-Serna, J. et al. (2013) Gender inequalities in occupational health related to the unequal distribution of working and employment conditions: a systematic review. <i>Int J Equity Health</i> 12 , 57 < https://doi.org/10.1186/1475-9276-12-57 >
RD123	Furnee, C. A. et al. (2011) Health and income: a meta-analysis to explore cross-country, gender and age differences. <i>Eur J Public Health</i> 21 , 775-780 < https://doi.org/10.1093/eurpub/ckq166 >
RD124	Elementary occupations are mostly routine tasks, often involving the use of simple hand-held tools and, in some cases, requiring a degree of physical effort. Most occupations in this major group do not require formal educational qualifications but will usually have an associated short period of formal experience-related training.
RD125	Luria, P. et al. (2009) Health risk perceptions and environmental problems: findings from ten case studies in the North West of England. (Health Protection Agency North West and Centre for Public Health, Liverpool John Moore's University). < http://bit.ly/294iCrA >
RD126	Office for National Statistics. (2017) <i>Total number of households by region and country of the UK, 1996 to 2016</i> , < http://bit.ly/2u0bRFC >.
RD127	Blight, G. E. (2008) Wind erosion of waste impoundments in arid climates and mitigation of dust pollution. <i>Waste Manag.Res.</i> 26 , 523-533 < https://doi.org/10.1177/0734242X07082027 >
RD128	Viana, M. et al. (2013) Natural sources of atmospheric aerosols influencing air quality across Europe. <i>Sci.Total Environ.</i> 472 , 825-833 < https://doi.org/10.1016/j.scitotenv.2013.11.140 >
RD129	van der Gon, H. A. et al. (2013) The policy relevance of wear emissions from road transport, now and in the future--an international workshop report and consensus statement. <i>J.Air Waste Manag.Assoc.</i> 63 , 136-149
RD130	LandIS. (2013) <i>A Guide to the Soils of England and Wales</i> , < www.landis.org.uk/services/soilsguide/ >.
RD131	Quality of Urban Air Research Group. (1996) Airborne Particulate Matter in the United Kingdom: Third Report of the Quality of Urban Air Review Group. (Prepared at the request of the Department of the Environment by the University of Birmingham, Birmingham). < http://bit.ly/1EQoDUQ >
RD132	This statement about sensitivity is one step in scoring the impact assessment and it does not imply that people are not affected by changes in air quality.

ID	Reference or note
RD133	Llywodraeth Cymru. (1997) Technical Advice Note (TAN) 11: Noise. (Wales). < http://bit.ly/2DdmTvC (Cy) & http://bit.ly/2Da6HMA (En)>
RD134	Hitachi Group. (2010) <i>Code of Conduct</i> , < www.hitachi.com/corporate/about/conduct/index.html#aid8013470 >.
RD135	Quigley, R. <i>et al.</i> (2006) Health Impact Assessment. (International Association for Impact Assessment). < http://bit.ly/2d6r1jk >
RD136	World Health Organization Regional Office for Europe and European Centre for Health Policy. (1999) Health impact assessment: main concepts and suggested approach. Gothenburg consensus paper. 1-10 (WHO Regional Office for Europe, ECHP, Brussels). < http://bit.ly/XyA89L >
RD137	World Health Organization. (1948) Preamble to the Constitution of the World Health Organization; signed on 22 July 1946 by the representatives of 61 States and entered into force on 7 April 1948. (New York). < http://bit.ly/1cgnJ3S >
RD138	World Health Organization. (2007) Mental health: strengthening mental health promotion. < http://bit.ly/1PpjJ2b >
RD139	Dahlgren, G. and Whitehead, M. (1991) <i>Policies and strategies to promote social equity in health</i> . (Institute for Future Studies).
RD140	Barton, H. and Grant, M. (2006) A health map for the local human habitat. <i>The Journal of the Royal Society for the Promotion of Health</i> 126 , 252-253
RD141	Marmot, M. <i>et al.</i> (2010) Fair society, healthy lives. < http://bit.ly/1iK9VjN >
RD142	Relative to population size.
RD143	Frequency, in the context of degree to which resources are shared with the Wylfa Newydd Project, can also be a consideration in relation to sensitivity. In the context of magnitude, frequency is a quality of the activities or effects of the Wylfa Newydd Project, rather than a quality of the population or receptor experiencing the change.
RD144	HM Government of Great Britain & Northern Ireland. (2010) Environmental protection: the air quality standards regulations. (London). < http://bit.ly/1mq3Ewz >
RD145	HM Government of Great Britain & Northern Ireland. (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. < http://bit.ly/1SHWUOV >
RD146	Environment Agency. (2002) Horizontal Guidance for Noise Part 1 - Regulation and Permitting, Integrated Pollution Prevention and Control (IPPC). Report No. ISBN 0 11 310123 6. < http://bit.ly/1KrEaz4 >
RD147	Environment Agency. (2002) Horizontal Guidance for Noise Part 2 - Noise Assessment and Control. Report No. ISBN 0 11 310187 2, (Bristol). < http://bit.ly/1qQ01Du >
RD148	BSI. (2014) Methods for rating and assessing industrial and commercial sound. (British Standards Institution). < http://bit.ly/1FSadlr >
RD149	BSI. (2014) Guidance on sound insulation and noise reduction for buildings. (British Standards Institution). < http://bit.ly/1EeHzuT >

ID	Reference or note
RD150	BSI. (2008) Code of practice for noise and vibration control on construction and open sites. Noise. (British Standards Institution, London, England). < http://bit.ly/1pWgM08 >
RD151	Nomis. (2017) <i>Official labour market statistics</i> , < www.nomisweb.co.uk >.
RD152	Llywodraeth Cymru and Statistics for Wales. (2017) <i>Welsh Index of Multiple Deprivation 2014 by rank and lower super output area</i> , < http://bit.ly/2rZ9YIS (Cy) & http://bit.ly/2t2pbZJ (En)>.
RD153	Llywodraeth Cymru and Stats Wales. (2014) <i>Population estimates by lower super output area and age group</i> , < http://bit.ly/1jcGizl >.
RD154	Jamie, G. (2014) <i>Quality and Outcomes Framework (QOF) prevalence</i> , < www.gpcontract.co.uk/browse/WAL/14 >.
RD155	World Health Organization Regional Office for Europe. (2006) Air quality guidelines. Global update 2005. Particulate matter, ozone, nitrogen dioxide and sulfur dioxide. < http://bit.ly/1GZKsRd >
RD156	World Health Organization Regional Office for Europe. (2000) Air quality guidelines for Europe. (Copenhagen, Denmark). < http://bit.ly/1HXtli4 >
RD157	In 2015 the World Health Assembly passed a resolution calling for reduction of air pollution – see http://bit.ly/1HO246j
RD158	Institute of Air Quality Management. (2014) Guidance on the Assessment of Dust from Demolition and Construction. < http://bit.ly/1jblgRv >
RD159	Llywodraeth Cymru. (2017) Local air quality management in Wales: policy guidance. < http://bit.ly/2sxrinw [Cy] and http://bit.ly/2rDZd9N [EN]>
RD160	World Health Organization Regional Office for Europe. (2009) Night noise guidelines for Europe. (Copenhagen, Denmark). < http://bit.ly/1vY4TJ >
RD161	World Health Organization. (1999) Guidelines for community noise. (WHO, Geneva). < http://bit.ly/17VGPy >
RD162	World Health Organization Regional Office for Europe. (2014) Update of WHO guidelines for community noise for the European Region. <i>WHO website</i>
RD163	European Environment Agency. (2010) Good practice guide on noise exposure and potential health effects. (The Expert Panel on Noise (EPoN) for the EEA, Copenhagen, Denmark). < http://bit.ly/1oohdkw >
RD164	BSI. (2008) Code of practice for noise and vibration control on construction and open sites. Vibration. (British Standards Institution, London, England). < https://shop.bsigroup.com/ProductDetail?pid=000000000030258086 >
RD165	Llywodraeth Cymru and Stats Wales. (2014) <i>Annual WIMD indicator data – 2014</i> , < http://bit.ly/1jbpeKa >.
RD166	Isle of Anglesey <i>et al.</i> (2008) North West Wales Local Housing Market Assessment Baseline report. < http://bit.ly/1MnfQQj >
RD167	Lovasi, G. S. <i>et al.</i> (2009) Built environments and obesity in disadvantaged populations. <i>Epidemiol.Rev.</i> 31 , 7-20

ID	Reference or note
RD168	Based on 2005-2009 Slope Index of Inequality (SII) data
RD169	Gwynedd and Môn Public Services Board. (2017) Anglesey Well-being Assessment. < http://bit.ly/2s31rQm >
RD170	Mendez-Figueroa, H. <i>et al.</i> (2013) Trauma in pregnancy: an updated systematic review. <i>Am.J.Obstet.Gynecol.</i> 209 , 1-10 < https://doi.org/10.1016/j.ajog.2013.01.021 >
RD171	Price, E. <i>et al.</i> (2014) Organisation of services for people with cardiovascular disorders in primary care: transfer to primary care or to specialist-generalist multidisciplinary teams? <i>BMC Fam Pract</i> 15 , 158 < https://doi.org/10.1186/1471-2296-15-158 >
RD172	Plaistow, J. <i>et al.</i> (2014) Young people's views of UK mental health services. <i>Early Interv Psychiatry</i> 8 , 12-23 < https://doi.org/10.1111/eip.12060 >
RD173	Lehnert, T. <i>et al.</i> (2011) Review: health care utilization and costs of elderly persons with multiple chronic conditions. <i>Med Care Res Rev</i> 68 , 387-420 < https://doi.org/10.1177/1077558711399580 >
RD174	Luppa, M. <i>et al.</i> (2012) Health service utilization and costs of depressive symptoms in late life - a systematic review. <i>Current pharmaceutical design</i> 18 , 5936-5957 < https://doi.org/10.2174/138161212803523572 >
RD175	Ismail, S. A. <i>et al.</i> (2013) Reducing inappropriate accident and emergency department attendances: a systematic review of primary care service interventions. <i>Br J Gen Pract</i> 63 , e813-820 < https://doi.org/10.3399/bjgp13X675395 >
RD176	Flores-Mateo, G. <i>et al.</i> (2012) Effectiveness of organizational interventions to reduce emergency department utilization: a systematic review. <i>PLoS One</i> 7 , e35903 < https://doi.org/10.1371/journal.pone.0035903 >
RD177	Welsh Ambulance Services NHS Trust. (2013) FOI Disclosure October 2013 Part 1. < http://bit.ly/1twSv7q >
RD178	Welsh Ambulance Services NHS Trust. (2015) FOI Disclosure January 2015 Part 1. < http://bit.ly/1twSv7q >
RD179	Totally Communications. (no date) <i>Ambulance Waiting Times 2011-2014 by Post Code (4 digit)</i> , < www.ambulanceresponsetimes.co.uk >.
RD180	Betsi Cadwaladr University Health Board. (2016) Full-time equivalent GP cluster data.
RD181	NHS Healthy Urban Development Unit. (2009) Planning Contributions Model. Guidance Notes. < http://bit.ly/1LBeobx >
RD182	Statistics for Wales. (2015) General medical practitioners in Wales: 2004 to 2014. Report No. SDR 48/2015. < http://bit.ly/1jPxK1G >
RD183	Llywodraeth Cymru and Stats Wales. (2015) <i>Employment rate by Welsh local area, year and gender</i> , < http://bit.ly/1PORzmx >.
RD184	Centre for Workforce Intelligence. (2014) In-depth review of the psychiatrist workforce: Technical report. (CFWI, London). < http://bit.ly/1jKvLvn >
RD185	Virtanen, M. <i>et al.</i> (2015) Long working hours and alcohol use: systematic review and meta-analysis of published studies and

ID	Reference or note
	unpublished individual participant data. <i>BMJ</i> 350 < https://doi.org/10.1136/bmj.g7772 >
RD186	Office for National Statistics. (2014) <i>Measuring National Well-being, Personal Well-being in the UK, 2013/14</i> , < http://bit.ly/1LaVhzi >.
RD187	Llywodraeth Cymru. (2015) <i>Welsh Health Survey, local authority and health board results: 2012 and 2013</i> , < http://bit.ly/1Ohjv25 >.
RD188	Public Health Wales. (2013) HIV and STI trends in Wales. Surveillance Report. < http://bit.ly/1VCZ7N5 >
RD189	Llywodraeth Cymru and Stats Wales. (2015) <i>National Survey for Wales. Community Cohesion. April 2014 to March 2015</i> , < http://bit.ly/1OkqlZM >.
RD190	Bhugra, D. and Becker, M. A. (2005) Migration, cultural bereavement and cultural identity. <i>World Psychiatry</i> 4 , 18-24
RD191	Llywodraeth Cymru. (2016) <i>Community Cohesion National Delivery Plan 2016-17</i> , < http://bit.ly/2claOoY [Cy] and http://bit.ly/2c3Q4QF [En]>.
RD192	Behrman, J. R. et al. (2011) Does more schooling reduce hospitalization and delay mortality? New evidence based on Danish twins. <i>Demography</i> 48 , 1347-1375 < https://doi.org/10.1007/s13524-011-0052-1 >
RD193	Gerhardstein, P. et al. (2012) Early operant learning is unaffected by socio-economic status and other demographic factors: a meta-analysis. <i>Infant Behav Dev</i> 35 , 472-478 < https://doi.org/10.1016/j.infbeh.2012.02.005 >
RD194	Keum, N. et al. (2015) Adult weight gain and adiposity-related cancers: a dose-response meta-analysis of prospective observational studies. <i>J Natl Cancer Inst</i> 107 < https://doi.org/10.1093/nci/dju428 >
RD195	Kodama, S. et al. (2014) Quantitative relationship between body weight gain in adulthood and incident type 2 diabetes: a meta-analysis. <i>Obes Rev</i> 15 , 202-214 < https://doi.org/10.1111/obr.12129 >
RD196	Stanley, S. and Laugharne, J. (2014) The impact of lifestyle factors on the physical health of people with a mental illness: a brief review. <i>Int J Behav Med</i> 21 , 275-281 < https://doi.org/10.1007/s12529-013-9298-x >
RD197	Public Health Wales. (2014) Sub-regional health needs profile: Isle of Anglesey & Gwynedd. Report No. Final v2. < http://bit.ly/1NIQ2nB >
RD198	Public Health Wales. (2015) Child Measurement Programme Annual Report 2013/2014. < http://bit.ly/1VEdzix >
RD199	The term risk perception is common in the literature and will be used when findings are quoted from a study that uses the term.
RD200	Sinisi, L. (2004) <i>Public concerns and risk communication</i> (National Environmental Protection Agency).
RD201	Parkhill, K. A. et al. (2010) From the familiar to the extraordinary: local residents perceptions of risk when living with nuclear power in the UK. <i>Transactions of the Institute of British Geographers</i> 35 , 39-58 < https://doi.org/10.1111/j.1475-5661.2009.00364.x >
RD202	Venables, D. et al. (2009) Living with nuclear power: A Q-method study of local community perceptions. <i>Risk Anal.</i> 29 , 1089-1104 < https://doi.org/10.1111/j.1539-6924.2009.01259.x >

ID	Reference or note
RD203	Demand for electricity varies all the time but a significant proportion of demand, known as “baseload”, is required 24 hours a day. Nuclear power stations are suited to being baseload plant, as they are able to generate continuously in a reliable and predictable way and at high capacity.
RD204	Department of Energy and Climate Change. (2015) UK energy in brief 2015. < http://bit.ly/1Za8lQe >
RD205	Department of Energy and Climate Change. (2015) Annual Report on Fuel Poverty Statistics report. < http://bit.ly/1KZaTJy >
RD206	Field, C. B. <i>et al.</i> (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel of Climate Change (Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA). < http://bit.ly/294TJfR >
RD207	Llywodraeth Cymru and Statistics for Wales. (2017) <i>Welsh Index of Multiple Deprivation 2014 revised. Indicator data by Lower Layer Super Output Areas - All Domains</i> , < http://bit.ly/2rZ8Wwu (Cy) & http://bit.ly/2sJE8Nr (En)>.
RD208	Office for National Statistics. (2016) <i>Headline estimates of personal well-being. Local authority update 2015 to 2016</i> , < http://bit.ly/2n4yjKK >.
RD209	Statistics for Wales. (2015) Welsh Health Survey 2014: Initial Headline results. < http://bit.ly/1PK2uO9 (Cy) & http://bit.ly/1Ohjv25 (En)>
RD210	Llywodraeth Cymru and Stats Wales. (2016) Data for the National Assembly for Wales constituency areas. < http://bit.ly/2cdchis [Cy] and http://bit.ly/2bTQaPb [En]>
RD211	Statistics for Wales. (2016) <i>Welsh Health Survey</i> , < http://bit.ly/1PK2uO9 (Cy) & http://bit.ly/1Ohjv25 (En)>.
RD212	Laverack, G. (2001) An identification and interpretation of the organizational aspects of community empowerment. <i>Community Development Journal</i> 36 , 134-145 < https://doi.org/10.1093/cdj/36.2.134 >
RD213	Petersen, A. R. (1994) Community development in health promotion: empowerment or regulation? <i>Aust J Public Health</i> 18 , 213-217 < https://doi.org/10.1111/j.1753-6405.1994.tb00230.x >
RD214	Brown, J. S. <i>et al.</i> (2015) <i>Promoting public mental health and well-being principles into practice</i> . (Jessica Kingsley Publishers).
RD215	Glasgow Centre for Population Health. (2011) Asset-based approaches for health improvement: redressing the balance. < http://bit.ly/2h28swe >
RD216	Coggins, T. <i>et al.</i> (2008) Mental well-being impact assessment: a toolkit. (Care Services Improvement Partnership, North West Development Centre). < http://bit.ly/2pgVuCV >
RD217	Stakeholder Advisory Group on ELF EMFs. (2010) Second Interim Assessment 2009 – 2010. Electricity Distribution (including low-voltage and intermediate-voltage circuits and substations). < http://www.emfs.info/policy/sage/2ia/ >

ID	Reference or note
RD218	Brown, J. S. (2015) <i>Promoting public mental health and well-being principles into practice</i> . (Jessica Kingsley Publishers).
RD219	Putnam, R. (2000) <i>Bowling alone: the collapse and revival of American community</i> . (Simon Schuster).
RD220	Putnam, R. (1993) <i>Making democracy work: civic traditions in modern Italy</i> . (Princeton University Press).
RD221	Trosset, C. (1993) <i>Welshness Performed: Welsh Concepts of Person and Society</i> . (University of Arizona Press).
RD222	Williams, D. R. and Vaske, J. J. (2003) The Measurement of Place Attachment: Validity and Generalizability of a Psychometric Approach. <i>Forest Science</i> 49 , 830-840
RD223	Baldwin, C. <i>Locating Britishness? Mediating Identity, Ethnicity, Community and Place in Multi-Ethnic Swindon</i> D.Phil thesis, University of Oxford, (2012).
RD224	Baldwin, C. and King, R. (2017) What about the people? The socially sustainable, resilient community and urban development. < http://tde.bz/2muXnJM >
RD225	Beaufort Research Ltd. (2016) Anglesey Residents Survey (Wylfa Newydd) – Draft 2. HIA/WLIA/Socio-Econ/EqIA. Report No. B01622 – Ben Cave Associates / Jacobs. [Welsh language and English language versions].
RD226	Beaufort Research Ltd. (2016) Wylfa Residents Survey. Report No. B01622.

L HIA appendix – methods

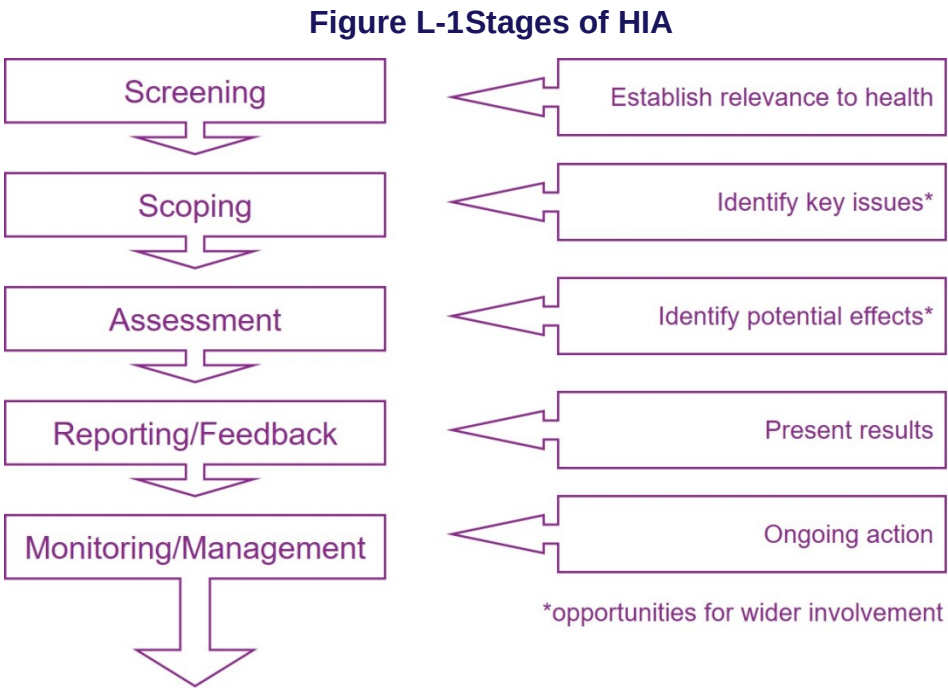
L.1 Overview of the assessment process

- L.1.1 This appendix sets out the comprehensive HIA methods. The methods are presented in two parts.
- Section L.2 sets out the general HIA approach to assessment that applies across all topics of this HIA Report.
 - Section L.3 sets out the specific methodologies and assessment criteria that have informed the professional judgements reached for individual HIA topics.

L.2 HIA approach to assessment

Stages of the HIA

- L.2.1 Figure L-1 sets out the main stages of HIA (screening, scoping, assessment, reporting/feedback and monitoring/management) together with a summary of the core activity involved in each stage. The arrow that extends down from the monitoring/management stage indicates that the HIA has an ongoing role after this HIA Report has been completed.



- L.2.2 Some elements of the HIA process are sequential, although there is a large amount of interaction between the various stages. The HIA is prospective and sequential. It has been undertaken in advance of the construction and operation of the proposed Power Station, thereby providing sufficient opportunity to enable 'constructive modifications' to be made to the design should potential adverse effects be identified and mitigation required. It also provides opportunity to ensure that beneficial effects on health and well-being are increased.

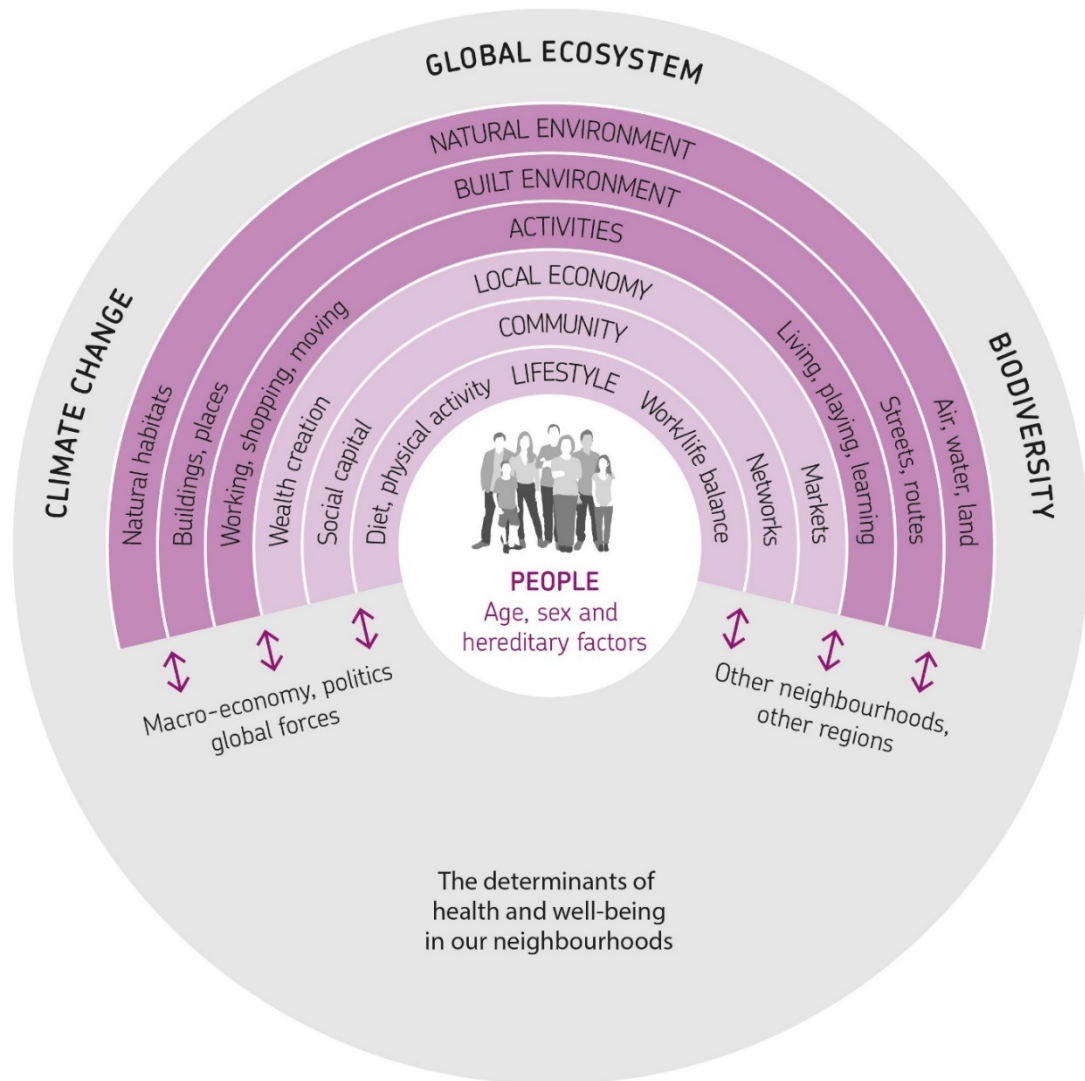
Objectives of the HIA

- L.2.3 HIA is a systematic process used to identify the potential health effects arising from policies, plans, programmes and projects and to help reduce health inequalities. HIA is defined as [RD135]:
- “...a combination of procedures, methods and tools that systematically judges the potential, and sometimes unintended, effects of a policy, plan, programme or project on both the health of a population and the distribution of those effects within the population. HIA identifies appropriate actions to manage those effects.”
- L.2.4 Core values of an HIA are democracy, equity, sustainable development and the ethical use of evidence [RD136].
- L.2.5 The HIA uses the WHO’s definition of health, which states that health is a “*state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*” [RD137].
- L.2.6 The HIA also uses a WHO definition for well-being. The WHO defines well-being as a “state in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” [RD138].

The determinants of health

- L.2.7 Human health and the physical and social environment are intricately linked. Human health has a number of determinants that go beyond individual lifestyle choices. This is shown in Figure L-2. Communities and/or individuals can be affected directly or indirectly. Determinants can improve and protect health as well as be harmful to health. Examining how a policy, plan, programme or project influences these determinants and the likely effects on the health of communities and individuals is a key role of an HIA. As noted above, these effects might be on physical health or on mental health.

Figure L-2 Determinants of health and well-being



Source: Based on the Whitehead and Dahlgren [RD139] diagram as amended by Barton and Grant [RD140]

- L.2.8 Figure L-2 shows how the factors that influence health and well-being apply at the individual level, e.g. smoking, use of alcohol and diet. It also shows how these factors apply at the level of local community (e.g. the level of support that people enjoy in their local community), and at the wider society level (e.g. whether employment is available and whether steps are taken to protect the environment). These influences are known as the 'determinants of health and well-being'. These determinants can improve and protect health and well-being or they can be harmful. The effects might be on physical health or on mental health. Health and well-being are thus determined by a wide range of issues, many outside the control of individual choices. The HIA work examines the ways in which the Project potentially affects these determinants of health and well-being.
- L.2.9 The scoping stage considered all determinants. The analysis stage considers certain determinants in more detail.

Health inequalities

- L.2.10 The effects of the proposed Project may be experienced differently by different population groups; population groups can be identified by factors including (but not limited to) age, gender, ethnicity, socio-economic status, place of residence or pre-existing health status. Public health policy seeks to reduce inequalities in health between population groups [RD141]. HIA also seeks to enable the policy-maker to take steps to manage the potential effects.
- L.2.11 The EqIA (Application Reference Number: 8.22) report discusses the potential disproportionate and differential effects of the Project on protected characteristic groups as defined in the *Equality Act 2010*. Whilst there may be some overlap, health inequalities do not necessarily correspond to protected characteristics.

Spatial and temporal scope of the HIA

Spatial scope

Study areas

- L.2.12 This HIA looks at data for the populations likely to be affected at different geographical levels. These are:
- site-specific;
 - local;
 - regional;
 - national; and
 - international.
- L.2.13 Effects that relate to a localised activity or facility are considered at a site-specific scale. The site-specific areas for which routine statistics are collected are Lower Layer Super Output Areas (LSOAs) and wards. 'Ward' refers to electoral wards of Wales. Wales changed to using the term 'electoral wards' instead of 'electoral divisions' in August 2013. The Llanbadrig and Mechell wards are within the Isle of Anglesey Unitary Authority. The HIA has referred to the Office of National Statistics' datasets for these (and other relevant site-specific) wards (see the HIA appendix in volume M). These areas belong to the 2012 administrative hierarchy list of areas.
- L.2.14 For the purposes of the HIA, LSOAs and wards are considered to cover the same geographical boundaries. Any differences are not considered to affect the HIA's conclusions. The HIA therefore reports statistics collected for both LSOAs (e.g. Isle of Anglesey 001C) and wards (e.g. Llanbadrig ward).
- L.2.15 The HIA has selected 'representative' LSOAs/wards for site-specific geographies to characterise the population affected. The LSOAs/wards selected are not intended to indicate the area of effect, but rather the profile of the affected population. Where there are relevant variations in population profiles (e.g. very different levels of deprivation), two or three LSOAs/wards have been selected for a single site-specific geography. It is considered disproportionate to the assessment to include all LSOAs/wards within a given radius of a site-specific location.

Geographic population groups

- L.2.16 The HIA considers the following geographic levels: site-specific; local (Anglesey and Arfon); regional (north Wales or BCUHB area); national (Wales and the rest of the UK); and international.
- L.2.17 The HIA analysis summarises the potentially significant health effects for six population groups based on these study areas (some have greater sensitivity due to their closeness to the Project's activities):
- the population near the Wylfa Newydd Development Area (site-specific);
 - the population near the local road network (A5025, A55, A5 and A487) (site-specific);
 - the population near Dalar Hir (site-specific);
 - the population near or in Holyhead and near Parc Cybi (site-specific);
 - the population of Anglesey and north Wales (local and regional); and
 - the population of Wales and beyond the borders of Wales (national and international).

Potentially vulnerable groups

- L.2.18 The HIA scoping stage considered a wide range of potentially vulnerable groups in line with Welsh guidance [RD1]. The EqIA (Application Reference Number: 8.22) also considers vulnerable groups. The HIA analysis summarises effects for four population groups based on their sensitivity to potential changes attributable to the Project (beneficial or adverse):
- children and young people;
 - older people;
 - people with existing poor health (physical and mental health); and
 - people living in deprivation, including those on low incomes.
- L.2.19 Within these groups, specific sensitivities are considered for individual issues. Where groups overlap, there may be increased vulnerability, e.g. children who have asthma. Disability is an issue discussed in detail within the EqIA (Application Reference Number: 8.22). The HIA does not consider people with disabilities to be inherently less healthy than other people. Any increased sensitivity falls within the more general category of 'people with existing poor health' (for whatever reason). Where appropriate, the HIA gives consideration to mitigation relevant to reduced mobility or sensory impairment.

Temporal scope

- L.2.20 The following durations define the temporal scope of the assessment.
- L.2.21 The duration of potentially significant effects varies between issues being assessed but can be generalised as follows:
- 'very short term' relates to effects measured in hours, days or weeks (e.g. effects, associated with brief peaks in activity close to receptors);
 - 'short term' relates to effects measured in months (e.g. periods within the construction stage);

- 'medium term' relates to effects measured in years (e.g. the construction stage);
 - 'long term' relates to effects measured in decades (e.g. the operational stage).
- L.2.22 The duration of specific activities is discussed in greater detail within the Environmental Statement.
- L.2.23 Within these durations, the frequency of effects is relevant. This is considered later in this section in the discussion of magnitude of effects.

Methods used in the assessment

Introduction

- L.2.24 The potential effects of the Project on health and well-being have been investigated and an assessment has been made. The assessment uses both qualitative and quantitative data to reach conclusions.
- L.2.25 This HIA has been informed by the policy context and guidance on HIA. Notably, the Wales Health Impact Assessment Support Unit guidance [RD1] has been used to keep a focus on population groups rather than the Project's activities.
- L.2.26 In reaching conclusions as to the significance of potential effects, the HIA has considered the sensitivity of affected populations and the magnitude of change due to the Project.
- L.2.27 Professional judgement has been used when applying the criteria during assessment, in order to take account of relevant contextual factors as well as the available information. The methodology supporting such professional judgements is described below.

Assessing sensitivity of a population

- L.2.28 The assessment of sensitivity has been informed by baseline data for the relevant study area and scientific evidence from published literature.
- L.2.29 The term 'sensitivity' is used to capture the notion that change can be adverse or beneficial; for example, employment opportunities may bring beneficial effects to health and well-being. People and communities are not passive and will shape their own environment and adapt to change.
- L.2.30 Health effects would not be evenly distributed across the population so it is important to consider population groups that may be more vulnerable.
- L.2.31 Table L-1 provides examples of the criteria that have been used to characterise the sensitivity of community receptors.

Table L-1 Sensitivity: criteria for community health and well-being

Sensitivity	General criteria	HIA-specific criteria
High	Very sensitive to change from the Project's activities, or with little capacity to accommodate a change.	People who are vulnerable to changes in environmental health determinants, such as air quality and noise levels, are the very young; pregnant women and their unborn children; the very old; and people with poor health due to a pre-existing condition and/or disability. People who have lower socio-economic status and who have reduced access to financial, social and political resources. This includes access to health care. It also includes access to, and familiarity with, representatives and advocates and formal complaint procedures. People who share resources constantly with the Project may be more sensitive to its effect. This could include users of roads, tracks and marine resources. It could also include those who live adjacent to the Wylfa Newydd Development Area, Off-Site Power Station Facilities or Associated Development. People who benefit from interaction with the Project, for example through employment or through education opportunities. Some people may anticipate risks to their health and well-being and express high levels of anxiety. They are likely to be aware of, and thus affected by, actual changes and by the possibility of change.
Medium	Moderate sensitivity to change from the Project's activities, or with moderate capacity to accommodate a change.	People who are likely to experience temporary inconvenience or benefit as a result of changes in environmental or social determinants of health. They may live or work adjacent to the construction areas or temporary Associated Development of the Project or they may express some concerns and anxieties about the effects of the Project on their well-being.
Low	Not particularly sensitive to change from the Project's activities, or with considerable capacity to accommodate a change.	People with sufficient coping strategies who feel there will be little or no change to their well-being as a result of Project activities, whether that change may be beneficial or adverse. They may live or work adjacent to the Project and are confident that any hazards associated with the Project's components are controlled.

Sensitivity	General criteria	HIA-specific criteria
Negligible	Not sensitive to change from the Project's activities, or with considerable capacity to accommodate a change.	People who are generally not inconvenienced by the Project activities or exposed to potential hazards associated with the Project. People who express no concern about potential effects and are confident that any hazards associated with the Project's components are controlled.

Assessing magnitude of change

- L.2.32 The assessment of magnitude has been informed by changes in social conditions, (including changes to economic, infrastructure or service conditions) or environmental conditions due to the Project as reported by relevant assessments in the Environmental Statement (Application Reference Number: 6.2 to 6.8) chapters and WLIA (Application Reference Number: 8.21).
- L.2.33 The following factors have also informed a professional judgement to characterise the magnitude of change that might be expected:
- severity – the scale and reversibility of a change in health outcomes;
 - likelihood – the probability of a relevant effect occurring; and
 - extent – numbers exposed to or experiencing an effect.
- L.2.34 Table L-2 provides criteria that have informed the professional judgement of magnitude of a change caused by the Project. One or more of the columns (extent, likelihood and severity) may be applicable to a particular judgement. Not all criteria apply in all cases. The table has been used as a basic background guide only and the decision on the scoring of magnitude is one of professional judgement. The table does not indicate the incidence (rate of occurrence of new cases) or prevalence (number of cases at a given time).

Table L-2 Magnitude: criteria for community health and well-being

Magnitude	General criteria	HIA-specific criteria (one or more may apply)			
		Extent [RD142]	Likelihood	Frequency [RD143]	Severity
Large	Loss of resource and quality and integrity of resource; severe damage to key characteristics, features or elements; or large scale or major improvement of resources quality; extensive restoration or enhancement; major improvement of attribute quality.	Causes health effects to most people	Likely (>66%) due to the Project	Frequent (a few times a day) or continuous	A permanent, progressive or irreversible condition; permanently disabling; substantial change in quality of life (beneficial or adverse); or substantial change in a risk factor for health and well-being.
Medium	Loss of resource, but not adversely affecting its integrity; partial loss of/damage to key characteristics, features or elements; or benefit to, or addition of, key characteristics, features or elements; improvements of attribute quality.	Causes health effects to many people	As likely as not due to the Project	Infrequent (a few times a week)	A non-permanent, reversible, non-progressive condition; temporary disability; marked change in quality of life (beneficial or adverse); or marked change in a risk factor for health and well-being.
Small	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (or maybe more) key characteristic, feature or element; or minor benefit to, or addition of, one (or maybe more) key characteristic, feature or element; some beneficial effect on attribute or a reduced risk of adverse effects occurring.	Causes health effects to few people	Unlikely (<33%) due to the Project	Occasional (a few times a month)	Transient, temporary symptoms (e.g. irritation, nausea or headache) or slight change in quality of life (beneficial or adverse); or slight change in a risk factor for health and well-being.

Magnitude	General criteria	HIA-specific criteria (one or more may apply)			
		Extent [RD142]	Likelihood	Frequency [RD143]	Severity
Negligible	Very minor loss or detrimental alteration to one (or maybe more) characteristic, feature or element; or very minor benefit to, or beneficial addition of, one (or maybe more) characteristic, feature or element.	Individual level health effects or no effect	Not expected due to the Project	Rare (a few times a year)	No discernible change in health outcomes, quality of life or risk factors.

Assessing significance

- L.2.35 The HIA seeks to establish the significance of the effects of the Project upon health and well-being. The term 'significance' is used to identify the beneficial and adverse implications of the Project in a consistent manner across different topic areas.

Defining significance for health

- L.2.36 A significant health effect is when the direct, indirect or cumulative effects of the Project are considered likely to change the determinants of health in a way that can be associated with important or unacceptable changes to clinical or self-reported health outcomes of a defined population (beneficially or adversely).
- L.2.37 Conversely, an effect that is not significant is one where the direct, indirect or cumulative effects of the Project are not considered likely to change the determinants of health in a way that can be associated with important or unacceptable changes to clinical or self-reported health outcomes of a defined population (beneficially or adversely).
- L.2.38 A potential health effect may be 'not significant' for different reasons, for example:
- levels of change are predicted to be within accepted thresholds;
 - a source of harm does not have a pathway to a receptor population;
 - sensitive or vulnerable groups are not present in the area of effect; or
 - committed mitigation reduces the potential for changes in health to a level that is deemed acceptable.
- L.2.39 The term significance has several additional components.
- Significance means that the potential change is considered important or unacceptable.
 - A statement regarding significance is based on an analysis of a range of information sources.
 - Significance refers to changes in population health.
 - A finding of significance uses quantitative and qualitative information.
- L.2.40 These additional components are considered below.

Importance and acceptability

- L.2.41 The term 'significance' does not refer to statistical significance. The HIA process is neither designed, nor intended, to generate data to which statistical techniques should be applied. Rather, the HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes.
- L.2.42 The HIA uses local health priorities and local understanding, as well as the wider scientific evidence base and regulatory standards, to reach a professional judgement on a potential effect. In the topic-specific part of this methods appendix, information supporting the determination of significance is provided as follows.

- Considerations in relation to importance:
 - relevant scientific literature and baseline conditions; and
 - relevant local health priorities.
- Considerations in relation to acceptability:
 - relevant consultation responses; and
 - relevant regulatory standards and/or policy context.

L.2.43 The HIA notes when there is sometimes divergence between emerging evidence (e.g. research and WHO guide levels) and what is deemed to be acceptable in the UK (e.g. national regulatory standards). The salient issue for the assessment is what is considered to be acceptable with regard to the relevant context. The HIA defers to applicable regulatory standards as a gauge of what society in the UK considers an acceptable change in environmental conditions and, by extension, health outcomes. This does not preclude other factors, such as baseline environmental and population health conditions, from also informing the overall professional judgement reached on significance.

Information sources

L.2.44 The significance of an effect is thus determined for the area or context relevant to the issue under consideration. The finding is based on the consideration of available evidence, for example scientific literature; dialogue with the HIA Steering Group; consultation responses; baseline conditions; local health priorities and regulatory standards.

L.2.45 In reaching a determination of significance the assessor examines:

- issues which are amenable to objective measurement, such as air quality and noise; and
- issues which have a greater degree of subjectivity, e.g. well-being, self-reported health or understanding of risk.

L.2.46 In the final analysis, a finding of 'significance' is the professional judgement of the assessor.

Population level

L.2.47 Findings regarding 'significance' are determined with regard to the expected effect on a defined population. There may be outlying effects due to heightened resilience or sensitivity (even within a vulnerable sub-population). It can be appropriate to include a separate consideration of relevant vulnerable or sensitive sub-populations. This is the case even where such groups are small.

Quantitative/qualitative

L.2.48 The ways in which health outcomes can change are complex and have many factors. Quantitative measures of effect or dose-response relationships exist for relatively few changes in conditions and need to be used with care. For example, the error margins associated with a small effect size in a small population would usually negate any added value of quantitative assessment. In most instances, it is therefore more appropriate for HIA to describe the expected outcome in qualitative terms.

L.2.49 The findings regarding potential health effects are based on established and, when appropriate, statistically significant relationships between changes in determinants of health and changes in health outcomes. These are derived from scientific literature.

L.2.50 The HIA uses the following data sources:

- qualitative and quantitative data from the Environmental Statement. Where appropriate, the methodologies, assumptions and interpretation of data have been discussed with relevant EIA technical specialists;
- responses from the Pre-Application Consultations and HIA consultation;
- input from the HIA Steering Group;
- supporting technical assessments undertaken for the Project, including those for air quality, noise, transport, socio-economics and WLIA (Application Reference Number: 8.21); and
- scientific literature.

Scoring significance

L.2.51 The assessment of significance is usually iterative to allow adverse effects to be avoided (or as a last resort mitigated) and opportunities for health incorporated into the Project.

L.2.52 The assessment of significance for health is aligned to the definitions used across the EIA. For an effect to be significant, it must be sufficient to meet at least one of the following criteria.

- It leads to an exceedance of defined guidelines or widely recognised levels of acceptable change. (The HIA uses regulatory standards (e.g. UK statutory standards for air quality [RD144]; [RD145] or regulatory standards for noise [RD146]; [RD147]; [RD148]; [RD149]; [RD150]) to determine what society in the UK considers an acceptable change in environmental conditions and, by extension, health outcomes).
- It is likely that the consenting authority would reasonably consider applying a planning condition, requirement or legal agreement to the consent to require specific mitigation to reduce or overcome the effect.
- It threatens or enhances the viability or integrity of a receptor or receptor group of concern. (For HIA, 'viability or integrity' relates to health and well-being and 'receptors' are human populations).
- It is likely to be material to the ultimate decision about whether or not the consent application should be approved.

L.2.53 The significance of an effect can be expressed as a function of the sensitivity of the receptor affected, and the magnitude of the effect upon it.

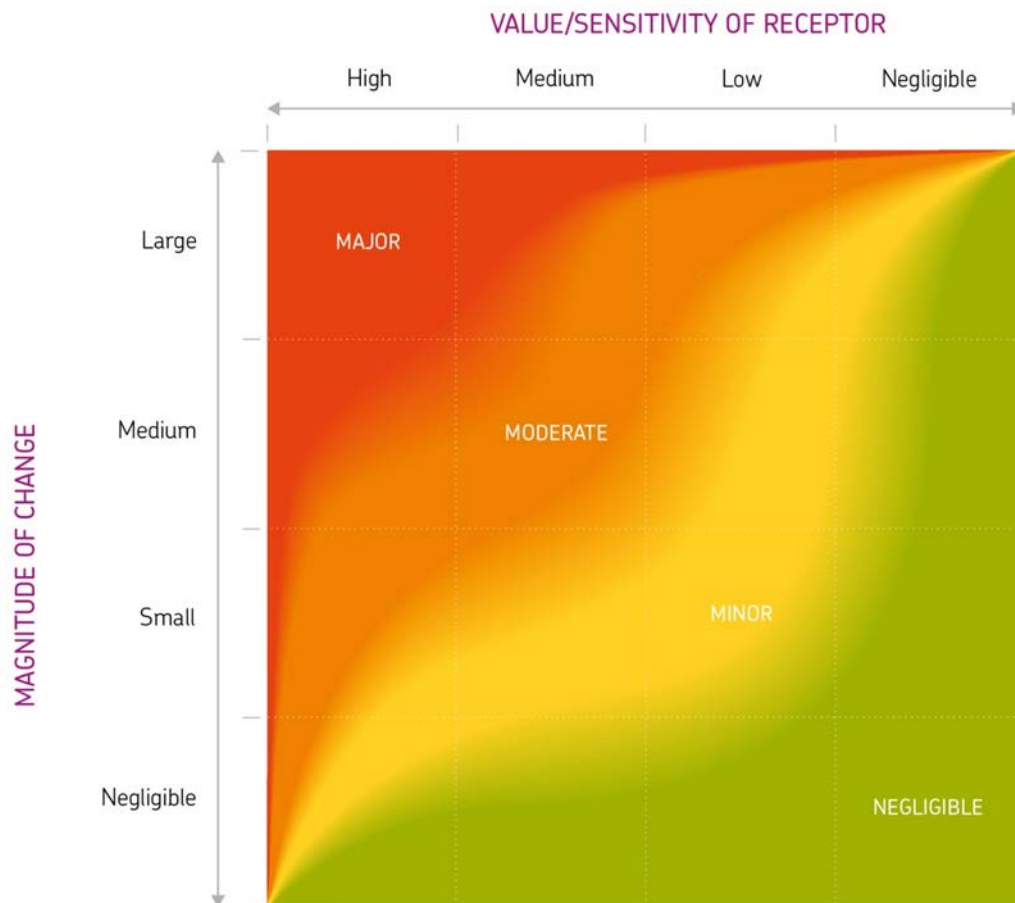
L.2.54 Professional judgement is required when applying the criteria during assessment in order to take account of relevant contextual factors as well as the available evidence base.

L.2.55 The matrix shown in Figure L-3 can also be used to indicate the potential significance of an effect. The matrix has therefore been used as a basic

background guide only. As such, significance determinations have been moderated up or down the scale where appropriate.

- L.2.56 The HIA identifies significance of residual effects. In other words, it identifies the effect remaining after mitigation measures have been implemented.
- L.2.57 The tables in HIA appendix in volume P summarise the potential health effects using the above terminology.
- L.2.58 Although generally consistent, the findings on significance of issues may reasonably vary between the HIA and similar topic sections within the relevant chapter from volume B to H in the Environmental Statement (Application Reference Number: 6.2 to 6.8). This is because the HIA considers issues from a different perspective. This may include particular population vulnerabilities; assessment against health and well-being outcomes (rather than EIA outcomes) and because additional health mitigation is proposed.

Figure L-3 Guide to significance ratings



Assessing certainty

- L.2.59 The potential significance of effects has been assigned a level of certainty on a three-point scale.
- High certainty – interactions are well understood and documented. Predictions are modelled and maps based on interpretations are

supported by a large volume of data. Design/information/data has comprehensive spatial coverage/resolution.

- Medium certainty – interactions are understood with some documented evidence (i.e. interactions are based on professional judgement supported by a reasonable consensus of scientific opinion and likely population sensitivity). Predictions are modelled but not yet validated and/or calibrated. Mapped outputs are supported by a moderate spatial coverage/resolution.
- Low certainty – interactions are currently poorly understood and not documented. Predictions are not modelled and the assessment is based on expert interpretation using little or no quantitative data. Design/information has poor development spatial coverage/resolution.

Approach to mitigation

Mitigation hierarchy

L.2.60 Table L-3 defines a mitigation hierarchy for health and well-being. When advocating mitigation, the highest possible level in the hierarchy should be chosen. There should generally be no obligation for the community to change their own behaviour as a result of the Project in order to remain safe and healthy.

Table L-3 Mitigation hierarchy: health and well-being examples

Hierarchy	Examples
Legislation	Standards for noise, air and water quality
Avoid or eliminate	Design out, e.g. reduce risk of communicable disease by ensuring that the behaviour of workers conforms to codes of conduct
Reduce through engineering controls	Design in, e.g. build a bypass or noise barrier
Reduce through management controls	Prevent night-time driving of project vehicles; develop grievance mechanisms
Change community behaviour	Apply evidence-based techniques to promote healthy and safe communities
Repair	Medical care
Compensate	Financial compensation or rehabilitation

L.2.61 Mitigation measures should be technically sound, socially acceptable and economically feasible [RD135]. The HIA takes, as its starting point, the 'residual' effects for the Project (summarised in Volume J of the Environmental Statement (Application Reference Number: 6.10)). This allows the health assessment to focus on any outstanding issues that have a bearing on community and population health and safety and avoids duplication and restatement.

- L.2.62 The HIA assumes the successful implementation of mitigation measures described in the Environmental Statement chapters (Application Reference Number: 6.2 to 6.8). The mitigation measures proposed in the Environmental Statement appendix J1-1 (schedule of environmental commitments) (Application Reference Number: 6.10.3) are therefore important to minimising potential health issues, and many issues have been scoped out on the basis that mitigation adequately addresses any potential effect to health and well-being.
- L.2.63 The mitigation measures presented in the HIA are therefore in addition, and not alternatives, to the measures presented in the Environmental Statement chapters (Application Reference Number: 6.2 to 6.8), and all measures work together in order to achieve the effect rankings presented in the HIA for residual effects.

Consideration of alternatives

- L.2.64 A full description of alternatives is provided in Environmental Statement chapter A4 (strategic alternatives) (Application Reference Number: 6.1.4). Also see Environmental Statement chapters E2, F2, G2 and H2 (Application Reference Number: 6.5 to 6.8).

Assumptions and limitations

- L.2.65 The HIA reports at a stage in the Project's design evolution when the majority of uncertainty has been removed. However, the HIA notes the following assumptions and limitations in reaching its conclusions.
- L.2.66 The HIA assumes the mitigation measures being considered, or equivalent measures, would be used.
- L.2.67 The HIA Steering Group has met regularly to discuss the HIA work, including its scope and methods. The HIA Steering Group has requested that, in addition to noting potential adverse effects, there is a focus on identifying the health and well-being opportunities of the Project, particularly for the people of Anglesey and north Wales.

Rochdale Envelope and parameters

- L.2.68 The HIA for the Project uses what is termed as a 'Rochdale Envelope' approach. This approach, established by UK planning case law, involves broadly defining the project (or elements of it) but limiting it by a number of clearly defined, fixed parameters.
- L.2.69 The application for development consent is thus based on bounded parameters rather than a defined design.
- L.2.70 In defining a Rochdale Envelope, a series of maximum extents of a project (in terms of activities to be undertaken and the spatial and temporal scope of the proposed development) are established to be used for the assessment of significant effects. These maximum extents are often termed the 'worst-case scenario'. The detailed design of a project can subsequently be modified within this 'envelope' without rendering its HIA inadequate.
- L.2.71 A parameter based approach is deemed appropriate for the construction and operation of the Project in order to provide sufficient flexibility to manage the

inevitable change through the Generic Design Assessment, the Nuclear Site Licence and design development processes. Maximum and minimum parameters (such as limits on height and location of buildings) would be set by the development consent requirements in order to keep the development within a defined envelope. The parameters are constrained within the following:

- Works Plans: these identify the limits of deviation for, and location of each work package (or 'work area').
- Schedule of Works: this outlines the works that could theoretically take place within each works area, as identified on the Works Plans.
- Parameter Plans: these identify the zones within which buildings, structures, and works identified in 'parameter tables' must be located. They provide an additional layer of restriction by further controlling where construction of certain elements can take place within the limits of deviation in the Works Plans.

- L.2.72 For the Project, parameters are set out in Environmental Statement chapters D1, E1, F1, G1 and H1 (Application Reference Numbers: 6.4.1, 6.5.1, 6.6.1, 6.7.1 and 6.8.1). Some elements of the Project are largely fixed for consenting purposes (e.g. the location of the nuclear reactors), while other buildings, structures and works are restricted through application of the parameters. Likewise, for those buildings where the location is sensitive in terms of EIA and HIA, e.g. because there is a stack emission on the building, the location has been limited to relatively modest limits of deviation.
- L.2.73 The Works Plans, Schedule of Works and Parameter Plans have been assessed as part of the HIA process. Based on professional judgement it has been determined that the assessment is representative of the likely worst-case scenario (i.e. that changes within the confines of the Rochdale Envelope would not change the scoring of the assessment outcomes).
- L.2.74 This is principally because the majority of health effects are related to either the community interaction with traffic and workforces outside the Wylfa Newydd Development Area, or with the general levels of disturbance and emissions from within the Wylfa Newydd Development Area. Such effects are considered unlikely to vary to the extent of altered assessment conclusions due to relatively minor changes in the siting of buildings or extents of work areas.
- L.2.75 Where appropriate, consideration has been given to Environmental Statement conclusions (e.g. air quality, noise and vibration, and landscape and visual assessments) in relation to potential implications on health from variation within the Rochdale Envelope. The HIA takes into account that each Environmental Statement topic chapters' 'design basis and activities' section sets topic specific parameter conditions for the likely worst-case.

Cumulative effects

- L.2.76 The assessment of cumulative effects (effects that might act together) is an important part of the HIA. Cumulative effects are reported in volume I of this HIA Report.

Temporal limits

L.2.77 Cumulative effects may arise either:

- when the effects to the same receptor occur during the same time period and so result in a cumulative effect of increased significance; or
- when the effects occur soon after each other and affect the same receptor. In such cases, the increased duration has the potential to increase the significance of effect.

Mitigation

L.2.78 The starting point for the cumulative effects assessment is to consider the residual effects reported in volumes C to H of this HIA Report (i.e. mitigation has already been taken into account).

L.2.79 In cases where the identified cumulative effects would be more significant than the contributing individual effects, additional mitigation measures are identified, where practicable.

L.2.80 Because mitigation measures identified for cumulative effects would also affect the significance of individual effects, the assessment process becomes iterative. The assessment of individual effects is revisited, taking into account all additional mitigation. Therefore, the assessment sections in volumes C to H of this HIA Report have taken into account all additional mitigation measures, whether proposed to mitigate individual or cumulative effects.

L.2.81 In order to avoid duplication of reporting, no additional mitigation measures are reported in volume I of this HIA Report. Where appropriate the mitigation measures reported in volumes C to H address cumulative effects.

L.2.82 It will not always be possible for Horizon to mitigate inter-project cumulative effects without the input of third-party developers.

[This page is intentionally blank.]

Figure L-4 Geographic levels and baseline data areas used by the HIA

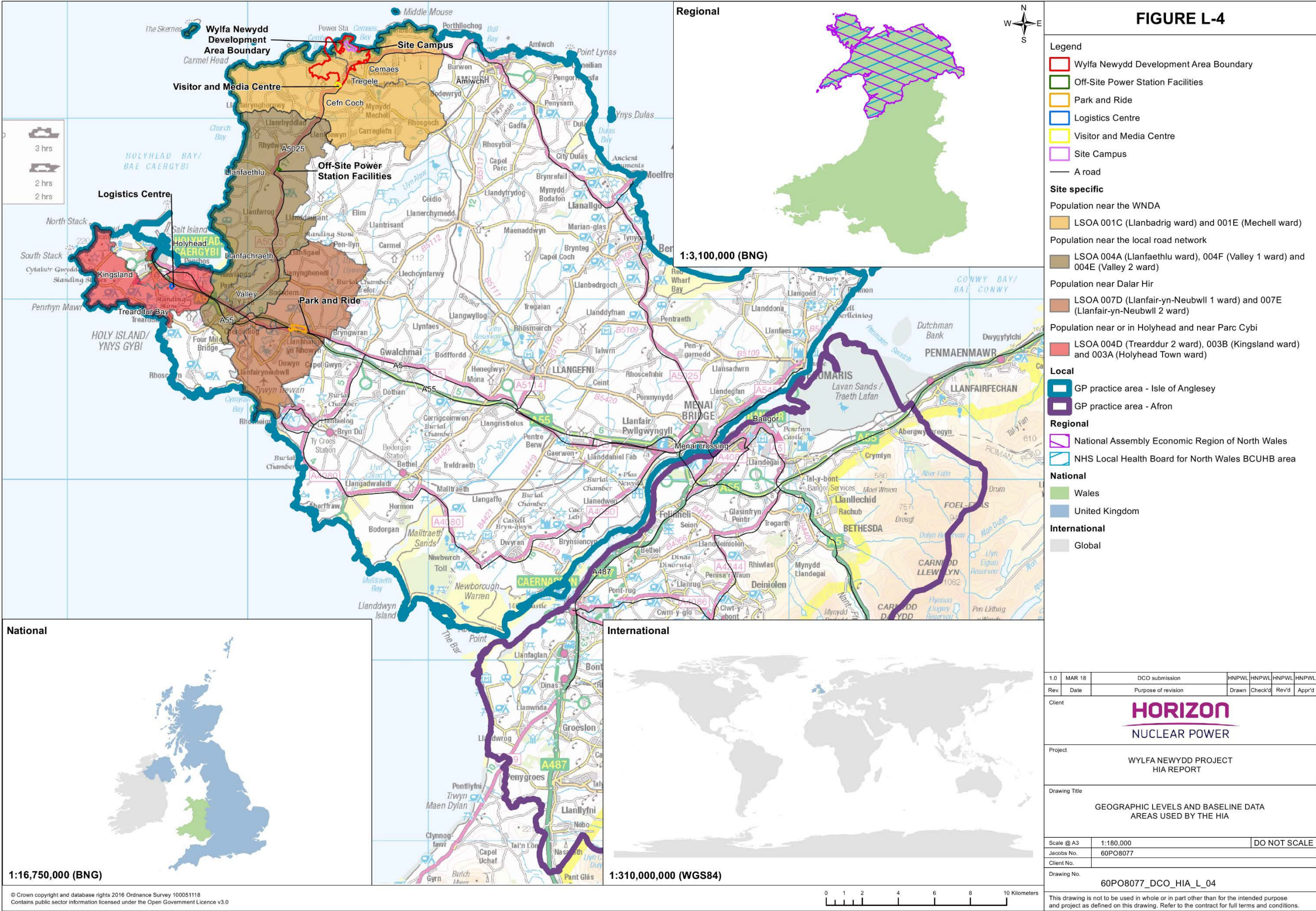
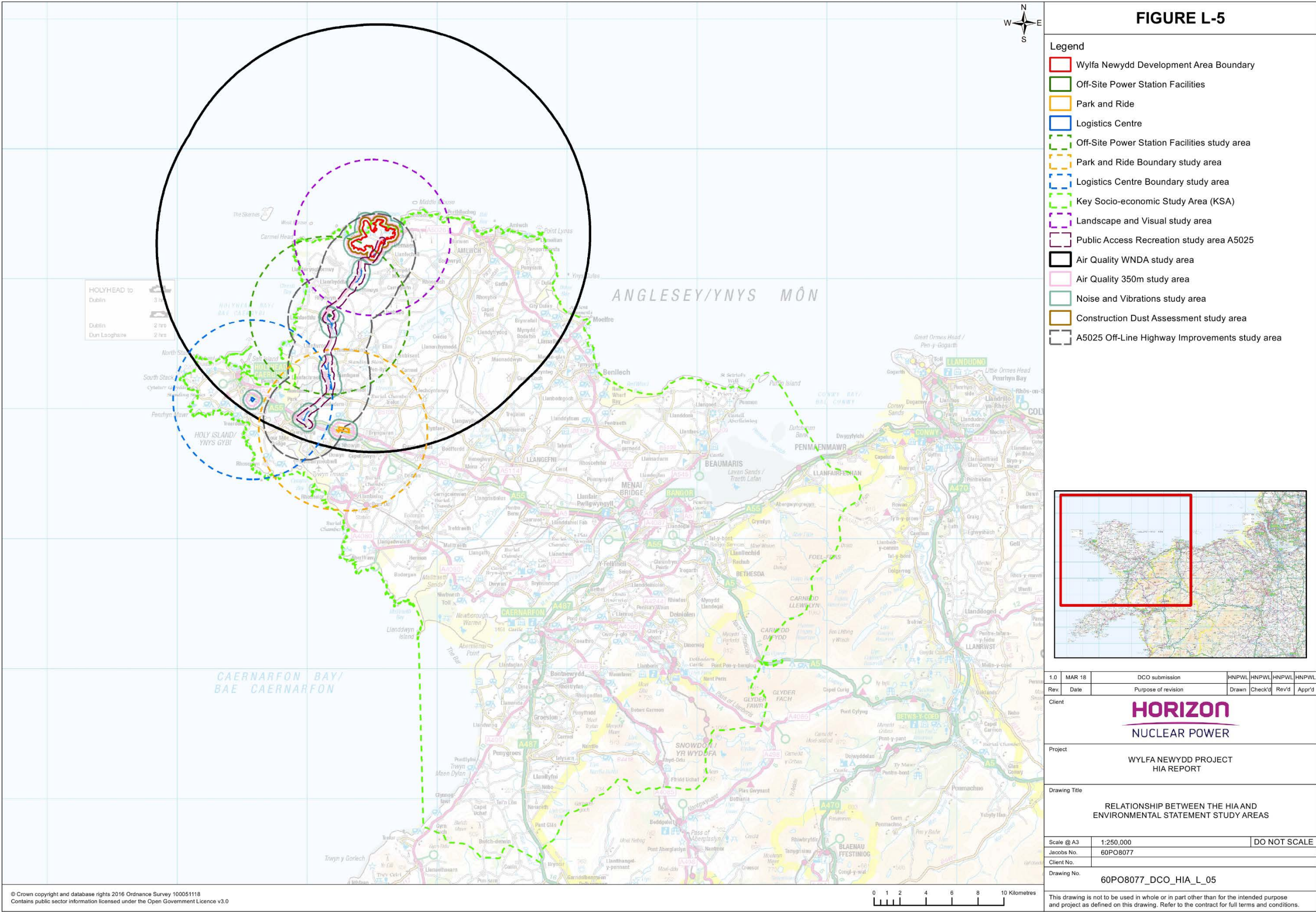


Figure L-5 Relationship between the HIA and Environmental Statement study areas



L.3 Topic-specific methodologies and assessment criteria

Introduction to the assessment process

L.3.1 This section provides an introduction to the technical basis for the HIA topic assessments for the Project. It includes a summary of:

- the conceptual source, pathway and receptor model;
- topic-specific considerations in relation to importance (scientific literature, baseline and local health priorities); and
- topic-specific considerations in relation to acceptability (consultation responses, regulatory standards (if applicable) and the Wylfa SPG policy context.

Air quality

Introduction

L.3.2 This section outlines the specific methodology used to assess the effects of the Project on air quality. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.

L.3.3 The relationship between changes in air quality and changes in health outcomes is summarised in the source-pathway-receptor model below.

- **Source:** vehicle and plant machinery emissions, (including dust of both non-respirable and respirable size). Production may include combustion, wear and disturbance of exposed substrates into aerosols (e.g. during excavation and earth movements).
- **Pathway:** pollutant gases and dust particulates may travel through the atmosphere. Those that are respirable (i.e. can be inhaled deep into the lungs) may be absorbed by the body and have toxicological effects. Particles of non-respirable size may precipitate, causing nuisance.
- **Receptor:** local populations living, working, learning or playing within the area of effect of the change in air quality, and owners (or users) of property affected by high levels of dust deposition.

L.3.4 This assessment links with the Environmental Statement chapters on air quality and soils and geology (in relation to dust) from volumes B to H (Application Reference Number: 6.2 to 6.8).

L.3.5 Welsh language and culture connections to this topic relate to changes in air quality affecting quality of life and thus the desirability to live in affected areas. The WLIA (Application Reference Number: 8.21) considers how the Welsh language, culture and community may be affected. Figure L-5 shows the Environmental Statement air quality assessment study area. The HIA uses this

study area to define the extent of site-specific effects of air quality that may affect the health and well-being of people living near to the Wylfa Newydd Development Area.

Considerations in relation to importance

Relevant scientific literature and baseline conditions

- L.3.6 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.
- L.3.7 The current environmental baseline is of generally low levels of background outdoor air pollution. The population baseline in Llanbadrig LSOA/ward is generally of good health, though levels are below average for Anglesey and Wales (74% of people report good or very good health, compared to 79% for Anglesey and 80% for Wales). This may reflect the older age profile of the population [RD151].
- L.3.8 General health, as measured by the health domain of the Welsh index of multiple deprivation in Llanbadrig and Mechell LSOAs/wards (areas near the Wylfa Newydd Development Area) is good (7th decile, 10 being the least deprived) [RD152].
- L.3.9 Near the local road network (A5025, A55, A5 and A487) levels of health deprivation are generally either average or low (i.e. generally good health), indicating no particular sensitivity to vehicle related emissions. The exception is a small area of Arfon near the A487 at Peblig (in Caernarfon where the A4085 joins the A487). This area has high levels of deprivation, including for health. This area may be more sensitive to changes in air quality [RD152].
- L.3.10 Older and younger people are more sensitive to changes in air quality. The proportion of older and younger people on the Isle of Anglesey is increasing [RD153].
- L.3.11 People with existing respiratory conditions are sensitive to changes in air quality. Short-term exposure to high levels of nitrogen dioxide and particulate matter is a risk factor for heart attack [RD39]. Local data for the population near the Wylfa Newydd Development Area (people registered at the main GP surgery in the Llanbadrig LSOA/ward) suggest above average rates of asthma (9.8%), COPD (3.4%) and coronary heart disease (4.6%) compared to the rest of Anglesey (8.1%, 2.9% and 4.3% respectively) and Wales (7.0%, 2.2% and 3.9% respectively) (see table M-7) [RD154]. It is noted that these types of data are suggestive only, as a range of factors affect direct comparisons between areas (see the HIA appendix in volume M for further details).
- L.3.12 Vulnerable groups such as the sick, the elderly and the unemployed tend to spend large amounts of time in their homes. This could increase exposure for those living close to sources of air pollution [RD108]. For households in Llanbadrig LSOA/ward: 47% have no adults in employment (including those not economically active due to retirement); 22% include dependent children; and 32% include a person with a long-term health problem or disability [RD151]. 13% of people report their day-to-day activities being limited a lot for health reasons [RD151].

- L.3.13 In the Llanbadrig LSOA/ward 27% of households experience deprivation along two or more of the following dimensions: employment, education, health and housing. This proportion is similar to the average for Anglesey (26%) and Wales (28%), suggesting average levels of inequality related sensitivity [RD151].

Relevant local health priorities

- L.3.14 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:
- taking care of the island's natural environment; and
 - ensuring all children and young people are healthy and live in a safe environment.

Considerations in relation to acceptability

Relevant consultation responses

- L.3.15 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.

Community engagement events

- L.3.16 The HIA team attended community engagement events in Cemaes, Llanfachraeth, the former Wylfa Sports and Social Club and Tregele in May 2016.
- L.3.17 Dust, and reduced air quality in general, was a source of concern to some, while others saw it as inevitable and something that could be controlled. Concerns included the ways that dust would:
- affect cyclists and walkers;
 - cover gardens where participants spent much time;
 - cover clean washing which is hung up outside to dry; and
 - require domestic maintenance activities to be conducted more frequently, for example car washing, window cleaning and painting, which in turn would reduce regular leisure time.
- L.3.18 Tregele was identified as being very close to the site in light of these concerns.
- L.3.19 Possible health and well-being effects were highlighted for people with existing conditions such as 'bad chests', asthma and COPD.

HIA workshop

- L.3.20 The HIA team ran a workshop held at the Valley Hotel on the Isle of Anglesey in October 2016. The workshop was targeted at people aged 50 and over. Thirty people attended the workshop.

- L.3.21 The impacts of construction on air quality with respect to traffic and the work on-site were commented on. Participants noted that this was of concern for people with pre-existing conditions, such as COPD and asthma.

Relevant regulatory standards/policy context

Regulatory standards

- L.3.22 The consideration of acceptability (that has informed the determination of significance) has been guided by UK regulatory standards.
- L.3.23 The HIA is based on UK statutory standards for air quality [RD144], [RD145]. The HIA has also been informed by WHO targets [RD155]. The HIA analysis uses the air quality modelling introduced in Environmental Statement chapter B5 (air quality) (Application Reference Number: 6.2.5).
- L.3.24 The *Air Quality Standards Regulations 2010* and the *Air Quality Strategy for England, Scotland, Wales and Northern Ireland* [RD145] set AQOs and policy options for improving air quality in the UK. The WHO [RD155] sets targets that are in some cases more stringent than the AQOs (see table L-4), notably for particulate matter.

Table L-4 Comparison of UK AQOs and WHO guide values

Pollutant	UK AQP	WHO guide value
Particles (PM ₁₀)	50µg/m ³ 24-hour mean	50µg/m ³ 24-hour mean
	40µg/m ³ annual mean	20µg/m ³ annual mean
Particles (PM _{2.5})	25µg/m ³ annual mean	10µg/m ³ annual mean
	No equivalent	25µg/m ³ 24-hour mean
Nitrogen dioxide	200µg/m ³ 1-hour mean	200µg/m ³ 1-hour mean
	40µg/m ³ annual mean	40µg/m ³ annual mean
Ozone	100µg/m ³ 8-hour mean	100µg/m ³ 8-hour mean
Sulphur dioxide	125µg/m ³ 24-hour mean	20µg/m ³ 24-hour mean
	No equivalent	500µg/m ³ 10-minute mean

- L.3.25 It is noted that the *Air Quality Standards Regulations 2010* do not include a requirement in relation to short-term PM_{2.5} (24-hour mean) and that the annual target is more than twice the WHO guide value. The WHO states that the complete elimination of anthropogenic particulate matter is not feasible and thus that guidelines and standards cannot provide complete protection against the adverse effects on health of particulate matter [RD106]. Rather, the standard setting process needs to achieve the lowest concentrations possible in the context of local constraints, abilities and public health priorities.
- L.3.26 The HIA considers how the Project's emissions profile compares to WHO air quality guide [RD156] thresholds. The HIA discussion of WHO values is appropriate because air quality is increasingly acknowledged as a key determinant of health [RD157]. It is desirable to achieve WHO levels where possible, but the HIA considers WHO levels relevant aspirational targets, rather than required thresholds.

- L.3.27 Comparison to WHO guide levels provides a useful benchmark for potential health effects. It should be noted that health effects may occur even below WHO guide values (e.g. for both fine particulate matter (PM_{2.5}) and nitrogen dioxide there is no identifiable threshold below which there is no risk to health [RD106], [RD103]). Concentrations of air pollutants below the WHO guide values are taken by the HIA as a level of health effect that is currently deemed to be acceptable by international health consensus. This does not preclude lower levels being sought. Nor does it discount emerging evidence (e.g. from the Committee on the Medical Effects of Air Pollutants), strengthening the argument for lower thresholds to be set in the future.
- L.3.28 A level of health effect that is deemed to be acceptable by society in the UK is taken by the HIA to be that enshrined by statutory or regulatory limit values. Whilst these values may not confer complete protection from health effects, they are an accepted balance between what is desirable and what is feasible, as judged on behalf of the UK population by the UK Government.
- L.3.29 A noted tension for HIA is to balance the stated position of international health consensus (i.e. WHO levels) with the stated position of UK regulators (i.e. AQO levels). Where these guide values are the same, for example nitrogen dioxide and short-term PM₁₀ levels, there is no methodological difficulty. Where the guide values differ, for example short-term and annual mean PM_{2.5}, the decision about which threshold value represents a significant effect for health is debatable. As neither value represents a level of total health protection, the issue is very much about what is considered acceptable in the local circumstances. In the UK, the AQO is a good indication of what is considered acceptable.
- L.3.30 In reaching conclusions as to the significance of effects, the HIA therefore adopts the same air quality threshold measure as the Environmental Statement. The HIA provides additional commentary relating to the achievement of WHO guide values, but does not hold the Project to the WHO standard where it is more stringent than UK regulatory requirements.
- L.3.31 The Environmental Statement air quality assessment uses the Institute of Air Quality Management methodology [RD158] for the assessment of dust effects. This guidance does not include PM_{2.5} as a separate assessment criterion from PM₁₀. The guidance does however relate PM_{2.5} to PM₁₀ measures by stating that 85% to 90%, by weight, of the fugitive dust emissions of PM₁₀ from construction sites are PM_{2.5-10} and 10% to 15% are in the PM_{2.5} fraction [RD158].
- L.3.32 For PM_{2.5} emissions other than from dust, e.g. vehicle or plant exhausts, the Environmental Statement air quality assessment models expected PM_{2.5} concentrations.

Policy context

- L.3.33 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.
- Objective: ensure that the Project conserves and enhances the island's distinctive environment. For example:

- minimise the release of potentially polluting substances to air.
 - Objective: ensure that the Project supports the quality of life (including health, well-being and amenity) of the island's residents, visitors and workers. For example:
 - by implementing measures to minimise air quality effects arising from the Project.
- L.3.34 The Welsh Government published new guidance on air quality management in June 2017 [RD159]. The guidance confirms that air quality management is a public health priority in Wales.
- L.3.35 The guidance notes that public bodies should adopt the five ways of working set out in the *Well-being of Future Generations (Wales) Act 2015*, which includes preventing problems from occurring or getting worse. The guidance clarifies that for air quality management this means keeping exposure to air pollution as low as reasonably practicable across the whole of the population, looking out in particular for areas where the national air quality objectives might be at risk of being breached at some point in the future and acting pre-emptively to prevent those breaches from occurring.
- L.3.36 The guidance states that “our long-term goal for air quality should be twofold, to achieve compliance with the national air quality objectives in specific hotspots and to reduce exposure to pollution more widely, so as to achieve the greatest public health benefit”.
- L.3.37 The guidance describes the UK Air Quality Objectives as “a pragmatic threshold above which government considers the health risks associated with air pollution are unacceptable”.
- L.3.38 Noting the potential for non-threshold health effects of nitrogen dioxide and fine particulate matter, the guidance states that, while compliance with the UK Air Quality Objectives is essential, it is desirable to keep levels of pollution as low as reasonable practicable.
- L.3.39 The HIA methods therefore acknowledge that:
- there are non-threshold health effects from nitrogen dioxide and fine particulate matter;
 - neither UK AQO nor WHO thresholds confer complete protection from non-threshold health effects;
 - UK AQO thresholds should not be treated as a simple test of significance, emerging evidence and local context factors are also important; and
 - regardless of meeting UK AQO (or WHO) thresholds, it is desirable to keep levels of pollutants with non-threshold health effects as low as reasonable practicable.

Noise

Introduction

- L.3.40 This section outlines the specific methodology used to assess the effects of the Project on noise. The HIA considers significance in terms of the

‘importance’ or the ‘acceptability’ of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.

- L.3.41 The relationship between changes in noise and vibration and changes in health outcomes is summarised in the source-pathway-receptor model below:
- **Source:** noise or vibration generated from plant, vehicles and construction activities may cause a disturbance.
 - **Pathway:** noise disturbance propagates as a sound pressure wave through the air to surrounding receptors. Noise may propagate for considerable distances across bodies of water with low dissipation. Vibration disturbance propagates as a pressure wave, predominantly structure-borne or through the ground, to surrounding receptors. Vibration may exacerbate noise effects.
 - **Receptor:** people living, working, learning or playing within the area of effect of the change in construction noise or vibration. People who spend extended periods (residential or work) close to the source are likely to experience greater disturbance levels. Night-time residential exposures to elevated noise levels are generally associated with greater health effects than the equivalent day-time levels.
- L.3.42 This assessment links with Environmental Statement chapter B6 (noise and vibration) (Application Reference Number: 6.2.6).
- L.3.43 Welsh language and culture connections to this topic relate to changes in noise affecting quality of life and thus the desirability to live in affected areas. The WLIA (Application Reference Number: 8.21) considers how the Welsh language may be affected. Figure L-5 shows the Environmental Statement noise and vibration study area. The HIA uses this study area to define the extent of site-specific effects of noise that may affect the health and well-being of people living near to the Wylfa Newydd Development Area.
- L.3.44 Significant vibration effects are not expected to separately affect health (being related to the exacerbation of some noise effects) so are not considered separately from noise in the HIA.

Considerations in relation to importance

Relevant scientific literature and baseline conditions

- L.3.45 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.
- L.3.46 The current context is of relatively low levels of background noise. This suggests that the introduction of loud day-time or night-time noise sources would be particularly noticeable.
- L.3.47 Potential health effects of noise include annoyance and sleep disturbance (which may also affect performance when awake) [RD41]. Night-time noise is particularly important for health, as this is the usual time of rest and the time when most people are in their homes.

- L.3.48 Children are less vulnerable to annoyance than adults are, but more vulnerable to disturbance (while awake or asleep) affecting their ability to learn [RD45]. Older people, whilst no more sensitive to annoyance and sleep disturbance than other adults, are more sensitive to cardiovascular health effects from noise [RD45]. The proportion of both older and younger people on the Isle of Anglesey is increasing, with fewer middle-aged people [RD153].
- L.3.49 Vulnerable groups such as the sick, the elderly and the unemployed tend to spend large amounts of time in their homes. This could increase exposure for those living close to sources of noise [RD108]. For households in Llanbadrig LSOA/ward: 47% have no adults in employment (including those not economically active due to retirement); 22% include dependent children; and 32% include a person with a long-term health problem or disability [RD151].
- L.3.50 The percentage of households in the Llanbadrig LSOA/ward that experience multiple dimensions of deprivation (27% of households experience deprivation along two or more of the following dimensions: employment, education, health and housing) is similar to the average for Anglesey (26%) and Wales (28%), suggesting average levels of inequality related sensitivity [RD151].

Relevant local health priorities

- L.3.51 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:
- providing the best possible learning environment for all children and young people;
 - taking care of the island's natural environment; and
 - ensuring all children and young people are healthy and live in a safe environment.

Considerations in relation to acceptability

Relevant consultation responses

- L.3.52 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.

Community engagement events

- L.3.53 The HIA team attended community engagement events in Cemaes, Llanfachraeth, the former Wylfa Sports and Social Club and Tregele in May 2016.
- L.3.54 The area surrounding the Wylfa Newydd Development Area was seen as normally being peaceful and quiet. Noise arising from construction was a source of concern to some while others saw it as inevitable. The concerns that were expressed are listed below.

- The nature and timing of the noise, including noise levels, duration and frequency of noise, and whether there would be noise during the night as well as during the day.
 - The different sources of noise to which people would be exposed, for example rock blasting, Heavy Goods Vehicles and construction vehicles.
 - Participants described different ways in which increased noise could affect them:
 - Would the noise levels discourage opening of the windows?
 - What should residents do if noise were to become intolerable?
 - Some people described themselves as being especially sensitive to increased noise during the daytime by virtue of their occupation (e.g. night-shift workers), the location of their property (e.g. those living in an elevated position) or the fact that people within their household are vulnerable (e.g. small babies or elderly people).
 - The noise may deter people from visiting the area; this was mentioned in relation to cyclists, walkers and tourists seeking relaxation.
- L.3.55 Possible adverse health effects mentioned included disturbed sleep, annoyance and stress.

HIA workshop

- L.3.56 Participants expressed concern about noise from traffic to and from the site, and from work on-site. The increased usage of Anglesey airport, and consequential noise was raised as an issue.

Relevant regulatory standards/policy context

Regulatory standards

- L.3.57 The consideration of acceptability (that has informed the determination of significance) has been guided by UK regulatory standards.
- L.3.58 The HIA is based on UK regulatory standards for noise [RD146]; [RD148]; [RD149]; [RD150]. The HIA has also been informed by WHO targets [RD160]; [RD161]. The HIA uses the noise modelling introduced in Environmental Statement chapter B6 (Application Reference Number: 6.2.6).
- L.3.59 Chapter B6 of the Environmental Statement noise and vibration section sets out a comprehensive summary of UK guidance values for determining potential effects from noise sources. That assessment has used the full range of those guidance values to reach conclusions on the potential significance of effects. The HIA acknowledges the validity of this approach and does not repeat the modelling. The HIA provides additional analysis of the Environmental Statement conclusions specifically for the health perspective based on professional judgement informed by the WHO noise guide thresholds [RD73]; [RD74]. The WHO guideline values relate to thresholds rather than degrees of change in noise levels and are also used in the noise methodology of Environmental Statement chapter B6 (Application Reference Number: 6.2.6).

L.3.60 The WHO guide values indicate that there may be health effects associated with construction noise. This must be contextualised by other factors, such as baseline noise levels or the sensitivity of the affected population. Table L-5 summarises WHO guide values for noise.

Table L-5 WHO noise criteria

Guidance document	Location or receptor	Time period	Noise criteria
WHO's <i>Guidelines for Community Noise</i> [RD162]. Day-time criteria relate to the onset of “serious” and “moderate” annoyance; night-time criteria relate to sleep disturbance. All values relate to external noise levels.	Outdoor living areas	Day-time	55dB $L_{Aeq\ T}$
			50dB $L_{Aeq\ T}$
	Outside bedrooms	Night-time	45dB $L_{Aeq\ T}$
			60dB L_{Amax}
WHO's <i>Night noise guidelines for Europe</i> [RD160]. Annual average external noise levels	Outside bedroom windows	Night-time	40dB L_{night} (outside)

- $L_{Aeq\ T}$ = The ambient noise encompassing all noise over time period T. For example, $L_{Aeq\ 1\ hr}$ is the L_{Aeq} level determined over a period of one hour.
- L_{Amax} = The maximum recorded noise level during the measurement period.
- $L_{night\ (outside)}$ = The yearly average of night noise level outside at the facade measured overnight 23:00 - 07:00 hours.

L.3.61 Table L-6 sets out evidence-based noise thresholds for health effects compiled by the European Environment Agency [RD163].

Table L-6 Relationship between exposure to noise and health and well-being

Effect	Dimension	Acoustic indicator*	Threshold **	Time domain
Annoyance, disturbance	Psychosocial, quality of life	L_{den}	42	Chronic
Self-reported sleep disturbance	Quality of life, somatic health	L_{night}	42	Chronic
Learning, memory	Performance	L_{eq}	50	Acute, chronic
Reported health	Well-being, clinical health	L_{den}	50	Chronic
Hypertension	Physiology, somatic health	L_{den}	50	Chronic
Ischaemic heart diseases	Clinical health	L_{den}	60	Chronic

* L_{den} and L_{night} are defined as outside exposure levels.

** Level above which effects start to occur or start to rise above background.

L_{den} = The day-evening-night equivalent level. This is the noise level, measured over the 24-hour period, with a 10dB penalty added to the levels between 23:00 and 07:00 and a 5dB penalty added to the levels between 19:00 and 23:00 to reflect people's extra sensitivity to noise during the night and the evening.

L_{eq} = The sound pressure level, in dB, equivalent to the total sound energy over a given period of time.

dB = The decibel scale which extends from 0 to 140 decibels, corresponding to the intensity of the sound pressure level.

- L.3.62 The HIA considers how the Project's noise profile compares to the WHO noise guide thresholds [RD160]; [RD161], which are in some cases more stringent than limits set by UK noise guidance, such as the Environment Agency's *Horizontal Guidance for Noise* [RD146] or British Standards [RD148]; [RD149]; [RD150]. It is desirable to achieve WHO levels where possible, but the HIA considers WHO levels to be relevant aspirational targets rather than required thresholds.
- L.3.63 Comparison to WHO guide levels provides a useful benchmark for potential health effects. It should be noted that health effects may occur even below WHO guide values (e.g. subjective factors or sensitivities may trigger responses at noise levels that would normally not be associated with adverse health effects). Levels of noise below the WHO guide values are taken by the HIA as a level of health effect that is currently deemed to be acceptable by international health consensus. This does not preclude lower levels being sought. Nor does it discount emerging evidence strengthening the argument for lower thresholds to be set in the future.
- L.3.64 A level of health effect that is deemed to be acceptable in the UK is taken by the HIA to be that set out by regulatory guidance. For noise, there are no UK statutory thresholds, although mechanisms such as statutory nuisance acknowledge that noise levels may be prejudicial to health. In the absence of clear statutory limit values, UK guidance documents are recognised by the HIA as setting out what constitutes an acceptable level of noise in the UK. Whilst these values may not confer complete protection from health effects, they are an accepted balance between what is desirable and what is feasible, as judged by a consensus of technical experts and public consultation in the development of such guidance.
- L.3.65 A noted tension for HIAs is to balance the stated position of international health consensus (i.e. WHO levels) with the stated position of UK regulators (i.e. the Environment Agency's *Horizontal Guidance for Noise* or British Standards levels). Where these guide values are the same, there is no methodological difficulty. For example, 45dB $L_{Aeq T}$ is referenced as a night-time threshold in British Standard BS5228-1 (construction noise guidance) [RD164] and the WHO's *Guidelines for Community Noise* [RD161]. Where the guide values differ, the decision about which threshold value represents a significant effect for health is debatable. For example, 65dB $L_{Aeq T}$ is referenced as a day-time threshold in British Standard BS5228-1 (construction noise guidance), whilst the equivalent value is 55dB $L_{Aeq T}$ in the WHO's *Guidelines for Community Noise*. As neither value represents a level of total health protection, the issue is very much about what is considered acceptable in the local circumstances.

In the UK, the regulatory standards are a good indication of what is considered acceptable.

- L.3.66 In reaching conclusions as to the significance of effects, the HIA therefore adopts the same noise threshold measure as the Environmental Statement. The HIA provides additional commentary relating to the achievement of WHO guide values, but does not hold the Project to the WHO standard where it is more stringent than UK regulatory requirements.
- L.3.67 The Environmental Statement noise assessment uses the following construction noise thresholds to define a small and above level of magnitude of noise effects (i.e. above these noise levels, there is the potential for a significant effect depending on receptor sensitivity):
- a day-time noise level of 55dB(A) $L_{Aeq T}$ (07:00–19:00); and
 - a night-time noise level of 45dB(A) $L_{Aeq T}$ (19:00–07:00).
- L.3.68 These thresholds are considered good proxies for potential health effects. A direct comparison with the Environmental Statement noise assessment results is therefore possible without the need for additional modelling for the HIA.

Policy context

- L.3.69 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.
- Objective: ensure that the Project conserves and enhances the island's distinctive environment.
 - Objective: ensure that the Project supports the quality of life (including health, well-being and amenity) of the island's residents, visitors and workers. For example:
 - measures are implemented to minimise noise and vibration effects arising from the Project.

Housing

Introduction

- L.3.70 This section outlines the specific methodology used to assess the effects of the Project on housing. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.
- L.3.71 The Project would require a construction workforce, many of whom would need accommodation on the Isle of Anglesey. The relationship between the changes in the demand for, and supply of, houses on the Isle of Anglesey and potential changes in health outcomes is summarised in the source-pathway-receptor model below.
- **Source:** the construction workforce would require accommodation and associated services.

- **Pathway:** use of existing housing stock could increase housing costs (including rental costs) and may deter tourism.
 - **Receptor:** local residents, particularly those on social rent who could be displaced by higher rental costs.
- L.3.72 This assessment links with the socio-economic effects discussed in Environmental Statement chapter C1 (Application Reference Number: 6.3.1). The HIA analysis uses the construction worker distribution modelling discussed in the Environmental Statement.
- L.3.73 Welsh language and culture connections to this topic relate to the cost of housing in areas of high housing demand and the location of the Site Campus. The WLIA (Application Reference Number: 8.21) considers the effect of this for the local population and those wishing to return to the island, especially young people, which includes a high proportion of Welsh speakers.
- L.3.74 Figure L-5 shows the Environmental Statement KSA. The HIA uses this study area to define the extent of site-specific effects of housing that may affect the health and well-being of people on the Isle of Anglesey or in Arfon (together an area equivalent to the KSA).

Considerations in relation to importance

Relevant scientific literature and baseline conditions

- L.3.75 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.
- L.3.76 Having sufficient space in a home can improve diet, privacy, household and family relationships, as well as opportunities for leisure and studying [RD107]. Anglesey currently has below average rates of overcrowding compared to Wales [RD165].
- L.3.77 Lack of affordable housing is associated with trade-offs between housing, heating, food, medical care and other basic needs. This can affect schooling, healthcare and social networks [RD109]; [RD110]. Studies show that the Isle of Anglesey needs additional affordable housing [RD166].
- L.3.78 New community resources (such as housing) can widen inequalities if not targeted at those who are already disadvantaged [RD167]. Currently, on the Isle of Anglesey there are fewer inequalities compared to the average for Wales [RD168].
- L.3.79 People who may be at greater risk from displacement include tenants of private landlords, particularly those on means-tested benefits. Social renting accounts for 15% of tenures on the Isle of Anglesey, 19% in Arfon and 16% in north Wales. The majority are rented from the Council (13%, 11% and 11% respectively). This leaves only 2% of tenures on the Isle of Anglesey as social rented from other, potentially more market sensitive, sources. In Arfon, the percentage of tenures that are social rented from other sources is higher (9%), suggesting greater potential for market forces to affect social tenants [RD151].
- L.3.80 The Anglesey well-being assessment indicates that the average income required to afford an entry level house on the Isle of Anglesey is £32,357, yet the average household income is £23,567. Near the Wylfa Newydd

Development Area (in the Bro Aberffraw and Bro Rhosyr well-being assessment area), the entry level cost is £31,429 and the average household income is £24,782. The disparity is much less marked around Holyhead (the Caergybi and Ynys Cybi well-being assessment area), where the entry level cost is £22,321 and the average household income is £19,996. Housing market changes in the Holyhead area may therefore particularly effect opportunities for Anglesey residents to get on the housing ladder [RD169].

Relevant local health priorities

- L.3.81 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:
- creating the right housing opportunities for young people to keep them on the Isle of Anglesey and encourage those that have left to return;
 - managing greater demands on housing, welfare and other services used by the population through collective action and early intervention to empower and support people; and
 - promoting the quality, suitability and affordability of housing in order to improve the capacity to develop strong communities.

Considerations in relation to acceptability

Relevant consultation responses

- L.3.82 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.
- L.3.83 Consultation on the Project has encountered a range of views, with some stakeholders expressing concern about the potential integration of the construction workforce into local communities and others expressing concerns about housing the workforce in purpose-built campuses away from existing communities.

HIA workshop

- L.3.84 The Project was seen as affecting house prices in different ways. Some participants spoke of an increase in house prices. Others spoke of decreases where land had been purchased and remaining householders were not able to get the full value for their properties.
- L.3.85 Participants suggested that construction worker accommodation could be spread around the island. Some participants noted that there was more space on the opposite side of the island to Valley. A contrasting perspective was that construction workers should be concentrated in Holyhead so as not to spoil Cemaes, which was seen as a 'lovely place'. There was an understanding that house prices and rents were already high for local people and that accommodating the construction workers could lead to further increases. Housing lists could also be affected by the workers' presence and needs.

- L.3.86 Some people felt the location of temporary workers' accommodation should be close to the site; others suggested locations that were distant to the site.
- L.3.87 Concern was expressed about local communities being broken up should workers 'displace' local people. This could have the knock-on effect of decreasing young people's confidence. Workers' integration into existing communities and their impact on community spirit was flagged up as a possible issue. On the other hand, it could be positive if workers are concentrated, but they should be prepared to integrate with the existing community.

Relevant regulatory standards/policy context

Policy context

- L.3.88 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.
- **Objective:** ensure that the Project supports improvements to the quality of life (including housing and amenity) of the island's residents, visitors and workers.
 - **Objective:** ensure that the Project delivers significant and enduring infrastructure benefits to the island's communities. For example:
 - deliver a lasting legacy benefit from construction workers' accommodation without adversely affecting the local housing market or the island's tourist accommodation offer.

Transport

Introduction

- L.3.89 This section outlines the specific methodology used to assess the effects of the Project on transport. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.
- L.3.90 The relationship between the changes to transport infrastructure and potential changes in health is summarised in the source-pathway-receptor model below.
- **Source:** increased number of vehicles on the road network or changes in routes that link community residential, commercial or amenity services.
 - **Pathway:** a change in road safety, community severance, journey times or levels of intimidation of other road users. Accessibility to health-promoting opportunities. Active travel, which through physical activity reduces many risk factors for poor physical and mental health.
 - **Receptor:** local road users, including those using motor vehicles as well as pedestrians and cyclists.
- L.3.91 This assessment links with the relevant chapters from Volume B to H of the Environmental Statement chapters (Application Reference Number: 6.2 to 6.8)

on traffic and transport and public access and recreation (discussion of severance, pedestrians and cyclists). Figure L-5 shows the Environmental Statement traffic and transport assessment study area. The HIA uses this study area to define the extent of site-specific effects of construction traffic that may affect the health and well-being of people living near to the A5025 highway.

Considerations in relation to importance

Relevant scientific literature and baseline conditions

- L.3.92 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.
- L.3.93 Transport allows the movement of people and goods between places, enabling access to employment, economic and social opportunities as well as to essential services [RD48]. The A5025 highway between Valley and Cemaes would experience the greatest changes.
- L.3.94 Physical injury and death are the most direct health effects of motorised transport [RD48]. Children, [RD50] pregnant women [RD170] and cyclists (particularly older cyclists) [RD51] are generally more vulnerable. The history of accidents on the A5025 shows incidents to be spread out, but relatively frequent, with some close to communities (see Environmental Statement appendix C2-4 (Application Reference Number: 6.3.14)). Local residents, or regular users of services (e.g. schools) accessed from the A5025, may be more sensitive to the Project's transport effects due to more frequent use of the same stretches of highway.
- L.3.95 There is no hospital with accident and emergency (A&E) facilities on the Isle of Anglesey; the closest is Ysbyty Gwynedd located in Bangor. Emergency response times are already affected by the rural context and existing congestion (e.g. high average waiting times for ambulances and a low proportion of ambulances responding within 8 minutes, see table M-5. People on the Isle of Anglesey attending the hospital may, therefore, be affected by levels of road congestion at the Menai crossings.
- L.3.96 On the Isle of Anglesey, 60% of people travel to work. The majority drive a car or van (42%) compared to travel on foot (6%) or by bicycle (1%). For shared transport to work, 4% are passengers in a car or van, and 2% use a bus, minibus or coach. The average distance travelled to work by people on the Isle of Anglesey (22.5km) is higher than average for north Wales (18km) and Wales (16.7km) [RD151].
- L.3.97 Access to services, as measured by the access domain of the Welsh index of multiple deprivation, is a key driver of deprivation on the Isle of Anglesey. Access to services is particularly poor in Llanfaethlu and Mechell LSOAs/wards (1st decile) which includes the population near the local road network (A5025) and approaching the Wylfa Newydd Development Area [RD152].

Environmental baseline

- L.3.98 The Environmental Statement traffic and transport assessment (Application Reference Number: 6.3.2) summarises baseline traffic injury data by year for

the major routes on the Isle of Anglesey. The Environmental Statement concludes that the A5025 exhibits accident risks considered to be of a medium order, primarily due to its dispersed but frequent accident history and physical relationship to local communities. The A5025 Highway Improvements are expected to make the routes safer, although an increase in traffic volumes associated with the Project would be expected to slightly increase incidents, negating some of the benefits to road safety from the A5025 Highway Improvements.

Relevant local health priorities

L.3.99 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:

- making sure people have access to services;
- supporting strong communities through effective transport links that optimise accessibility to employment, education, health and services; and
- providing access to play, leisure and supporting activities that contribute to well-being and improved health.

Considerations in relation to acceptability

Relevant consultation responses

L.3.100 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.

HIA workshop

L.3.101 The bus network was described as an asset, although other participants said that while public transport existed it could be improved, or that the bus service was poor. Participants said that buses were busy and that the island needed bigger buses. Bus journeys were described as taking too long, for example, an hour and half from Holyhead to Bangor. It was felt that this would get worse: the frequency of the buses was not the problem but the fact that the routes were not available. This meant that the bus connections did not align with the location of shops.

L.3.102 The rail fares were expensive, for example, to Bangor and Chester. There was a view that prices should be lowered. Some participants thought that the island offered easy car access and that it was hard to travel without a car.

L.3.103 Participants wanted to know about the effects of construction on the roads, access to the site and traffic implications. The topic of roadworks was brought up and it was commented that the signage placement for roadworks could be an accident risk. Roadworks could also impact on journey times; for example, the time needed for a trip between Church Bay and Valley had more than doubled. It was observed that it had affected the emergency services, which were already experiencing delays. Car journeys required extra time. The extra

traffic had impacted on the Britannia Bridge, which was already 'bottle-necked' in the morning and afternoon rush hours.

- L.3.104 Questions were asked about whether there would be extra traffic, for example, to and from the Wylfa Newydd Development Area; to workers' accommodation, including work buses, as well as traffic caused by the transportation of construction materials from the port. It was suggested that there would be no local problem, but that people who used the bridge to get to work were already affected by impacts from other projects. The impacts on parking of additional vehicles on the island were discussed. Not all participants thought they would be affected by heavy traffic and others stated that traffic inconveniences were likely to be short-lived.
- L.3.105 A concern was raised about children's safety with respect to roadworks and increased traffic.
- L.3.106 Sea transportation was brought up, and participants questioned the ability of ships to dock when a north wind prevailed.
- L.3.107 It was proposed that public transport should be invested in, improved and made affordable so that Anglesey residents could continue to get out and about.
- L.3.108 Planning was recommended at an early stage, as it was already awkward to get on and off Anglesey.

Relevant regulatory standards/policy context

Policy context

- L.3.109 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.
- Vision: promote sustainable modes of transport, enhance connectivity and minimise the effect of the development on local capacity and resilience.
 - Objective: ensure that the Project promotes the sustainable movement of people and materials and provides resilient transportation infrastructure capable of attracting and sustaining economic growth and creating sustainable communities. For example:
 - minimise road traffic and disruption and maximise the opportunities for the island's existing transportation infrastructure;
 - ensure Associated Development is well served by sustainable transport links; and
 - ensure construction worker accommodation has good access to community facilities and services.
 - Objective: ensure that the Project delivers significant and enduring infrastructure benefits to the island's communities. For example:
 - ensuring Associated Development sites are in suitable locations to provide a beneficial legacy use; and

- improve connectivity and the movement of people, enabling residents to capitalise on the Project's opportunities, whilst minimising disruption and congestion.

Demand for medical and healthcare services

Introduction

L.3.110 This section outlines the specific methodology used to assess the effects of the Project on demand for medical and healthcare services. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.

L.3.111 The following source-pathway-receptor model summarises the links between healthcare, social infrastructure and health.

- **Source:** changes in demand for medical and healthcare facilities (e.g. GP or A&E services) as a result of an influx of workers. Changes in demand for advice and support due to concerns about the Power Station.
- **Pathway:** a change in capacity, staffing and resources of services.
- **Receptor:** local community accessing these services or facilities.

L.3.112 This assessment links with the socio-economic effects discussed in Environmental Statement chapter C1 (Application Reference Number: 6.3.1). The HIA uses the construction worker distribution model discussed in the Environmental Statement.

L.3.113 Welsh language and culture connections to this topic relate to the increased demand for healthcare, and therefore the ability of the local Welsh-speaking population to gain access to Welsh-speaking health practitioners and the recruitment of Welsh-speaking health professionals. The WLIA (Application Reference Number: 8.21) notes the vital role of Welsh-speaking practitioners in health services in order to ensure that members of the public can access services in their first language, as highlighted in the Welsh Government's More than Just Words strategic framework [RD56]. Figure L-5 shows the Environmental Statement KSA. The HIA uses this study area to define the extent of medical and health service demand that may affect the health and well-being of people living on the Isle of Anglesey or in Arfon (together an area equivalent to the KSA).

Considerations in relation to importance

Relevant scientific literature and baseline conditions

L.3.114 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.

L.3.115 An ageing population and high levels of multi-morbidity increase rates of GP and specialist consultations [RD171]. Adolescence is the period of highest risk for the development of mental illness, but also the age group least likely to seek help from mental health services. [RD172]. For the elderly general population, health care use and costs significantly increased with each additional chronic condition [RD173]. Depressive symptoms in later life lead to

increased health service use and costs, only a small proportion of which relate to depression treatment [RD174]. Inappropriate attendances may account for up to 40% of presentations at A&E departments [RD175]. Interventions aimed at increasing primary care accessibility and emergency department cost-sharing can be effective in reducing emergency department use [RD176].

Health baseline

- L.3.116 The closest health facilities to the proposed Wylfa Newydd Development Area are Cemaes GP surgery (a branch surgery of Canolfan Iechyd Amlwch (W94002) GP Practice in Llanbadrig ward) and The Old Lookout dental surgery. There is no hospital with A&E facilities on the Isle of Anglesey, the closest is Ysbyty Gwynedd located in Bangor. The closest Minor Injuries Unit is Ysbyty Penrhos Stanley located at Holyhead. The WAS has 22 ambulance stations in the BCUHB area [RD177]. The closest ambulance stations are Amlwch Ambulance Station (Unit 2 Amlwch Business Park, Amlwch, LL68 9BX), Holyhead Ambulance Station (Penrhos Stanley Hospital, Holyhead, LL65 2PR) and Llangefni Ambulance Station (Isgrai Clinic, Llangefni, LL77 2PT) [RD178].
- L.3.117 Ambulance response times near the Wylfa Newydd Development Area are relatively long due to the rural context, with only 21% of responses within eight minutes (compared to an average of 37% for Anglesey) [RD179].
- L.3.118 The HIA discussion of changes in demand for medical and healthcare services is most relevant to the local geographic level (the KSA) for primary healthcare and the regional geographic level (the north Wales/BCUHB area) for secondary and tertiary healthcare.
- L.3.119 Figure L-6 provides a summary of the locations of the main health services in north Wales (BCUHB area). Figure L-7 provides the locations of GP surgeries in relation to the KSA divisions of Anglesey North (blue), Anglesey West (orange), Anglesey South (green) and Menai Mainland (pink).
- L.3.120 To enable comparison with routinely collected statistics, the analysis assumes that, collectively, Anglesey North, Anglesey West and Anglesey South comprise the GP practice area of Anglesey and that Menai Mainland equates to the GP practice area of Arfon (the difference is not expected to affect the general trend described).
- L.3.121 GP surgery capacity data for Anglesey and Arfon show a net surplus of full-time equivalent GPs on the Isle of Anglesey. However, the surplus is located away from the north and west areas of Anglesey mostly likely to experience increases in demand from the Project. The primary care baseline for the purposes of assessment is therefore of no current capacity [RD180].
- L.3.122 Recruitment of GPs (and other healthcare staff) on the Isle of Anglesey and in north Wales generally is a noted challenge, particularly if there is a requirement for GPs to speak Welsh.
- L.3.123 On the Isle of Anglesey, approximately 12% of the population provide unpaid care, comprising 7% providing up to 19 hours care a week, 2% between 20 hours and 49 hours per week and 3% more than 50 hours per week. These are the same as the percentages for north Wales and Wales [RD151].

- L.3.124 On the Isle of Anglesey, there are approximately 2,095 people who describe themselves as being in a health or social care related occupation (health and social services managers and directors; managers and proprietors in health and care services; health professionals; therapy professionals; nursing and midwifery professionals; welfare professionals; health associate professionals; or welfare and housing associate professionals). In Arfon, the equivalent number of people identifying with these occupations is 2,160. For north Wales, the total number is 21,605 people [RD151].
- L.3.125 These baseline statistics are also relevant to the consideration of potential labour churn in health and social care community services discussed under the HIA topic of employment, income and economic development.

[This page is intentionally blank.]

Figure L-6 Health service locations

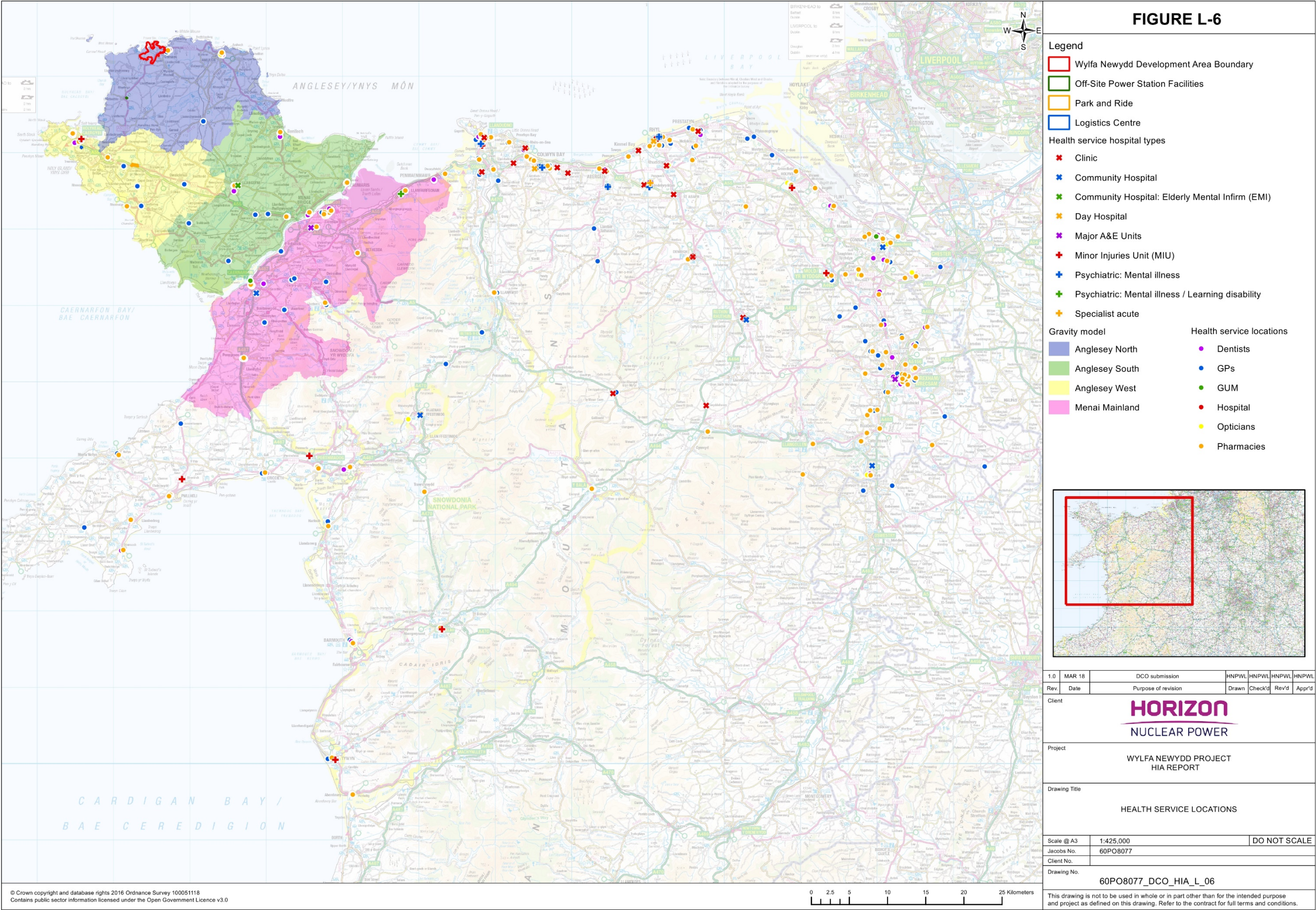
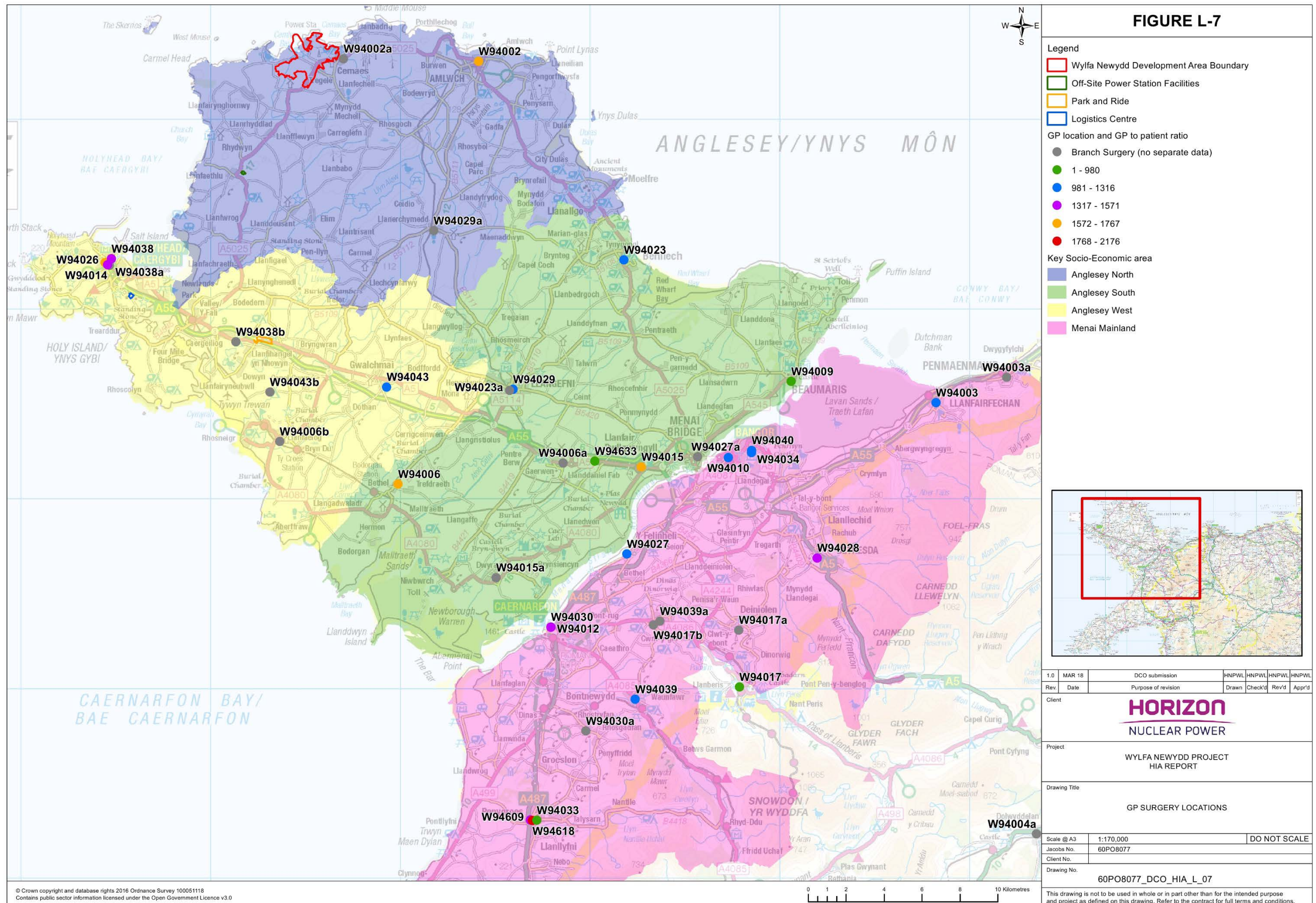


Figure L-7 GP surgery locations



Relevant local health priorities

L.3.126 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:

- providing effective services that meet the needs of vulnerable groups;
- managing greater demands on health and social care community services through collective action and early intervention to empower and support people;
- modernising services to meet the differing needs of individuals and communities;
- utilising early intervention strategies to support people;
- supporting older people and their carers to independence by providing timely services; and
- increasing the availability of healthy ageing provision in the community.

Considerations in relation to acceptability

Relevant consultation responses

L.3.127 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.

HIA workshop

L.3.128 Participants agreed that having physical access to GPs and being able to get an appointment were prized as an asset of island life. Another opinion was that health care facilities were strained and more were needed.

L.3.129 There was discussion about the possible impacts of the construction workforce on local medical and healthcare services and facilities. There was general concern about the pressure that incoming workers and others may cause on services, especially hospitals and GP's surgeries, some of which are already overworked. There were specific concerns about longer waiting times for appointments.

L.3.130 Participants emphasised the importance of supporting health services and health care, including doctors, nurses, hospitals and dentists that are required to address current health impacts. Access to mental health support was also requested. This was attributed to stress within communities in relation to the Project.

L.3.131 Participants recommended providing more care homes; upgrading Accident and Emergency services; and a greater number of dentists.

L.3.132 Dedicated health centres and services for construction workers and their families were also recommended.

L.3.133 Some concern was expressed about dividing residents from the workforce. If health services, or social activities, are only accessible to workers this could cause an increased 'us and them' feel among local communities. For example, local people might find it hard to access a dentist while workers have full access via an on-site service. This has already been seen at the RAF Valley with the bowling and gym provision to which local people have little access. A more optimistic view was that new services might be provided that would be open to all.

Relevant regulatory standards/policy context

L.3.134 The NHS primary healthcare planning standard is 1,800 patients per FTE GP. This figure is used by London's Healthy Urban Development Unit Planning Contributions Model. The Healthy Urban Development Unit uses the 1,800 people per GP as a default benchmark, based on guidance from the Royal College of GPs [RD181].

L.3.135 For Wales, the average number of registered patients per GP in 2014 was 1,582 [RD182]. For BCUHB, the average was 1,581 [RD183].

L.3.136 In addition to GPs, other members of the primary care workforce are required. Table L-7 uses proportions from a 2014 in-depth review of the GP workforce by the Centre for Workforce Intelligence [RD184]. Although based on English GP workforce data (Welsh equivalent data not being identified), the figures provide an approximation of the additional human resources required per GP.

Table L-7 Approximate general practice workforce per GP

Role	GP workforce proportions (%)	Workforce number/GP
GP	26.9%	1
Practice nurse	12.5%	0.5
Direct patient care	7.5%	0.3
Admin and clerical	51.4%	1.9
Other	1.7%	0.1

Policy context

L.3.137 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.

- Vision: contribute to an enhancement of local community infrastructure, facilities and services.
- Objective: ensure that the Project delivers significant and enduring infrastructure benefits to the island's communities. For example:
 - provide appropriate community infrastructure and services necessary to support the Project and ensure that such facilities are integrated into the island's existing communities.

- Objective: ensure that the Project supports the quality of life (including health, well-being and amenity) of the island's residents, visitors and workers. For example:
 - enhance and improve the provision of community facilities including emergency and health care services;
 - seek a comprehensive package of high quality facilities, either as new facilities or improved existing facilities, that meet the needs of construction workers and provide legacy use for the wider community; and
 - ensure the Project benefits the island's disadvantaged communities.

L.3.138 The Welsh Government has published “More than Just Words” – a strategic framework designed to strengthen Welsh language services in health services, social services and social care [RD56]. This sets out a commitment by the Welsh Government to help ensure Welsh speakers receive health, social and social care services in their first language.

Lifestyle and behaviour

Introduction

L.3.139 This section outlines the specific methodology used to assess the effects of the Project on lifestyles and behaviour. The HIA considers significance in terms of the ‘importance’ or the ‘acceptability’ of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.

L.3.140 The following source-pathway-receptor model summarises the links between risk-taking activity and health. This is with regard to the construction workforce.

- **Source:** some tourist populations can be prone to risky behaviour involving, for example, alcohol, misuse of drugs and unprotected sex. A predominantly male and itinerant construction workforce could also be prone to the same behaviours.
- **Pathway:** leisure time for construction workers could lead to increase in the patronage of pubs and clubs and an increase in demand for commercial sex work. During summer months, this demand would overlap with that of the tourist population.
- **Receptor:** Anglesey residents, especially young adults, and the construction workforce.

L.3.141 This assessment links with the socio-economic effects discussed in Environmental Statement chapter C1 (Application Reference Number: 6.3.1). The HIA analysis uses the construction worker distribution modelling discussed in the Environmental Statement.

L.3.142 Figure L-5 shows the Environmental Statement KSA. The HIA uses this study area to define the extent of lifestyle and behaviour effects to the health and well-being of people on the Isle of Anglesey or in Arfon (together an area equivalent to the KSA).

Considerations in relation to importance

Relevant scientific literature and baseline conditions

- L.3.143 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.
- L.3.144 Long working hours are a risk factor for use of alcohol at levels that pose a risk to health [RD185]. When compared to Wales as a whole, Anglesey has higher rates for long working hours [RD186], but it also has lower rates of alcohol consumption [RD187]. Alcohol use increases the probability of unprotected sex and is thus linked to rates of HIV and other sexually transmitted infections (STIs) [RD62]. Anglesey has some indications of higher STI rates (e.g. for chlamydia); however, rates of HIV are less than half the average for Wales [RD188].
- L.3.145 Young adults who frequent areas where off-shift workers congregate for recreational social activities (e.g. pubs or bars) may be more vulnerable to risk-taking behaviour. On the Isle of Anglesey, there are approximately 9,619 people aged between 18 years and 30 years (an approximated age band for young adults). This represents 14% of the total population on the Isle of Anglesey, which is similar to the north Wales average of 15% and 17% for Wales as a whole. In Holyhead Town LSOA/ward, the percentage rises to 20% of the population. This equates to approximately 240 young adults living in the area most likely to experience night-time economy effects from off-shift construction workers visiting Holyhead. Whilst young adults from other LSOAs/wards of Holyhead may also be affected, those with greatest proximity and frequency of interaction are likely to be most representative of vulnerability to potential effects [RD151].
- L.3.146 The percentage of households in the Holyhead Town LSOA/ward that experience multiple dimensions of deprivation (40% of households experience deprivation along two or more of the following dimensions: employment, education, health and housing) is also higher than average for Anglesey (26%) and Wales (28%), suggesting increased inequality related sensitivity to both potential adverse and beneficial effects (e.g. workers spending locally benefiting the local economy) [RD151].
- L.3.147 The community safety domain of the Welsh index of multiple deprivation in Holyhead Town LSOA/ward is very poor (1st decile), suggesting particular sensitivity for this population on issues of actual and perceived crime and anti-social behaviour [RD152]. The Anglesey well-being assessment area of Caergybi and Ynys Cybi Area (representative of the Holyhead area) shows high crime rates compared to Anglesey as a whole [RD169].
- L.3.148 Levels of direct and indirect sex work have anecdotally been reported by stakeholders as being above average in Holyhead compared to elsewhere on the Isle of Anglesey. Baseline statistics have not been identified. Direct sex work refers to services, such as indoor and outdoor prostitution as well as escort services. Indirect sex work refers to services such as lap dancing, stripping and virtual sex services (over the internet or phone) [RD117].

Relevant local health priorities

L.3.149 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:

- enhancing resilience by supporting all children and their families to have access to healthy lifestyles;
- making sure that Anglesey is a safe place;
- tackling community safety issues such as harm caused by alcohol;
- safeguarding children and young people on the Isle of Anglesey who are vulnerable, in need or at risk; and
- developing early intervention and prevention services to promote health, well-being and social inclusion in order to reduce dependence on more long-term services.

Considerations in relation to acceptability

Relevant consultation responses

L.3.150 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.

L.3.151 Consultation at Pre-Application Consultation Stage One noted concerns that some activities of the construction workforce outside work hours could have adverse social influences. Such influences include antisocial behaviour, increases in drugs or alcohol misuses, illicit markets emerging to provide unregulated alcohol or cigarettes to the workforce and commercial sex work.

HIA workshop

L.3.152 The HIA team ran a workshop held at the Valley Hotel on the Isle of Anglesey in October 2016. The workshop was targeted at people aged 50 and over. Thirty people attended the workshop.

L.3.153 The facilities, amenities and services that were seen as contributing to island life were the duty-free ferry port, the bridges, the new layout of Holyhead town centre, and Morawelon post office. This post office acted as a 'hub'.

L.3.154 It was noted that some people, who had planned to retire to Anglesey, were experiencing stress due to the development plans and were moving elsewhere.

L.3.155 A view was shared that, during the construction of the Power Station, the arrival of the construction workforce could lead to higher crime rates. It was noted that steps are needed to address fears people are attributing to the incoming workforce. Some people remembered the construction of the Existing Power Station and the Anglesey Aluminium Plant and described both beneficial and challenging aspects associated with the arrival and presence of that construction workforce.

L.3.156 The impacts of construction on facilities and social opportunities were considered. The role of the former Wylfa Sports and Social Club was discussed as well as its planned closure. The club was noted as having potential to be a place where any gaps between workers and the existing community could be bridged. It is also the only local place which can be used as a wedding venue.

L.3.157 People noted that community groups were grateful for funding from Horizon (for example, for local festivals), but that there was also concern that a 'cap in hand' culture may be created where communities become reliant on this funding. This would mean that projects would not necessarily be self-sustaining in the longer term.

Community survey

L.3.158 The community survey was a telephone survey of 509 randomly selected members of the public on the Isle of Anglesey between late September and October 2016. People on the Isle of Anglesey could choose to conduct the interviews in Welsh or English. The community survey was undertaken to support the HIA and other assessments, providing an overview of the scale of people's concerns and aspirations for the Project.

L.3.159 The following areas explored by the survey are of particular relevance to the lifestyle and behaviour topic of the HIA.

L.3.160 **Fear of anti-social behaviour and crime:** People were asked the extent to which they agreed or disagreed with the statement that the construction workers would behave well in the local area. The responses measured fear of anti-social behaviour. Most people (64%) agree that the construction workers would behave well in the local area, while 4% disagree. This question elicited some uncertainty, with approximately 25% of people holding a neutral opinion or being unsure. This indicates that, unless given cause to think otherwise, most people would not be fearful of anti-social behaviour from the workforce. This outlook is indicative of the likelihood of harmonious integration and social interaction. The ambivalence and uncertainty that was also expressed indicates that some are suspending judgement until the workers arrive.

- A lower proportion of households with children (57%) than households without children (67%) agree that the construction workers would behave well in the local area.
- Responses expressing disagreement were higher for Cemaes (13%) and Amlwch (9%) than Holyhead (4%) and other areas of Anglesey (2%).

Relevant regulatory standards/policy context

Policy context

L.3.161 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.

- Objective: ensure that the Project supports the quality of life (including health, well-being and amenity) of the island's residents, visitors and workers. For example:

- ensure new development is designed so as to reduce opportunities for crime and public disorder.

Community identity, social networks and culture

Introduction

L.3.162 This section outlines the specific methodology used to assess the effects of the Project on community identity, social networks and culture. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.

L.3.163 Community identity has an intangible character and the ways in which the communities on the Isle of Anglesey might react and adapt to the Project are many and various. The following source-pathway-receptor model summarises how the community identity, social network(s) and culture(s) are linked to health and well-being.

- **Source:** construction works, for example on land surrounding the Wylfa Newydd Development Area. Also the arrival and activities of the workforce, including employment opportunities.
- **Pathway:** changes in community identity due to in- or out-migration; the relationship with the landscape; housing mix, affordability or demand; or shopping, education, employment or service opportunities available.
- **Receptor:** current residents in areas surrounding the Wylfa Newydd Development Area, as well as communities of Anglesey and north Wales.

L.3.164 This assessment links with the relevant chapters from volumes B to H of the Environmental Statement on socio-economic and landscape and visual effects (Application Reference Number: 6.2 to 6.8). The HIA analysis uses the construction worker distribution modelling discussed in the Environmental Statement.

L.3.165 The Welsh language is an essential part of the cultural identity and character of Wales. Effects caused by the Project on the Welsh language therefore also potentially affect Welsh culture and traditions. Welsh language and culture connections to this topic relate to the potential dilution of existing Welsh traditions and culture (that are often built on social and cultural networks) due to non-Welsh-speaking workers moving into the area. Potential effects also relate to ways in which local Welsh speakers interact with construction workers, including use of the Welsh language. Links are made to raising awareness of the distinct culture and traditions in local communities. The WLIA (Application Reference Number: 8.21) considers how the project may effect social tensions, conflict or serious divisions within the Welsh-speaking community. Figure L-5 shows the Environmental Statement KSA and the landscape and visual study area. The HIA uses these study areas to define the extent of community identity, social networks and culture effects that may affect the health and well-being of people living near to the Wylfa Newydd Development Area and more widely across Anglesey or in Arfon (together an area equivalent to the KSA).

Considerations in relation to importance

Relevant scientific literature and baseline conditions

- L.3.166 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.
- L.3.167 Academic studies have shown that social networks can protect health: social networks are associated with lower risks of coronary heart disease and cancer (particularly breast cancer) [RD65]. Additionally, places and locations hold meanings and memories for people. The ways in which people are able to relate to, access and enjoy these places and locations are important for mental health and well-being [RD70].
- L.3.168 Strong social support and large social networks are important for physical and mental health. In contrast, violence, antisocial behaviour and discrimination are linked to poorer health and greater health inequalities [RD65]. Currently on the Isle of Anglesey, most people feel they belong to the local area, get along well with others from different backgrounds and treat each other with respect [RD189].
- L.3.169 Migration contributes to the richness in diversity of cultures and ethnicities [RD190]. Over half (55%) of people usually resident on the Isle of Anglesey describe themselves as having a Welsh only identity. However, although Anglesey is less ethnically diverse than Wales, it has a greater proportion of people identified as being other than Welsh [RD151].
- L.3.170 On the Isle of Anglesey, 39% of the usually resident population describe themselves as having no Welsh identity, which is higher than the average for Wales (34%). In Llanbadrig LSOA/ward (close to the Wylfa Newydd Development Area), 50% of usually resident people report no Welsh identity. Llanbadrig LSOA/ward also has a higher proportion of people identifying as English (26%) compared to the average for Anglesey (16%) and Wales (11%) [RD151].
- L.3.171 On the Isle of Anglesey, 63% of the usually resident population understand spoken Welsh, 57% speak Welsh and 51% read Welsh; these levels are high compared to Wales as a whole (23%, 19% and 18% respectively). Similarly high levels are recorded for Llanbadrig LSOA/ward (59%, 52% and 47%), highlighting the importance of the Welsh language (even more so than national identity) as a common factor in community identity, social networks and culture near the Wylfa Newydd Development Area [RD151].
- L.3.172 A small street cleanliness dataset for the Anglesey well-being assessment area of Bro Aberffraw and Bro Rhosyr (representative of being near the Wylfa Newydd Development Area) is relevant to community identity. The results suggests some areas are well-maintained (50% of streets had no more than three small items of rubbish, compared to 20% for Anglesey as a whole), whilst other areas are poorly maintained (13% had a wide distribution of rubbish, compared to 5% for Anglesey as a whole) [RD169].

Relevant local health priorities

L.3.173 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:

- promoting Anglesey's image and distinctive strengths;
- promoting community cohesion so people from different backgrounds value diversity, share a sense of belonging and work together to make their area a better place;
- increasing use of the Welsh language and interest in cultural issues;
- ensuring children and young people have the opportunity to take part in cultural activities and are active participants in their communities;
- promoting strong communities where everybody's voice is heard; and
- helping individuals and communities to develop and maintain their independence.

Considerations in relation to acceptability

Relevant consultation responses

L.3.174 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.

Community engagement events

L.3.175 The HIA team attended community engagement events in Cemaes, Llanfachraeth, the former Wylfa Sports and Social Club and Tregele in May 2016.

L.3.176 Changes to community identity, social networks and culture linked to the Project were seen as likely to occur over a long timeframe.

L.3.177 Participants made the following observations:

- The closure of the Cemlyn Road could lead to the Cemlyn community becoming isolated from Tregele/Cemaes.
- Participants were concerned about effects from all site activities on the character of the area (especially in Cemaes Bay and Tregele).
- Construction would contribute to a less agricultural setting.
- Concerns were voiced about the effects on property values and on the fact that some people had already moved and sold their houses.
- Participants described uncertainty about the effects which would occur and how this uncertainty was a source of stress.

HIA workshop

L.3.178 Feeling part of a small, friendly, close-knit community, knowing neighbours, and seeing and talking to people was important. The community spirit, where

people could live and work together, was cited as being central to life on the Isle of Anglesey. The small population meant that everyone knew everyone.

- L.3.179 Feeling safe on the island was key. Anglesey was described as being a 'great' and 'lovely' place to live, and participants expressed a feeling of 'being lucky' to live there. Participants described how they appreciated the merits of the island after returning from living elsewhere. Hearing children playing on the estates and streets was also a pleasant aspect of life. Participants stated that islanders needed to look after the next generation, and that both community spirit and caring for the next generation are good for health and well-being
- L.3.180 There were also less positive feelings about community life. Some participants felt that communities or their estate had changed, that they did not know who was who any more, and they felt less safe. There was less communication, some people did not know their neighbours and it was observed that children spent a lot of time sitting at their computers. Many organisations and people were seeking volunteers and had a specific agenda. A strong group of people committed to the community were seen as important, but there was no one replacing current volunteers. Some participants thought the culture of communities had changed so that there was less respect, and children or young people did not care about them.
- L.3.181 There was a concern about the effects of the construction of the Power Station on community spirit.
- L.3.182 A common perspective was that the Power Station needed to be of benefit to smaller communities. It was pointed out that in Holyhead, people in small areas knew about their immediate area, but not necessarily the whole town. In general, housing estates should be turned into better communities, or supportive communities in the first instance as opposed to just 'estates'. It was stated that Horizon should look after communities and support young people and families.
- L.3.183 Places for meeting, enjoying activities and forming social connections and friendships were valued. Community-led groups and meeting places were mentioned, as was free use of a gym, leisure centre and swimming pool. Other activities mentioned were:
- Youth clubs,
 - Community Centres,
 - Tai chi and craft clubs in a church house that led to learning skills,
 - friendship groups such as Bingo weekly, and
 - a Luncheon club where transport was provided.
- L.3.184 Participants found some local services to be wanting. More litter bins were needed and there were problems with dog faeces on the streets. Participants felt that it was difficult to ask people to pick rubbish up. Participants also described problems with noise pollution. Anglesey Council was not felt to take adequate action regarding these problems. Recycling facilities were seen as inadequate and some also described how entertainment and leisure were inadequate. There was a fear that libraries were being closed.
- L.3.185 The closure of public toilets was noted in the light of the potential population increase.

- L.3.186 It was noted that broadband would need to be improved should the Power Station be approved and built.
- L.3.187 The Welsh language and culture were generally seen as important in defining communities and helping them to 'gel', as well as being a main aspect of local heritage. Contrasting views were expressed regarding language services; for example, one participant stated that the IACC should not spend money on bilingual services while other participants stated that translation services (between Welsh and English) should be provided if people wanted to access GPs.
- L.3.188 Participants were concerned that local culture would be adversely affected by the presence of the construction workforce. There were strong feelings regarding the possible effects on the Welsh language of an influx of non-Welsh speakers. There were concerns about communities becoming Anglicized and about whether there would be bilingual teaching in schools. Children learn Welsh at primary school and it was felt that this encourages a good linguistic balance, but there was a concern about whether the Welsh language would continue to be protected. Participants also suggested that older people would find it hard to see any further decline of the Welsh language.
- L.3.189 Participants said that construction workers should be prepared to learn, understand and respect Welsh culture.
- L.3.190 Participants wanted to see work with local organisations to develop robust plans for encouraging the use of the Welsh language. Participants described how there are local groups that could encourage Welsh speaking.
- L.3.191 Cultural activities to help integrate workers into the existing communities were proposed. Requests were also made for Horizon to get the local community involved in deciding how to welcome people, and how they would like to see people integrated. An example cited was a welcome pack that could be given to those in the accommodation sites containing information on the local area including groups that they can join.

Community survey

- L.3.192 The community survey was a telephone survey of 509 randomly selected members of the public on the Isle of Anglesey between late September and October 2016. People on the Isle of Anglesey could choose to conduct the interviews in Welsh or English. The community survey was undertaken to support the HIA and other assessments, providing an overview of the scale of people's concerns and aspirations for the Project.
- L.3.193 The following areas explored by the survey are of particular relevance to the community identity, social networks and culture topic of the HIA.
- L.3.194 **Strength of community cohesion:** People were asked how well people on the Isle of Anglesey get along with each other. "Getting along" is a widely used indicator for cohesion and it is the key premise of the Welsh Government definition of community cohesion [RD71]; [RD191]. Most people (81%) think that people on the Isle of Anglesey get along well with each other, while 15% think people get along "OK". Only 3% think that people do not get on. This suggests that any incoming workforce would encounter high levels of community cohesion and tight existing networks.

L.3.195 Feelings about ways in which the current community cohesion baseline might change: People were asked whether they agreed or disagreed that local people would get along with the construction workers. A majority (69%) agree that local people would get on with them, and 10% disagree and 21% expressed no firm opinion.

- Whilst many people feel that the influx of workers would have little effect on community cohesion on the island, 21% are ambivalent or uncertain. Protecting and enhancing community cohesion is a key area of interest for the Project and this suggests that communities on the Isle of Anglesey would generally be resilient to changes in community cohesion. The ambivalence and uncertainty indicates potential anxiety.
- Age group, working status, and having children living in a household are statistically associated with the extent to which respondents' agreed that local people would get on with the construction workers. A higher proportion of people aged 55+ (74%) and younger people aged 18-34 (72%) agree that local people would get on well with the construction workers, than people aged 35-54 (59%). Of households with children, 61% agree that the local people would get on well with the construction workers. Of households without children, 72% agree that local people would get on with the construction workers. Safeguarding is considered in section C.7.
- Fewer unemployed people (46%) agree that local people would get on with the construction workers than people from other working status groups (employed (68%); retired or permanently not working (72%); other non-working (80%)). The result may reflect concern over competition for jobs between local and non-local people. It also suggests there would be benefits for integration in getting local people into work.

L.3.196 Feelings about workers' integration: People were asked the extent that they agreed or disagreed with the statement "it would help construction workers to fit in if they understand our way of life". The response measured feelings about workers' integration. The majority of people agree (78%) that that it would help the construction workers to fit in if they understand the local way of life. 8% disagree. The remainder (14%) express no firm opinion. This underlines the importance of raising awareness about the Welsh way of life in order to assist workers to integrate. This could include educational and communication components on Welsh language and culture.

L.3.197 Identification with local community: People were asked the extent to which they agreed or disagreed with the statement "I identify with the local community". Most people (85%) agree that they identify with their community. Age and Welsh language-speaking status are statistically associated with the extent to which people on the Isle of Anglesey identify with their community.

- Fewer younger people aged 18-34 (77%) agree that they identify with their community than people aged 35-54 (95%) and 55+ (82%).
- A higher proportion of the Welsh language speakers (89%) agree that they identify with their community than non-Welsh language speakers (77%).

- A higher proportion of people from the higher social grade categories AB (86%) and C1 (91%) agree that they identify with their community, than people from the other social grades C2 (78%) and DE (82%).

L.3.198 This supports the notion that communities on the Isle of Anglesey are well-established and would be resilient to changes from external factors. These same communities may, at the same time, be sensitive to internal changes that affect defining features of the community (for example use of the Welsh language).

L.3.199 **Strength of social networks based on face-to-face contact:** People were asked the extent that they agreed or disagreed with the statement “I have friends, neighbours or family on the Isle of Anglesey who I often see”. A majority of people (95%) agree that they have friends, neighbours or family who they often see on the Isle of Anglesey. The survey results indicate the presence of strong social networks on the Isle of Anglesey which in turn indicates resilience within communities, particularly for vulnerable members of society. These networks also underline the importance for local communities of maintaining both continuous access and environments conducive to spontaneous social interactions (e.g. communal lounges on housing estates) and organised ones (e.g. youth clubs and community-led groups).

L.3.200 **Emotional attachment to the Welsh way of life:** People were asked the extent that they agreed or disagreed with the statement “the Welsh way of life is important to me”. Most people (78%) agree that the Welsh way of life is important to them, while 9% disagree, 10% neither agree nor disagree, 2% have no opinion, and 1% don’t know or are not sure. The result confirms the importance of the Welsh culture on the Isle of Anglesey.

L.3.201 **Emotional attachment to place of residence:** People were asked the extent that they agreed or disagreed with the statement “the place where I live means a lot to me”. The majority of people (92%) agree that the place where they live means a lot to them. Subjective factors are important in people’s reaction to change (i.e. responses are not based solely on objective evidence). This suggests that change may be challenging even though communities are resilient.

L.3.202 **Feelings about workers’ effect on community identity:** People were asked the extent that they agreed or disagreed with the statement “the construction workers will change the community so that I identify with it less”. A majority of people (57%) disagree that the construction workers would change the community so that they would identify with it less, 25% of people agree with the proposition and 18% expressed no firm opinion. There is a mix of views, but a higher proportion of people feel that workers would not change community identity in a detrimental way. A sizable minority (a quarter of people) could feel adversely affected, and some are uncertain as to how they could be affected. Area/place of residence and Welsh language-speaking status are statistically associated with the extent to which people feel that construction workers would change the community on the Isle of Anglesey so that they identify with it less.

- A higher proportion of people near Cemaes (44%) agree that the construction workers would change the community so they identify with it less, than in the other regions of Anglesey combined (24%).

- A higher proportion of Welsh speakers (28%) than non-Welsh speakers (19%) agree that the construction workers would change the community so they identify with it less. The variation in results by age is not statistically significant.

L.3.203 Emotional response to the Project: People were asked the extent that they agreed or disagreed with the statement “I feel positive about the new Power Station”. A majority of people (68%) agree that they feel positive about the Power Station, 15% disagree and 17% express no firm opinion. This result demonstrates strong feelings about the Project, mostly positive. Region, social grade and working status are statistically associated with the extent to which people agree that they feel positive about the Power Station.

- A lower proportion of people near Cemaes (59%) and in other areas of Anglesey (64%) agree that they feel positive about the Power Station than people near Amlwch (72%) and in Holyhead (80%).
- A lower proportion of people in social grade categories AB (57%) and C1 (65%) agree that they feel positive about the Power Station than people from social categories C2 (77%) and DE (74%).
- A lower proportion of unemployed people (53%) agree that they feel positive about the Power Station than people from the other working status categories.

L.3.204 The potential effect of the Project on emotional attachment to place of residence: People were asked, “thinking about the proposed Power Station, to what extent do you agree or disagree with the following statement: ‘the place where I live will mean less to me if the new Power Station is built’”. Most people (81%) disagree that their place of residence would mean less to them if the Power Station is built, 9% agree with the proposition and 4% have no firm opinion. This suggests that building the Power Station would not change the emotional attachments that Anglesey residents have to the places where they live, and that levels of attachment would be resilient even to large material changes.

- It is perhaps not surprising that area/place of residence on the Isle of Anglesey is significantly associated with answers to this question. A higher proportion of people near Cemaes (23%) felt that the place where they live would mean less to them if the Power Station is built than people near Amlwch (11%), in Holyhead (5%) and in other areas of Anglesey (8%).
- The results for age and working status are also significant: a higher proportion of people aged 35-54 (13%) than younger people aged 18-34 (8%) and older people aged 55+ (6%) agree that the place where they live would mean less to them if the Power Station is built.
- A smaller proportion of people who are employed (9%) or retired/permanently not working (6%) agree that the place where they live would mean less to them if the Power Station is built, compared to people who are unemployed (20%) or permanently not working (16%).

Relevant regulatory standards/policy context

Policy context

L.3.205 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.

- Vision: support the sustainability, vibrancy and quality of life of Anglesey and its communities (including support for the Welsh language and culture).
- Objective: ensure that the Project supports the quality of life (including health, well-being and amenity) of the island's residents, visitors and workers. For example:
 - measures are implemented to minimise adverse visual amenity effects arising from the Project and existing visitor attractions are protected.
- Objective: ensure that the Project recognises and strengthens the unique identity of the island and its communities. For example:
 - ensure that the island's image is maintained and enhanced;
 - sustain local distinctiveness and strengthen the Welsh language and culture; and
 - avoid adverse effects of temporary workers' accommodation and the influx of construction workers on community well-being, cohesion and identity through sensitive Associated Development site location, scale, design and management.

Employment, income and economic development

Introduction

L.3.206 This section outlines the specific methodology used to assess the effects of the Project on employment, income and economic development. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.

L.3.207 The following source-pathway-receptor model summarises the links between employment and health.

- **Source:** new employment opportunities generated directly by the Project, or indirect changes in access to employment opportunities due to improved access to geographic areas or markets.
- **Pathway:** employment has direct and indirect benefits for health, particularly via mental health and socio-economic status. Reduction in unemployment is particularly beneficial.
- **Receptor:** people of working age in the local employment market (and their dependants).

- L.3.208 This assessment links with the socio-economic effects discussed in Environmental Statement chapter C1 (Application Reference Number: 6.3.1).
- L.3.209 Welsh language and culture connections to this topic relate to employment opportunities that could contribute to retaining the existing working-age population on the island, especially young people. The employment opportunities could also attract those who have previously left the area to return. However, the arrival of non-Welsh-speaking workers could also reduce the proportion of Welsh speakers. The WLIA (Application Reference Number: 8.21) considers the effects on local Welsh-speaking businesses and suppliers, including effects from loss of Welsh-speaking staff by some services, e.g. social care.
- L.3.210 Figure L-5 shows the Environmental Statement KSA. The HIA uses this study area to define the extent of site-specific effects of employment that may affect the health and well-being of people living on the Isle of Anglesey or in Arfon (together an area equivalent to the KSA).

Considerations in relation to importance

Relevant scientific literature and baseline conditions

- L.3.211 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.
- L.3.212 Employment is beneficial for health, particularly for mental well-being, [RD72] whilst long-term unemployment has the opposite effect [RD74]. Loss of employment also affects dependants, with family members experiencing emotional and financial hardship [RD76]. On the Isle of Anglesey, unemployment is slightly higher (5%) compared to Arfon, north Wales and Wales (all 4%) [RD151].
- L.3.213 Young people and those currently on low incomes in north Wales are particularly likely to see long-term health benefits from gaining good quality employment.
- L.3.214 On the Isle of Anglesey and in Arfon, just under two-thirds of working age people are economically active (64% and 63% respectively), lower than the average for north Wales and Wales (67% and 66% respectively) [RD151].
- L.3.215 On the Isle of Anglesey there is a larger proportion (55%) of residents with occupations categorised as skilled manual, semi-skilled, unskilled manual or unemployed, compared to 53% for Wales. In Arfon occupation categories show the opposite trend, with a smaller proportion (47%) of residents with occupations categorised as skilled manual, semi-skilled, unskilled manual or unemployed [RD151]. Employment opportunities from the Project associated with typically higher paid roles may be particularly beneficial, for example higher or intermediate managerial roles, administrative or professional occupation roles and supervisory, clerical or junior managerial roles.

Relevant local health priorities

- L.3.216 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:

- ensuring children and young people have access to a wide range of relevant career opportunities;
- promoting financial inclusion;
- generating job opportunities;
- maximising the island's tourism potential; and
- capitalising on all strategic energy investment proposals on the Isle of Anglesey.

Considerations in relation to acceptability

Relevant consultation responses

L.3.217 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.

HIA workshop

L.3.218 Participants drew attention to a lack of job opportunities on the Isle of Anglesey, especially for young people. Some low paid jobs were available, including labouring, but there was poor job security and an increase in zero hours contracts.

L.3.219 Participants discussed whether local people would get the new jobs. It was agreed that people from outside Anglesey would apply and that local people might pass up the opportunity to apply if they did not feel confident in themselves. There was concern that this could have an adverse psychological effect, especially on young people. Employment for young residents on the Isle of Anglesey means they do not have to leave the island to find work.

L.3.220 Participants recounted how, during the construction stage of the Existing Power Station in the late 1960s, there were not enough people to conduct the relevant training. It was hoped this would not be the case today.

L.3.221 Participants asked for a guarantee that jobs and training would be available to local people. It was commented on that the people who are unemployed on the Isle of Anglesey are not automatically guaranteed jobs at Horizon because their skills may differ from those required at the Power Station. Similarly, they may not be in a position to access the training on offer in schools and colleges, for example if they are older and require preparatory courses to reintroduce them into learning or require flexible training so they can work while learning.

L.3.222 It was recognised that 'good' wages could have positive effects on health and well-being, as well as the availability of work for 60 years.

L.3.223 There was some concern that workers from industries such as farming and tourism would be drawn from local businesses to the Power Station by higher wages. It was stated that this happened with farm labourers when the Existing Power Station was first developed. This could have effects on the health and well-being of farming families and tourist operators.

L.3.224 Participants noted that teaching young people new skills in I.T. and manufacturing would leave a legacy benefit to communities.

- L.3.225 Another important opinion on the economic impacts of the Power Station was the need to support local companies. It was suggested that local businesses should be supported to gain the accreditations and/or certificates needed to take on contracts at the Power Station, rather than bringing in firms from outside Anglesey.
- L.3.226 The money that the increased population would spend would create additional activity for local businesses such as supermarkets.
- L.3.227 The requirement for skilled operators would create educational opportunities during the operation of the proposed Power Station.
- L.3.228 Participants asked if taxes paid by incoming workers could be invested into the local economy. There was concern about the effect subcontracting would have on wages, for example any disparity between wages of those hired by Horizon and those hired by local firms.
- L.3.229 Participants suggested that a key area of needed investment was for public open space. There were enough shops, but they should stay open longer. Holyhead also needed further investment. Some had commented that housing, entertainment and leisure facilities were poor. Finally, positive sustainable legacies should be mobilised.
- L.3.230 The construction of the Power Station was seen as a potential threat to tourism.

Community survey

- L.3.231 The community survey was a telephone survey of 509 randomly selected members of the public on the Isle of Anglesey between late September and October 2016. People on the Isle of Anglesey could choose to conduct the interviews in Welsh or English. The community survey was undertaken to support the HIA and other assessments, providing an overview of the scale of people's concerns and aspirations for the Project.
- L.3.232 The following area explored by the survey is of particular relevance to the employment, income and economic development topic of the HIA.
- L.3.233 **Opportunities for local people such as jobs and investment:** People were asked about the extent to which they agreed or disagreed with the statement "the new Power Station provides opportunities for local people such as jobs and investment". This also links to the HIA topic on 'education and training'. The community survey indicates that most people (83%) agree that the Power Station would provide opportunities for local people, 8% disagree with the proposition and 8% express no firm opinion. There is a high level of expectation amongst respondents for the Project to bring local economic benefits. This expectation underpins the support and good will for the Project on the Isle of Anglesey and demonstrates the central requirement (and appetite) for the processes of design, mitigation and enhancement to deliver these opportunities.

Relevant regulatory standards/policy context

Policy context

L.3.234 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.

- Vision: long-term sustainable economic growth and local prosperity through the provision of quality employment opportunities.
- Vision: support the prosperity of local businesses by providing appropriate supply chain and inward investment opportunities.
- Objective: ensure that the Project drives the transformation of the Anglesey and north Wales economies and maximises opportunities for the employment of local people. For example:
 - reduce poverty and economic inactivity by helping residents back into work; and
 - maximise benefits through positive procurement practices.

Education and training

Introduction

L.3.235 This section outlines the specific methodology used to assess the effects of the Project on education and training. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.

L.3.236 The following source-pathway-receptor model summarises the links between education, training and health.

- **Source:** new education and training opportunities generated directly by the Project, or indirect changes in access to education and training opportunities due to improved educational facilities or resources.
- **Pathway:** education and training has direct and indirect benefits for health, particularly via socio-economic status.
- **Receptor:** people of school and employment ages in local communities.

L.3.237 This assessment links with the socio-economic effects discussed in Environmental Statement chapter C1 (Application Reference Number: 6.3.1).

L.3.238 Welsh language and culture connections to this topic relate to use of Welsh in the workplace and in general everyday life. The WLIA (Application Reference Number: 8.21) also considers how the introduction of non-Welsh-speaking school-aged children to some schools could affect the use of the Welsh language amongst school-aged children.

L.3.239 Figure L-5 shows the Environmental Statement KSA. The HIA uses this study area to define the extent of site-specific effects of employment that may affect

the health and well-being of people living on the Isle of Anglesey or in Arfon (together an area equivalent to the KSA).

Considerations in relation to importance

Relevant scientific literature and baseline conditions

- L.3.240 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.
- L.3.241 Schooling improves the likelihood of good earnings [RD77] and is generally associated with better health [RD192]. Around a quarter (25%) of working-age people in north Wales currently have no academic or professional qualifications, which is similar to the average for Wales (26%). The equivalent proportions on the Isle of Anglesey and in Arfon are lower at 24% and 21% respectively [RD151]. Working age people on the Isle of Anglesey and in Arfon generally also have above average qualification achievement with 26% and 28% respectively at Level 4 or higher (compared to 24% for both north Wales and Wales) [RD151].
- L.3.242 Children from more socially and economically deprived families tend to have more difficulty in school [RD193]. The Anglesey well-being assessment indicates high levels of inequalities in educational achievement as measured by grade performance in relation to qualifying for free school meals. Of schoolchildren who qualify for free school meals, 35.9% achieve five A* to C GCSEs or equivalent including English/Welsh and maths. This compares to 60.8% for schoolchildren who do not qualify for free school meals. The Anglesey results broadly mirror those for Wales (31.6% and 64.1% respectively) and the Bro Aberffraw and Bro Rhosyr Area (near the Wylfa Newydd Development Area) (33.3% and 61.3% respectively) [RD169].
- L.3.243 In north Wales, educational achievement at Key Stage 2 (age 7-11), and rates of entry into higher education aged 18-19, are similar to the average for Wales [RD165]. For Key Stage 4 (age 14-16), education achievement in north Wales is generally above the Welsh average; however, some locations on the Isle of Anglesey (e.g. Llanbadrig ward) have below average achievement.
- L.3.244 Groups likely to benefit most from educational or training support linked to the Project include people from deprived backgrounds; people with low educational achievement; people who are unemployed or in elementary occupations; people seeking skilled or technical apprenticeships; and people seeking re-training for construction-related careers.

Relevant local health priorities

- L.3.245 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:
- ensuring that people have the right skills;
 - providing the best possible learning environment for all children and young people; and

- ensuring children and young people have access to a wide range of relevant lifelong learning and skills opportunities to keep them on the Isle of Anglesey and encourage those that have left to return.

Considerations in relation to acceptability

Relevant consultation responses

L.3.246 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.

HIA workshop

L.3.247 Participants stated that additional school places would be required for the children of the construction workers.

L.3.248 It was suggested that vocational training should be offered to young people, unemployed people and local businesses in preparation for working at the proposed Power Station, or providing services and products to Horizon during its construction and operation.

Relevant regulatory standards/policy context

Policy context

L.3.249 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.

- Vision: long-term sustainable economic growth and local prosperity through the provision of quality training and workforce development opportunities.
- Objective: ensure that the Project drives the transformation of the Anglesey and north Wales economies and maximises opportunities for the upskilling of local people.

Physical activity

Introduction

L.3.250 This section outlines the specific methodology used to assess the effects of the Project on physical activity. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.

L.3.251 The following source-pathway-receptor model summarises the links between physical activity and health.

- **Source:** closure of Public Rights of Way or footpaths during construction activities. Disruption in the landscape that discourages use of active travel or recreation.
 - **Pathway:** reduction in active travel and opportunities for physical activity and exposure to green space.
 - **Receptor:** local populations making regular use of the footpaths and Public Rights of Way.
- L.3.252 This assessment links with the relevant chapters from volumes B to H of the Environmental Statement on landscape and visual effects, public access and recreation and traffic and transport (Application Reference Number: 6.2 to 6.8).
- L.3.253 Welsh language and culture connections to this topic relate to provision of bilingual signposting and information as part of diverted or improved active travel routes.
- L.3.254 Figure L-5 shows the Environmental Statement public access and recreation study area. The HIA uses this study areas to define the extent of site-specific effects of physical activity that may affect the health and well-being of people living near the Wylfa Newydd Development Area.

Considerations in relation to importance

Relevant scientific literature and baseline conditions

- L.3.255 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.
- L.3.256 Physical activity is good for cardiovascular health [RD81]: it aids the avoidance of being overweight and protects against cancer [RD194] and type 2 diabetes [RD195]. Currently, the proportion of people on the Isle of Anglesey who are overweight or obese is similar to the Welsh average (58%). However, more people are physically active on the Isle of Anglesey than the Welsh average [RD187]. Local data for the population near the Wylfa Newydd Development Area suggest above average rates of obesity (11.1%) compared to Anglesey (10.0%) and Wales (9.9%) (see table M-7) [RD154]. It is noted that this type of data is suggestive only as a range of factors affect direct comparisons between areas (see the HIA appendix in volume M for further details).
- L.3.257 Levels of physical activity influence, and are influenced by, mental health. People with a mental illness are more likely to have poor physical health, which is linked to being unwell more often and dying prematurely [RD196]. Anglesey currently has a below average proportion of people reporting any form of mental illness compared to Wales [RD187].
- L.3.258 Older people are more vulnerable if they become less mobile. Safe travel options are important in maintaining mobility [RD85]. Half the people on the Isle of Anglesey live in rural areas (villages, hamlets, or isolated dwellings) [RD197]. People are more sensitive to changes in local physical activity opportunities if dependent on either carers or public transport to access alternatives. Near the Wylfa Newydd Development Area, private vehicle ownership is high, with few households in Llanbadrig and Mechell LSOAs/wards having no car or van (16% and 8% respectively, compared to 20% for north Wales and 23% for Wales) [RD151].

L.3.259 Access to services, as measured by the access domain of the Welsh index of multiple deprivation, is a key driver of deprivation on the Isle of Anglesey. Near the Wylfa Newydd Development Area access to services is average in Llanbadrig LSOA/ward (5th decile), but very poor in Mechell LSOA/ward (1st decile) [RD152].

L.3.260 Obesity is linked to levels of physical activity. Children from poorer backgrounds are more likely to be overweight or obese [RD86]. Almost a third of children on the Isle of Anglesey aged 4-5 years are overweight or obese; this is above the average for Wales [RD198].

Relevant local health priorities

L.3.261 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:

- creating opportunities for active travel;
- providing access to safe and high quality play provision for children and young people; and
- creating the right opportunities for children and young people to take part in sport and leisure activities to keep them on the Isle of Anglesey and encourage those that have left to return.

Considerations in relation to acceptability

Relevant consultation responses

L.3.262 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.

Community engagement events

L.3.263 The HIA team attended community engagement events in Cemaes, Llanfachraeth, the former Wylfa Sports and Social Club and Tregele in May 2016.

L.3.264 Concerns about changes to opportunities for physical activity related to the changes in access to footpaths and other areas as a result of construction.

L.3.265 Concerns were raised with regard to closure of access to main footpaths, to cycling routes, to beaches and to wooded and scenic areas. Responses collected at Tregele noted the potential adverse effect of footpath closures. The closure of minor footpaths was mentioned as being less problematic.

L.3.266 The attraction of outdoor areas for visitors, and the importance of tourism for the local economy was noted.

L.3.267 A general concern was articulated for the landscape and how, as an asset for future generations, it should be protected.

L.3.268 Participants noted how environmental effects, such as noise, dust, fumes and increased traffic, could change the quality of the environment for outdoor activity, e.g. walking and cycling.

L.3.269 The existing facilities for leisure and sports were noted as being sparse, but they were also appreciated and well-used.

L.3.270 Participants inquired about ways in which information about planned changes would be communicated, for example the ways in which information would be provided:

- in the event of route closure and whether temporary, alternative routes would be available; and
- for holidaymakers who may be planning a visit to the area.

HIA workshop

L.3.271 Participants agreed that a major attraction of the lifestyle on the Isle of Anglesey is being able to get out and about in the island's outdoor spaces and varied landscapes. Aspects of the environment that are valued are the beautiful skies and sunsets, the wildlife, the clean air and the diversity of landscapes. The island's tranquillity is appreciated. The opportunity to walk on its beaches is important. Specific places mentioned were Penrhos Coastal Park for its woods, land, lakes and tourist sites; Gorad for its scenery and wildlife; Llanfawr playing field; and Newry Beach.

L.3.272 Access to key spaces on the island was highlighted as a concern. Residents needed to be able to go out and about, and be active, but they were fearful of areas being blocked off. Green spaces were important for older people, young people and families.

L.3.273 Impacts on nature and the knock-on effects on walking and cycling and spending time with family outdoors were described. The quality of the sea water was also mentioned as being important for outdoor swimming. One participant described how sea kayaking was important.

L.3.274 The question was posed as to whether workers would have their own activities. A thought was shared that there was 'nothing' to keep workers in town. It was felt that there would be low levels of interest in local attributes such as walking on the beaches.

Relevant regulatory standards/policy context

Policy context

L.3.275 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.

- Objective: ensure that the Project supports the quality of life (including health, well-being and amenity) of the island's residents, visitors and workers. For example:
 - enhance and improve the provision of community facilities including open space, leisure and recreation facilities; and

- seek a comprehensive package of high quality facilities, either as new facilities or improved existing facilities, that meet the needs of construction workers and provide legacy use for the wider community.

Public understanding of risk

Introduction

- L.3.276 This section outlines the specific methodology used to assess the effects of the Project on public understanding of risk. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.
- L.3.277 The following pathway summarises the relationship between ways in which risks are understood and health outcomes.
- **Source:** public understanding of risks can differ from the understanding of risks that are derived from scientific studies.
 - **Pathway:** anxiety, stress and a sense of powerlessness can have adverse effects on health and mental well-being while a sense of control is beneficial to health and well-being.
 - **Receptor:** people living and working on the Isle of Anglesey and in Wales.
- L.3.278 Nuclear fuel and radiological wastes would not be on-site during the construction stage so the HIA focuses on the operational stage, which includes commissioning of the reactors and any storage, treatment and removal of radiological material.
- L.3.279 The Project, and its risks and benefits, is understood in different ways by different people. This HIA Report considers these views, ways that health and well-being might be affected and a course of action. The aim is to find a way to address and allay concerns that people might have, inform communications and consultation elements of the Project and contribute towards reducing anxiety.
- L.3.280 The term 'understanding' is used in preference to 'perception'. An understanding of a topic or an issue is something that can develop and that can be debated and shared. The term 'perception' can imply views that do not align with scientific analysis are given less credence [RD199].
- L.3.281 The topic links to Environmental Statement chapter D14 (Application Reference Number: 6.4.14) on radiological effects. A quantitative analysis of radiological risks is presented in the EP-RSR application and Article 37 submissions.
- L.3.282 The Environmental Statement radiological assessment study area (Application Reference Number: 6.4.14) extends from the Power Station Site to the national and international level. As such it is not shown on Figure L-5. The HIA uses this study area to contextualise the potential extent of actual risks. Whilst this is of relevance, particularly as the HIA notes that understanding of risks is not geographically bound, the HIA focuses on the consideration of effects near the Power Station Site and at the national (Wales) level.

Environmental Statement summary for context

- L.3.283 The Environmental Statement radiological assessment (Application Reference Number: 6.4.14) identifies no significant adverse radiological effects from routine operations of the Power Station.
- L.3.284 The basis of assessing the potential effects arising from exposure to radiological discharges is the identification of groups of individuals whose behaviour and habits are likely to mean they would receive the highest individual radiological doses. These are then used to identify the Representative Person, who is an individual receiving a dose that is representative of the more highly exposed individuals in the population. Combined exposure may be due to aqueous discharges (e.g. eating seafood caught locally), gaseous discharges (e.g. eating terrestrial food farmed locally) and direct radiation. The cumulative assessment takes into account both the Power Station and other sources, such as the Existing Power Station.
- L.3.285 The assessment is based on quantitative analysis undertaken for the EP-RSR submission. The dose assessment for the EP-RSR application is based on realistic but conservative assumptions, and the resulting assessment meets regulatory constraint levels.
- L.3.286 The Representative Person is estimated to receive a dose of 37.8 μ Sv/y from the Power Station. The cumulative dose is estimated to be 71.9 μ Sv/y. The Environmental Statement concludes this to be not significant in the context of the UK public dose limit of 1000 μ Sv/y and the PHE recommendations on constraints for new nuclear build of 150 μ Sv/y. In context average UK natural background doses are 2700 μ Sv/y (e.g. due to natural radon gas, cosmic radiation and medical sources).
- L.3.287 Environmental Statement appendix D14.01 describes the management of radioactive wastes at the Power Station during operation and decommissioning. Environmental Statement appendix D14.02 describes the assessment of effects from potential accidental release scenarios.

Considerations in relation to importance

Relevant scientific literature and baseline conditions

- L.3.288 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.
- L.3.289 People close to the Power Station may be more aware of the Project. However, understanding of risk is not geographically bounded and may be held by one person on behalf of another (e.g. concern by a person in Cardiff for a friend in Amlwch). This topic is therefore relevant to both the local and wider population.
- L.3.290 The Welsh Cancer Intelligence and Surveillance Unit and the Committee on Medical Aspects of Radiation in the Environment (COMARE) have concluded that there is no evidence of an increased incidence of childhood cancer in north Wales. An April 2016 COMARE report specifically considered childhood leukaemia risk should the Project be approved. COMARE is the national independent expert body on such matters. The issue was raised with COMARE by the Director of Public Health for the IACC following concerns

raised by some local residents through the HIA consultation process. The COMARE report finds that there is no evidence to support the view that there is an increased risk of childhood leukaemia and other cancers in the vicinity of Nuclear Power Stations in Great Britain.

- L.3.291 The way risks are understood has important influences on health behaviour [RD87]. Awareness of risk can affect mental, physical and emotional well-being, and can be worse when it is accompanied by uncertainty [RD125].
- L.3.292 The ultimate goal of dialogue between regulators and communities is to produce an informed public [RD200]. Trust, credibility, competence, fairness and empathy are of great importance [RD200] and the routine monitoring and clear communication of results can greatly increase trust, empower people and reduce fear factors [RD90].
- L.3.293 Research with people who live close to nuclear facilities suggests that the 'landscape of beliefs' about nuclear power is both subtle and complex. Care should be taken to avoid dividing communities into 'for' or 'against', and it should be recognised that people's views are dynamic and changing [RD201]; [RD202]. The research supports meaningful dialogue and associated meaningful action to take account of the dynamic nature of these views.
- L.3.294 The views that people hold can be associated with low-grade illnesses (e.g. headaches or hypertension) and can be exacerbated when there is uncertainty [RD125].
- L.3.295 Responses to risk may be influenced by the following social factors:
- personal prior experience of a risk (even indirect);
 - how people have processed information acquired from multiple sources;
 - public trust levels in regulatory bodies and local institutions and reliability of information sources; and
 - individual factors, e.g. a predisposition for anxiety.
- L.3.296 Unplanned events are rare and can be noteworthy. They may be remembered and can be important yardsticks for the understanding of risk. Memories are held both individually and collectively in communities.

Relevant local health priorities

- L.3.297 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:
- improving the quality of life of local people and communities on the Isle of Anglesey by enhancing economic, social and environmental well-being.

Considerations in relation to acceptability

Relevant consultation responses

- L.3.298 The consideration of acceptability (that has informed the determination of significance) has been guided by the consultation responses received from the public and health stakeholders. The main themes relevant to this topic were as described in the following sections.

- L.3.299 Ensuring that risks are avoided or mitigated, and that any residual risk is acknowledged, is an important element of the public engagement and consultation inputs to the development consent process.
- L.3.300 Comments that relate to the hazards of nuclear power, and which have been raised as part of this HIA, include questions about safety; resilience to natural disaster; ways in which an unplanned event would be dealt with; longer-term issues such as storage of waste; and risks of cancer associated with living close to, or working at, either the Existing Power Station or the Power Station.
- L.3.301 Together with stakeholders and with communities, the HIA has explored the assets and strengths of community life on the Isle of Anglesey. The engagement has asked about strengths of community life as well as topics of concern. The engagement has sought to empower people to propose solutions. It has inquired into the ways in which people understand risk within the context of community life on the Isle of Anglesey. It has encouraged reflection on the risks and the changes associated with the Project and on the ways these can be addressed that build on the current assets and strengths.

HIA workshop

- L.3.302 Participants commented that a Nuclear Power Station could affect future generations and leave a long legacy. Radiation and water contamination were mentioned. Fears of cancer from radiation were cited as a worry by some. Participants felt they did not have enough knowledge about waste and how it would be stored. People asked whom they should contact if they wanted to discuss the scientific evidence.
- L.3.303 Participants noted that the Existing Power Station was built when asbestos was widely used. Public reassurance was needed about the treatment of asbestos.
- L.3.304 The safe operation of the construction and operation of the Power Station was discussed. Participants noted the importance of evacuation plans regarding how to leave the island safely in the case of an adverse incident.
- L.3.305 Some participants described having felt 'tremors', and asked whether these could affect the structure of, or storage facilities at, the Power Station. Attention was drawn to corrosion that had occurred at the Existing Power Station, and the problems it had caused over the years, including numerous shutdowns. There was concern that the Power Station involved new and untried technology.
- L.3.306 Some participants described having worries and concerns. Others noted things that could be sources of concern, but as long as issues were addressed and monitored, 'everything' should be okay. Some participants noted that, once the proposed Power Station was operational, it would have no effect and that the novelty of it would wear off.

Community survey

- L.3.307 The community survey was a telephone survey of 509 randomly selected members of the public on the Isle of Anglesey between late September and October 2016. People on the Isle of Anglesey could choose to conduct the interviews in Welsh or English. The community survey was undertaken to

support the HIA and other assessments, providing an overview of the scale of people's concerns and aspirations for the Project.

L.3.308 The following areas explored by the survey are of particular relevance to the public understanding of risk topic of the HIA.

L.3.309 **Knowledge of the proposal for the Power Station:** 98% of the respondents report that they had heard about the proposal for the Power Station, and only 2% report that they have not heard of the proposal. This suggests that the awareness raising and consultation by Horizon, the IACC and other stakeholders has been effective in reaching the majority of the population. People's understanding of risk will benefit from this level of information exchange, albeit measured in the survey at the most basic level (i.e. awareness of the Project).

L.3.310 Almost half of respondents report a connection with the Existing Power Station (49%). The connection is mostly via friends or family members (44%) rather than direct employment. This result demonstrates the extent of the links that exist between people on the island and nuclear power. This also suggests a relatively high level of awareness, and potentially acceptance of risks that are associated with nuclear power.

L.3.311 **Nuclear power stations as a safe and reliable way of producing energy:** People were asked about the extent to which they agreed or disagreed with the statement "nuclear power stations are a safe and reliable way of producing energy". Most people (62%) agree that nuclear power stations are safe and reliable, while 16% disagree and 21% express no firm opinion. While a clear minority view is apparent, this result suggests that, in general, people accept nuclear power.

- The assumption is that people who express a definite view (of whatever opinion) have considered the pros and cons of nuclear power and reached a viewpoint. The responses to this question indicate a high level of engagement with the issue: 12% are ambivalent and 6% don't know or are unsure.
- Social grade (by occupation) was statistically associated with agreement with the proposition. A follow-up test revealed that a smaller percentage of AB respondents (45%) agree with the proposition than people from other social grades (C1 (63%), C2 (72%) and DE (66%)). This shows that households where the main earner is in a higher or intermediate managerial/administrative/professional occupation are more sceptical of nuclear power.

L.3.312 **Support for nuclear power on the Isle of Anglesey:** People were asked about the extent to which they agreed or disagreed with the statement "I support having nuclear power on the Isle of Anglesey". The response measured support for nuclear power on the island, and by extension, for the Project. The community survey indicates that a majority of people (71%) support having nuclear power on the Isle of Anglesey, 11% neither agree nor disagree, 15% disagree while 1% has no opinion and 2% don't know/are not sure.

- A majority of people expressed support for the Project. This can be taken as a general indicator that people who were surveyed considered the benefits of the Project to outweigh the risks.
- Support may be linked to a balancing of risks and benefits by local people and may be dependent upon expectations of benefits to Isle of Anglesey communities being met, such as jobs for local people. Although a majority of people near Cemaes (59%) agree that they supported having nuclear power on the Isle of Anglesey, a lower proportion of people there agree than in other regions (Amlwch (77%), Holyhead (85%) and other areas of Anglesey (67%)). There is a similar trend for disagreement, with a higher proportion of people in Cemaes disagreeing with the statement (30%) than in Holyhead (4%), Amlwch (13%) and other areas of Anglesey (17%).

L.3.313 The new Power Station and local people's physical health: People were asked about the extent to which they agreed or disagreed with the statement "the new Power Station won't affect local people's physical health". Of the respondents, 45% agree with the statement while 22% disagree. Almost a third of responses are distributed across the neutral or 'don't know or not sure' answer categories: 13% neither agree nor disagree, 6% have no opinion and 14% don't know or are not sure. When combined, this is a higher proportion of people than those who disagree. Therefore, whilst the majority view is that there is no cause for concern, there are a range of views, including uncertainty and ambivalence, on the potential effects of the new Power Station on physical health. Age (being 55+), Welsh language-speaker status, households with children, social grade, and working status are statistically associated with the extent to which people agree that the Power Station would not affect local people's physical health.

- A higher proportion of people aged 55+ agree with the statement (50%) compared to people aged 35-54 (42%) and 18-34 (38%).
- A lower proportion of Welsh speakers (40%) than non-Welsh speakers (55%) agree with the statement.
- A lower proportion of households with children (32%) than households without children (49%) agree with the statement.
- A lower proportion of respondents from the highest social grade category AB (34%) agree with the statement compared to people on the Isle of Anglesey from the other social grades (C1 (47%), C2 (49%) and DE (52%)).
- A lower proportion of unemployed respondents (32%) agree with the statement than other working status groups (employed (46%), retired/permanently not working (47%) and other not working (43%)).
- There are generally higher levels of agreement with the statement from people who stated that they identify with the community; who have friends and family on the Isle of Anglesey who they often see; and who feel that people on the island get along with each other. This suggests that feeling part of the community is linked to positive attitudes towards the physical health implications of the Project.

L.3.314 The new Power Station and local people's well-being: People were asked about the extent to which they agreed or disagreed with the statement "the new Power Station won't affect local people's well-being". The question measured expectations (both thoughts and feelings) about changes in mental health and well-being. Similar to results for physical health, the community survey indicates that almost twice as many respondents agree (47%) than disagree (24%) that the Power Station would not affect local people's well-being. Approximately one-quarter of responses are distributed across the neutral and "don't know" or "not sure" categories: 12% neither agree nor disagree, 4% expressed no opinion and 11% don't know/are not sure. Therefore, whilst the majority view is that there is no cause for concern, there are a range of views, including uncertainty and ambivalence, on the potential effects on well-being. Age group, Welsh language-speaker status and households with children are statistically associated with the extent to which people agree that the Power Station would not affect local people's well-being.

- A higher proportion of people aged 55+ agree with the statement (55%) compared to people aged 35-54 (40%) and 18-34 (43%).
- A lower proportion of Welsh speakers (43%) than non-Welsh speakers (57%) agree with the statement.
- A lower proportion of households with children (38%) than households without children (51%) agree with the statement.
- There are generally higher levels of agreement with the statement from respondents who stated that they identify with the community; who have friends and family on the Isle of Anglesey who they often see; and who feel that people on the island get along with each other. This suggests that feeling part of the community is linked to positive attitudes towards the well-being implications of the Project.

Relevant regulatory standards/policy context

L.3.315 This HIA Report has followed the UK Government's clear policy direction in NPS EN-6 [RD8] paragraph 3.12.11 that the assessment should act on the basis that the risk of adverse effects resulting from exposure to radiation for workers, the public and the environment would be adequately mitigated by the UK's strict legislative and regulatory regime. The HIA therefore does not include a detailed assessment of actual radiological effects. The EP-RSR application and Article 37 submissions for the application for development consent provide the radiological assessment. The Environmental Statement discusses findings of those radiological assessments.

Policy context

L.3.316 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.

- Vision: ensure a secure and safe project with robust emergency planning.
- Vision: recognise the support of local communities in hosting the Project by compensating for effects that cannot be mitigated and otherwise

securing the goodwill and understanding of the population of the island as a whole.

Energy generation: demand and affordability

Introduction

L.3.317 This section outlines the specific methodology used to assess the effects of the Project on energy generation: demand and affordability. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.

L.3.318 The following source-pathway-receptor model summarises the links between electricity supply and health.

- **Source:** the Power Station would provide a significant addition to UK-generated electricity supply.
- **Pathway:** a reduction in availability or affordability of electricity has implications for the safety of living conditions as well as the wider economy. A more stable energy market with predictable baseload [RD203] capacity and an appropriate margin between demand and supply (capacity margin) would be expected to promote affordability.
- **Receptor:** via the National Grid, the local, regional and national population would benefit.

L.3.319 This topic links with the discussion of the need for the Project in Environmental Statement chapter A1 (introduction) (Application Reference Number: 6.1.1).

L.3.320 Figure L-5 shows the national study area. The HIA uses this study area to define the extent of effects of electricity demand and affordability that may affect the health and well-being of people living throughout the UK.

Considerations in relation to importance

Relevant scientific literature and baseline conditions

L.3.321 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.

L.3.322 A reliable energy supply is associated with basic conditions for healthy living and powering essential services (e.g. hospitals) [RD95]. Reliance on international energy sources is increasing in the UK as the demand for electricity approaches what current UK generating facilities can supply [RD204].

L.3.323 Energy and fuel poverty is associated with poor physical and mental health [RD94]; [RD95]. Groups vulnerable to the health effects of fuel poverty include young children, older people and those with pre-existing health problems [RD97]. There are around 4.5 million fuel-poor households in the UK. In Wales, around a third of the population are estimated to be fuel-poor [RD205]. The Anglesey well-being assessment indicates that fuel poverty affects 13.9% of households in Wales and 17.7% of households on the Isle of Anglesey; this figure rises to 18.2% of households in the Bro Aberffraw and Bro Rhosyr Area

(near the Wylfa Newydd Development Area) [RD169]. Such vulnerable households would particularly benefit from affordable energy.

L.3.324 Clean energy technologies can benefit health both by avoiding harmful air pollutants and by reducing energy bills of consumers and businesses [RD96]. As a proportion of all spending, the poorest 10% of people in the UK spend three times as much on energy bills as the richest 10% [RD204]. People on low incomes are, therefore, far more sensitive to energy prices.

Relevant local health priorities

L.3.325 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:

- reducing fuel poverty risks, with bills likely to rise by between 14% and 25% by 2020.

Considerations in relation to acceptability

Relevant regulatory standards/policy context

Policy context

L.3.326 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.

- Vision: the Power Station would contribute to the UK's need for secure and affordable energy.
- Objective: ensure that the Project places the island at the forefront of energy research and development, production and servicing.

Energy generation: low carbon technology

Introduction

L.3.327 This section outlines the specific methodology used to assess the effects of the Project on energy generation: low carbon technology. The HIA considers significance in terms of the 'importance' or the 'acceptability' of any potential change in health outcomes. This section describes the considerations of importance and acceptability that have informed the assessment.

L.3.328 The following source-pathway-receptor model summarises the links between energy generation, climate change and health.

- **Source:** energy generation's (including embodied energy, fuel and waste management and associated transport) contribution to climate-altering pollutants, notably carbon dioxide. Nuclear power is considered a low carbon technology.
- **Pathway:** climate-altering pollutants contribute to climate change, which is associated with global changes in temperature, crop yields, productivity and disease prevalence.

- **Receptor:** international global population, particularly deprived populations in low- and middle-income countries.

L.3.329 Figure L-5 shows the national and international study area. The HIA uses this study area to define the extent of site-specific effects of low carbon technology that may affect health and well-being globally.

Considerations in relation to importance

Relevant scientific literature and baseline conditions

L.3.330 The consideration of importance (that has informed the determination of significance) has been guided by scientific literature and baseline conditions.

L.3.331 There is scientific consensus that human activities are causing global climate change. Many air pollutants linked to climate change are also harmful for health. Reducing use of fossil fuels by shifting to cleaner energy sources would, therefore, both reduce climate-change health effects and improve health through better air quality [RD206].

L.3.332 The effects of a changing climate are global and can potentially affect both physical and mental health. People with low incomes are most affected, as they are least able to adapt to change. This applies nationally in the UK (e.g. flooding effects); however, the majority of the burden from climate change will be on the poorest populations in low- and middle-income countries.

L.3.333 Substantial health and economic co-benefits could be associated with reductions in fossil fuel combustion. The adverse health aspects related to climate change include heat-related disorders (such as heat stress and economic consequences of reduced work capacity); respiratory disorders (including those exacerbated by air pollution and aeroallergens, such as asthma); infectious diseases (including vector-borne diseases and waterborne diseases); food insecurity (including reduced crop yields and an increase in plant diseases); and mental health disorders associated with natural disasters [RD98].

L.3.334 There are opportunities to achieve co-benefits from actions that reduce emissions of climate-altering pollutants and, at the same time, improve health. These include reducing local emissions of health-damaging and climate-altering air pollutants from energy systems, through improved energy efficiency and a shift to cleaner energy sources [RD206].

Relevant local health priorities

L.3.335 The consideration of importance (that has informed the determination of significance) has been guided by local health priorities set out in the *Isle of Anglesey Single Integrated Plan 2013 – 25* [RD24]. These include:

- responding to the challenges of climate change; and
- investing in low carbon energy opportunities.

Considerations in relation to acceptability

Relevant regulatory standards/policy context

Policy context

L.3.336 The consideration of acceptability (that has informed the determination of significance) has been guided by the local policy context of the IACC's Wylfa SPG [RD4], which sets out a vision and objectives. The content most relevant to this topic is summarised as follows.

- Vision: the Power Station would contribute to the UK's need for low carbon energy.
- Objective: ensure that the Project takes into account climate change.

L.4 Decommissioning

Introduction

- L.4.1 In line with expected requirements for a future EIA of decommissioning activities, it is assumed that decommissioning the Power Station would also be the subject to a separate HIA process that would assess the effects of decommissioning in detail against the conditions, technologies and techniques at that time.
- L.4.2 Decommissioning would take place after at least 60 years of the Power Station being operational. During the decommissioning stage, hazards posed by the Power Station would be reduced by the removal of radiological and chemical substances in a controlled manner. Once the hazards were removed in each structure, that structure would become available for demolition. If required, further work would address any remaining contamination to return the site to its agreed end state.
- L.4.3 The final stage of decommissioning would be the removal of nuclear licensing requirements. To de-license the Power Station Site, the ONR would need to establish that the site represents no danger to future users.
- L.4.4 The following paragraphs summarise the expected issues for health and well-being during the decommissioning stage.

Air quality

- L.4.5 Drawing comparisons with the construction stage, there may be similar potential for emissions from vehicles and machinery on the Wylfa Newydd Development Area (which excludes transportation on the local road network discussed below). Such emissions are expected to be mitigated using technologies and techniques available at that time. Dust effects are less likely as, although the buildings would be removed, the surrounding landscape would be mostly unaffected.

Noise

- L.4.6 Noise would be mainly from building removal with less noise in the landscape close to dwellings. The buildings may themselves provide more noise shielding

than during construction as the outer walls and roof could contain much of the internal dismantling noise. Final landscaping including mature vegetation may also provide noise screening.

Housing

- L.4.7 The workforce demand for all accommodation types is likely to be lower than in the construction stage. However, there may be localised demand issues similar to the construction stage, depending on the proportion of non-home-based workers.

Transport

- L.4.8 The number of vehicles needed is likely to be similar to the numbers at the operation stage, suggesting relatively low transport effects to health. The Marine Off-loading Facility may also be used during decommissioning to remove equipment, reducing the number of heavy goods vehicles needed.

Demand for medical and healthcare services

- L.4.9 The issues (but at a lower level of capacity due to a smaller workforce) around demand for health services by the decommissioning workforce are likely to be similar to those during construction. Health service planning could be an opportunity for NHS legacy benefits. Such planning would occur closer to the time of decommissioning and would be informed by a separate impact assessment.

Lifestyle and behaviour

- L.4.10 The decommissioning workforce is expected to be closer in number to the operational workforce than the construction workforce. There would also be the potential for operational staff to be retrained, reducing the need for non-local workers. However, as with construction, the arrival of non-local workers could affect the extent to which communities are healthy and safe places. Many of the mitigation measures described for the construction workforce are likely to be applicable to avoid adverse effects.

Community identity, social networks and culture

- L.4.11 The diminishing presence of the Power Station as an economic and landscape feature of the area may further change community identity. The decommissioning itself would be less visible as there would be less disruption to the near landscape and mature landscape screening.
- L.4.12 Society will be influenced by the choices made by successive generations. Despite the uncertainties, there seems no reason to suppose that significant adverse effects on community identity, social networks or culture would be likely.

Employment, income and economic development

- L.4.13 Although decommissioning is expected to offer a similar number of jobs to the operational stage, ultimately decommissioning would lead to the loss of the majority of jobs linked to the Power Station. However, being a highly skilled

group, those previously employed are likely to find alternative jobs (e.g. in the wider Anglesey Energy Island labour market for energy research and development, production and servicing).

Education and training

- L.4.14 During decommissioning, the benefits to health from educational and training opportunities are more limited, but there would be a range of specialist roles required for which prior upskilling of some within the local workforce could be planned.

Physical activity

- L.4.15 The potential for adverse effects to physical activity are far less than during construction as work would be focused on removing buildings, with limited change to local routes. Decommissioning may also result in a smaller final area enclosed by the perimeter fences giving potential for additional routes, and thus opportunities to be more active.

M HIA appendix – baseline

M.1 Introduction

- M.1.1 This appendix sets out a baseline summarising the general state of health and key determinants of health relevant to the HIA's scope.
- M.1.2 The baseline is presented in two parts.
- Section M.2 sets out baseline information for the site-specific geographic level. This covers:
 - the population near the Wylfa Newydd Development Area;
 - the population near the local road network;
 - the population near Dalar Hir; and
 - the population near or in Holyhead and near Parc Cybi.
 - Section M.3 sets out baseline information for the local, regional and national geographic levels. This covers:
 - the population of Anglesey and Arfon (local);
 - the population of north Wales (regional); and
 - the population of Wales (national).
- M.1.3 The HIA topic specific methods (see the HIA appendix in volume L) include relevant discussion of the baseline information for individual HIA topics.

M.2 Site-specific baseline data

Introduction

- M.2.1 Table M-1 sets out the site-specific baseline areas for each of the geographical populations used by the HIA, including wider area comparators linked to the local, regional and national baseline where relevant.
- M.2.2 The settlements of Tregele and Cemaes to the east of the Wylfa Newydd Development Area fall within the ward of Llanbadrig and represent the majority of that ward's population. The Llanbadrig ward is therefore considered representative of the population that would experience the greatest changes in environmental effects associated with the Wylfa Newydd Development Area. Social effects experienced more generally on the Isle of Anglesey may also be felt across the Llanbadrig ward, for example demands for housing stock or increased economic activity due to workforce spend on local goods or services. Given the potential for this population to experience the highest levels of change for many potential effects, the baseline focuses on this ward to gauge sensitivity. Where appropriate, this is supplemented within topic sections with additional population baseline information relevant to particular issues or where other geographic areas are affected.
- M.2.3 A small number of clustered or isolated dwellings are located in the neighbouring ward of Mechell to the south and south-west of the Wylfa Newydd Development Area. Topic-specific baseline information is summarised for the Mechell ward where relevant. However, generally, as the main settlements (representing the majority of Mechell ward's population) are at a greater

distance from the Wylfa Newydd Development Area, the ward is considered less likely to be generally representative of the worst affected population.

M.2.4 The following tables summarise key 2011 Census statistics and deprivation levels for the Llanbadrig ward.

- Table M-2 sets out 2011 census statistics relevant to the scope of the HIA.
- Table M-3 and table M-4 set out Welsh Index of Multiple Deprivation data.
- Table M-5 sets out ambulance response times for relevant postcode areas.
- Table M-6 sets out data from the 2017 Anglesey Well-being Assessment.
- Table M-7 summarise Quality Outcomes Framework data from the closest GP surgery to the Wylfa Newydd Development Area.

M.2.5 See the relevant table reference for additional notes on each indicator measure.

Table M-1 Site-specific baseline areas

Geographical population groups	Representative baseline areas used (these are selected to be representative of the potentially affected populations, rather than indicating area or extent of effect)					Selection rationale
Population near the Wylfa Newydd Development Area (Tregele and Cemaes) (site-specific)	Isle of Anglesey 001C LSOA / Llanbadrig ward	Isle of Anglesey 001E LSOA / Mechell ward	N/A	Post code district LL67	Bro Aberffraw and Bro Rhosyr Well-being Assessment Area	Selected for proximity to the Wylfa Newydd Development Area.
Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Isle of Anglesey 004A LSOA / Llanfaethlu ward	Isle of Anglesey 004F LSOA / Valley 1 ward	Isle of Anglesey 004E LSOA / Valley 2 ward	Post code district LL65	Talybolion Well-being Assessment Area	Selected for proximity to the west coast A5025 route. In addition, representative of issues for A55, A5 and A487 as some of the more deprived communities are close to busy highway routes as well as generally high access deprivation and long distances to Menai crossings.
Population near Dalar Hir (site-specific)	Isle of Anglesey 007D LSOA / Llanfair-yn-Neubwll 1 ward	Isle of Anglesey 007E LSOA / Llanfair-yn-Neubwll 2 ward	N/A	Post code district LL65	Canolbarth Môn and Llifon Well-being Assessment Area	Selected for proximity to the Park and Ride and surrounding communities, including near the A5 and A55.

Geographical population groups	Representative baseline areas used (these are selected to be representative of the potentially affected populations, rather than indicating area or extent of effect)					Selection rationale
Population near or in Holyhead and near Parc Cybi (site-specific)	Isle of Anglesey 004D LSOA / Trearddur 2 ward	Isle of Anglesey 003B LSOA / Kingsland ward	Isle of Anglesey 003A LSOA / Holyhead Town ward	Post code district LL65	Caergybi and Ynys Cybi Well-being Assessment Area	Selected for proximity to the Logistics Centre, including neighbouring areas of Kingsland, as well as central areas of Holyhead with high deprivation levels that off-shift workers may visit.
Population of Anglesey and north Wales (local and regional)	Isle of Anglesey / Ynys Môn parliamentary constituency	Arfon parliamentary constituency	North Wales / Betsi Cadwaladr University Health Board area.	N/A	Isle of Anglesey	Selected for geographic similarity to the KSA (Anglesey and Arfon combined) where most socio-economic effects are expected, as well as the wider area covered by the health board.
Population of Wales and beyond the borders of Wales (national and international)	Wales	N/A	N/A	N/A	Wales	Selected as the most relevant national comparator and expected wider area from which many workers may be recruited.

[This page is intentionally blank.]

Table M-2 Census 2011 baseline profiles for geographic population groups [RD151]

Geographic population groups	Site-specific										Local & regional**			Wales**
	Near the Wylfa Newydd Development Area (Tregele & Cemaes)		Near the local road network (A5025, A55, A5 & A487)			Near Dalar Hir		Near Holyhead & Parc Cybi			Anglesey & North Wales			
Representative LSOA*	001C	001E	004A	004E	004F	007D	007E	004D	003B	003A	Anglesey	Arfon	N. Wales	
Ward name (for same area as LSOA)	Llanbadrig	Mechell	Llanfaethlu	Valley 1	Valley 2	Llanfair-yn-Neubwll 1	Llanfair-yn-Neubwll 2	Trearddur 2	Kingsland	Holyhead Town				
KS101EW – Usual resident population – relevant to all HIA topics														
All usual residents	1,357	1,545	1,648	1,217	1,144	1,406	1,519	1,168	1,525	1,203	69,751	60,573	687,937	3,063,456
Area (hectares)	1,372.64	3,793.81	3,555.29	261.82	609.64	2,161.87	1,376.28	1,584.10	118.70	25.54	71,124.11	40,816.50	615,006.56	2,073,510.98
Density (number of persons per hectare)	1.0	0.4	0.5	4.6	1.9	0.7	1.1	0.7	12.8	47.1	1.0	1.5	1.1	1.5
QS302EW – General health – relevant to all HIA topics														
Very good health	43%	50%	48%	46%	50%	50%	60%	44%	47%	47%	48%	53%	48%	47%
Good health	31%	28%	28%	32%	31%	29%	28%	31%	33%	31%	31%	30%	32%	31%
Fair health	17%	15%	17%	16%	15%	14%	8%	18%	14%	16%	15%	12%	14%	15%
Bad health	7%	6%	5%	4%	4%	6%	3%	5%	5%	5%	5%	4%	5%	6%
Very bad health	1%	2%	1%	2%	1%	2%	1%	2%	1%	1%	1%	1%	1%	2%
QS303EW – Long-term health problem or disability – relevant to all HIA topics														
Day-to-day activities limited a lot	13%	12%	11%	13%	10%	13%	5%	13%	10%	10%	11%	9%	11%	12%
Day-to-day activities limited a little	12%	12%	15%	11%	11%	11%	7%	16%	12%	11%	12%	9%	11%	11%
Day-to-day activities not limited	75%	76%	74%	76%	79%	76%	87%	70%	78%	79%	77%	81%	78%	77%
QS613EW – Approximated social grade – particularly relevant to HIA topics of: employment, income and economic development; and education and training.														
AB Higher and intermediate managerial/administrative/professional occupations	12%	17%	17%	14%	18%	12%	16%	30%	7%	5%	17%	19%	18%	18%
C1 Supervisory, clerical and junior managerial/administrative/professional occupations	25%	22%	25%	24%	38%	20%	32%	34%	23%	26%	27%	34%	28%	29%
C2 Skilled manual occupations	33%	37%	32%	30%	27%	38%	28%	22%	30%	26%	27%	23%	26%	25%
DE Semi-skilled and unskilled manual occupations; unemployed and lowest grade occupations	29%	24%	25%	31%	18%	30%	24%	14%	41%	43%	28%	24%	28%	28%
QS201EW – Ethnic group – particularly relevant to HIA topics of: demand for medical and healthcare services; and community identity, social networks and culture.														
White	99%	99%	99%	99%	99%	99%	98%	99%	98%	96%	98%	94%	97%	96%
Mixed	1%	0%	0%	1%	1%	0%	1%	0%	1%	1%	1%	1%	1%	1%

Geographic population groups	Site-specific										Local & regional**			Wales**
	Near the Wylfa Newydd Development Area (Tregele & Cemaes)		Near the local road network (A5025, A55, A5 & A487)			Near Dalar Hir		Near Holyhead & Parc Cybi			Anglesey & North Wales			
Representative LSOA*	001C	001E	004A	004E	004F	007D	007E	004D	003B	003A	Anglesey	Arfon	N. Wales	
Ward name (for same area as LSOA)	Llanbadrig	Mechell	Llanfaethlu	Valley 1	Valley 2	Llanfair-yn-Neubwll 1	Llanfair-yn-Neubwll 2	Trearddur 2	Kingsland	Holyhead Town				
Asian	0%	0%	0%	0%	0%	1%	1%	0%	0%	2%	1%	3%	1%	2%
Black	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
QS104EW – Sex – particularly relevant to HIA topics of: employment, income and economic development; and education and training.														
Males	50%	50%	51%	47%	51%	50%	54%	46%	49%	52%	49%	49%	49%	49%
Females	50%	50%	49%	53%	49%	50%	46%	54%	51%	48%	51%	51%	51%	51%
KS102EW – Age structure – relevant to all HIA topics														
Mean age	45.3	44.0	44.1	42.2	45.8	41.9	29.7	50.8	38.7	36.8	43.4	38.2	41.8	40.6
QS103EW – Age by single year – percentage – relevant to all HIA topics – representative age bands suggested, but are not definitive cut-offs for associated health effects														
Age 0 to 15 – children and young people	16%	17%	18%	19%	15%	17%	28%	12%	20%	20%	17%	18%	18%	18%
Aged 16 to 64 – working age people	58%	63%	59%	58%	58%	65%	67%	53%	66%	67%	61%	66%	62%	63%
(Aged 18 to 30) – young adults	13%	12%	10%	14%	11%	15%	25%	10%	15%	20%	14%	23%	15%	17%
Aged 65 and over – older people	26%	21%	23%	23%	26%	18%	6%	35%	14%	13%	22%	16%	20%	18%
QS103EW – Age by single year – number – relevant to all HIA topics – representative age bands suggested, but are not definitive cut-offs for associated health effects														
Age 0 to 15 – children and young people	218	256	290	234	177	239	419	140	302	238	11,861	10,789	123,353	556,296
Aged 16 to 64 – working age people	786	966	978	708	667	907	1,012	623	1,002	812	42,244	40,138	426,259	1,944,616
(Aged 18 to 30) – young adults	172	183	173	173	122	209	381	111	234	240	9,619	14,224	103,921	520,153
Aged 65 and over – older people	353	323	380	275	300	260	88	405	221	153	15,646	9,646	138,325	562,544
QS206WA – Welsh language skills – particularly relevant to HIA topics of: demand for medical and healthcare services; and community identity, social networks and culture.														
Can understand spoken Welsh	59%	62%	65%	66%	59%	68%	40%	46%	59%	55%	63%	68%	36%	23%
Can speak Welsh	52%	61%	64%	59%	50%	67%	35%	34%	43%	39%	57%	66%	31%	19%
Can read Welsh	47%	56%	60%	53%	46%	62%	31%	29%	36%	32%	51%	61%	29%	18%
Can write Welsh	45%	52%	58%	47%	40%	57%	29%	25%	30%	26%	46%	57%	25%	16%
Can speak, read or write Welsh	54%	62%	66%	60%	52%	67%	37%	36%	46%	41%	59%	67%	33%	21%
QS418EW – Dwellings – particularly relevant to HIA topics of: housing; air quality; and noise.														
Dwellings	752	738	802	555	519	626	544	769	664	642	34,168	25,944	318,731	1,383,814

Geographic population groups	Site-specific										Local & regional**			Wales**
	Near the Wylfa Newydd Development Area (Tregele & Cemaes)		Near the local road network (A5025, A55, A5 & A487)			Near Dalar Hir		Near Holyhead & Parc Cybi			Anglesey & North Wales			
Representative LSOA*	001C	001E	004A	004E	004F	007D	007E	004D	003B	003A	Anglesey	Arfon	N. Wales	
Ward name (for same area as LSOA)	Llanbadrig	Mechell	Llanfaethlu	Valley 1	Valley 2	Llanfair-yn-Neubwll 1	Llanfair-yn-Neubwll 2	Trearddur 2	Kingsland	Holyhead Town				
QS119EW – Households by deprivation dimensions – particularly relevant to HIA topics of: lifestyles and behaviour; housing; air quality; and noise.														
Household is not deprived in any dimension	38%	37%	33%	37%	47%	39%	50%	40%	34%	28%	40%	42%	41%	39%
Household is deprived in 1 dimension	34%	33%	36%	33%	35%	31%	29%	40%	32%	31%	33%	32%	33%	32%
Household is deprived in 2 dimensions	21%	22%	25%	24%	16%	24%	14%	18%	25%	28%	21%	20%	21%	22%
Household is deprived in 3 dimensions	6%	6%	6%	6%	3%	7%	7%	2%	8%	10%	5%	6%	5%	6%
Household is deprived in 4 dimensions	0%	1%	1%	0%	0%	0%	0%	0%	1%	2%	1%	0%	0%	0%
QS301EW – Provision of unpaid care – particularly relevant to HIA topics of: demand for medical and healthcare services; employment, income and economic development; and education and training.														
Provides no unpaid care	88%	86%	90%	88%	86%	88%	93%	86%	89%	92%	88%	91%	89%	88%
Provides 1 to 19 hours unpaid care a week	6%	7%	6%	7%	9%	7%	4%	10%	6%	4%	7%	5%	7%	7%
Provides 20 to 49 hours unpaid care a week	2%	2%	2%	2%	2%	2%	1%	2%	2%	1%	2%	1%	2%	2%
Provides 50 or more hours unpaid care a week	3%	4%	3%	3%	3%	4%	2%	3%	4%	3%	3%	3%	3%	3%
QS416EW – Car or van availability – particularly relevant to HIA topics of: transport; and physical activity.														
No cars or vans in household	16%	8%	10%	20%	9%	14%	11%	12%	29%	49%	18%	24%	20%	23%
1 car or van in household	50%	41%	40%	45%	45%	41%	51%	41%	44%	35%	43%	42%	43%	43%
2 cars or vans in household	24%	33%	32%	25%	35%	31%	33%	35%	21%	13%	29%	26%	28%	26%
QS501EW – Highest level of qualification – particularly relevant to HIA topics of: employment, income and economic development; and education and training.														
No qualifications	22%	25%	26%	26%	20%	29%	12%	20%	29%	29%	24%	21%	25%	26%
Level 1 qualifications e.g. GCSE D-G	13%	12%	14%	16%	12%	14%	14%	11%	19%	20%	13%	11%	14%	13%
Level 2 qualifications e.g. GCSE A*-C	17%	16%	15%	18%	18%	19%	19%	16%	19%	18%	16%	15%	16%	16%
Level 3 qualifications e.g. A-levels	13%	12%	11%	11%	13%	11%	18%	11%	11%	12%	12%	18%	12%	12%
Level 4 qualifications and above e.g. a degree is Level 6	24%	25%	25%	20%	28%	20%	29%	33%	14%	11%	26%	28%	24%	24%
Apprenticeship	7%	5%	4%	6%	4%	4%	5%	6%	3%	4%	5%	3%	4%	4%

Geographic population groups	Site-specific										Local & regional**			Wales**
	Near the Wylfa Newydd Development Area (Tregele & Cemaes)		Near the local road network (A5025, A55, A5 & A487)			Near Dalar Hir		Near Holyhead & Parc Cybi			Anglesey & North Wales			
	001C	001E	004A	004E	004F	007D	007E	004D	003B	003A	Anglesey	Arfon	N. Wales	
Representative LSOA*	Llanbadrig	Mechell	Llanfaethlu	Valley 1	Valley 2	Llanfair-yn-Neubwll 1	Llanfair-yn-Neubwll 2	Trearddur 2	Kingsland	Holyhead Town				
Other qualifications	5%	5%	5%	3%	5%	4%	2%	4%	5%	6%	4%	4%	4%	4%
QS601EW – Economic activity – particularly relevant to HIA topics of: employment, income and economic development; and education and training.														
Economically active: Employee: Part-time	13%	11%	11%	14%	14%	12%	12%	11%	17%	16%	14%	13%	15%	14%
Economically active: Employee: Full-time	30%	32%	31%	33%	35%	37%	51%	28%	33%	33%	34%	32%	36%	36%
Economically active: Self-employed with employees: Part-time	0%	0%	1%	0%	0%	1%	1%	0%	0%	1%	0%	0%	0%	0%
Economically active: Self-employed with employees: Full-time	3%	2%	4%	2%	3%	2%	1%	4%	1%	1%	2%	2%	2%	2%
Economically active: Self-employed without employees: Part-time	3%	3%	3%	1%	2%	2%	1%	3%	1%	1%	2%	2%	2%	2%
Economically active: Self-employed without employees: Full-time	5%	9%	6%	4%	4%	7%	3%	6%	3%	3%	5%	4%	5%	5%
Economically active: Unemployed	5%	4%	4%	7%	3%	4%	6%	3%	8%	12%	5%	4%	4%	4%
Economically active: Full-time student	3%	1%	2%	2%	2%	2%	2%	3%	2%	3%	2%	6%	3%	3%
Economically inactive: Retired	25%	21%	23%	22%	26%	17%	7%	34%	15%	13%	20%	13%	17%	16%
Economically inactive: Student (including full-time students)	3%	4%	4%	4%	3%	4%	4%	3%	5%	4%	4%	14%	5%	6%
Economically inactive: Looking after home or family	4%	5%	4%	4%	3%	4%	7%	3%	6%	3%	4%	3%	4%	4%
Economically inactive: Long-term sick or disabled	5%	5%	5%	5%	3%	6%	5%	3%	7%	8%	5%	4%	5%	6%
Economically inactive: Other	1%	2%	3%	2%	1%	2%	1%	1%	2%	3%	2%	2%	2%	2%
QS606EW – Occupation (Minor Groups) – number – particularly relevant to HIA topics of: demand for medical and healthcare services; and employment, income and economic development.														
Health and Social Services Managers and Directors	2	3	2	4	0	1	2	3	0	2	126	115	1,141	4,820
Managers and Proprietors in Health and Care Services	0	7	5	1	1	1	2	0	0	1	99	77	1,035	3,879
Health Professionals	8	5	9	2	3	5	6	10	4	4	414	486	3,965	19,936
Therapy Professionals	2	0	2	0	1	1	3	0	0	0	78	109	965	4,673

Geographic population groups	Site-specific										Local & regional**			Wales**
	Near the Wylfa Newydd Development Area (Tregele & Cemaes)		Near the local road network (A5025, A55, A5 & A487)			Near Dalar Hir		Near Holyhead & Parc Cybi			Anglesey & North Wales			
Representative LSOA*	001C	001E	004A	004E	004F	007D	007E	004D	003B	003A	Anglesey	Arfon	N. Wales	
Ward name (for same area as LSOA)	Llanbadrig	Mechell	Llanfaethlu	Valley 1	Valley 2	Llanfair-yn-Neubwll 1	Llanfair-yn-Neubwll 2	Trearddur 2	Kingsland	Holyhead Town				
Nursing and Midwifery Professionals	16	14	11	12	15	13	6	16	12	8	833	783	8,441	36,029
Welfare Professionals	0	6	3	3	1	6	2	2	3	3	190	205	2,010	9,111
Health Associate Professionals	7	2	2	0	2	0	1	3	2	1	136	94	1,316	5,594
Welfare and Housing Associate Professionals	2	3	4	2	1	3	6	5	4	2	219	291	2,732	12,558
QS701EW – Method of travel to work – particularly relevant to HIA topics of: transport; and physical activity.														
Work mainly at or from home	4%	7%	6%	2%	3%	5%	3%	5%	1%	2%	4%	3%	4%	3%
Underground, metro, light rail, tram	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Train	0%	0%	0%	1%	0%	0%	0%	1%	1%	1%	0%	0%	1%	1%
Bus, minibus or coach	2%	0%	0%	2%	1%	1%	1%	1%	2%	2%	2%	3%	3%	3%
Taxi	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
Motorcycle, scooter or moped	1%	0%	0%	1%	1%	0%	1%	0%	1%	1%	0%	0%	0%	0%
Driving a car or van	38%	46%	44%	39%	47%	46%	46%	39%	35%	23%	42%	38%	43%	41%
Passenger in a car or van	4%	2%	3%	6%	4%	5%	4%	2%	4%	6%	4%	4%	4%	4%
Bicycle	0%	1%	0%	1%	1%	1%	8%	1%	1%	2%	1%	1%	1%	1%
On foot	6%	3%	2%	4%	2%	4%	6%	3%	11%	18%	6%	8%	7%	6%
Other method of travel to work	0%	1%	1%	0%	0%	1%	0%	1%	1%	1%	1%	0%	0%	0%
Not in employment	44%	41%	43%	44%	39%	38%	31%	46%	43%	44%	40%	41%	37%	39%
QS702EW – Distance travelled to work – particularly relevant to HIA topics of: transport; and physical activity.														
Average distance (km)	23.1	23.8	26.7	26.8	26.5	22.6	17.4	23.3	25.4	31.8	22.5	19.0	18.0	16.7
KS106EW – Adults not in employment and dependent children and persons with long-term health problems or disability for all households – particularly relevant to HIA topics of: air quality; and noise.														
No adults in employment in household	47%	39%	41%	45%	40%	36%	24%	48%	38%	41%	40%	36%	38%	38%
Dependent children in household: All ages	22%	24%	25%	27%	22%	27%	49%	18%	32%	27%	25%	28%	27%	28%
One person in household with a long-term health problem or disability	32%	32%	32%	34%	25%	33%	24%	32%	30%	31%	31%	29%	29%	30%
KS202EW – National identity – percentages do not sum as multiple options can be selected – particularly relevant to HIA topic of community identity, social networks and culture.														
Welsh only identity	42%	52%	59%	57%	49%	62%	33%	37%	56%	58%	55%	62%	47%	58%

Geographic population groups	Site-specific										Local & regional**			Wales**
	Near the Wylfa Newydd Development Area (Tregele & Cemaes)		Near the local road network (A5025, A55, A5 & A487)			Near Dalar Hir		Near Holyhead & Parc Cybi			Anglesey & North Wales			
	001C	001E	004A	004E	004F	007D	007E	004D	003B	003A	Anglesey	Arfon	N. Wales	
Representative LSOA*	Ward name (for same area as LSOA)	Llanbadrig	Mechell	Llanfaethlu	Valley 1	Valley 2	Llanfair-yn-Neubwll 1	Llanfair-yn-Neubwll 2	Trearddur 2	Kingsland				
Welsh and British only identity	6%	5%	3%	6%	5%	5%	3%	5%	5%	5%	5%	4%	5%	7%
Other Welsh combined background identity	3%	2%	2%	3%	1%	2%	1%	1%	3%	2%	2%	2%	2%	1%
No Welsh identity	50%	42%	37%	34%	44%	31%	63%	57%	35%	37%	39%	32%	46%	34%
English only identity	26%	23%	16%	15%	19%	13%	27%	23%	15%	13%	16%	11%	20%	11%
Scottish only identity	1%	1%	1%	0%	1%	1%	1%	0%	1%	1%	1%	0%	1%	1%
Northern Irish only identity	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
British only identity	19%	15%	15%	15%	20%	14%	28%	29%	17%	18%	18%	13%	19%	17%
Irish only identity	1%	0%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%	0%	0%
KS402EW – Tenure – particularly relevant to HIA topic of housing.														
Owned	71%	75%	72%	68%	91%	65%	49%	83%	67%	45%	69%	63%	68%	67%
Owned: Owned outright	44%	44%	48%	38%	54%	36%	19%	57%	34%	19%	41%	33%	37%	35%
Owned: Owned with a mortgage or loan	27%	31%	25%	30%	38%	29%	30%	26%	32%	26%	28%	29%	31%	32%
Social rented	12%	10%	10%	21%	2%	18%	10%	0%	18%	12%	15%	19%	16%	17%
Social rented: Rented from council (Local Authority)	11%	9%	9%	19%	1%	16%	4%	0%	16%	8%	13%	11%	11%	10%
Social rented: Other	1%	1%	1%	2%	0%	2%	5%	0%	3%	4%	2%	9%	5%	7%
Private rented	15%	12%	13%	9%	6%	13%	40%	15%	14%	39%	14%	16%	14%	14%
Private rented: Private landlord or letting agency	13%	11%	11%	9%	4%	12%	21%	13%	13%	36%	12%	14%	12%	13%
Private rented: Other	2%	2%	2%	0%	2%	2%	19%	2%	1%	4%	2%	2%	2%	2%
Living rent free	2%	2%	4%	3%	1%	3%	1%	2%	1%	3%	2%	2%	2%	2%

* Each of these LSOAs is in the Isle of Anglesey

** These areas are included as comparators. Note there are differences from the local, regional and national baseline tables, which use data that is not available at the site-specific level.

Table M-3 Site-specific data from Welsh Index of Multiple Deprivation – deciles for each domain (1 is the most deprived 10% of all LSOAs, and 10 is the least deprived 10%)
[RD152]

Geographic population groups	Site-specific										Local & regional**			Wales**
	Near the Wylfa Newydd Development Area (Tregele & Cemaes)		Near the local road network (A5025, A55, A5 & A487)			Near Dalar Hir		Near Holyhead & Parc Cybi			Anglesey & North Wales			
Representative LSOA*	001C	001E	004A	004E	004F	007D	007E	004D	003B	003A	Anglesey	Arfon	N. Wales	
Ward name (for same area as LSOA)	Llanbadrig	Mechell	Llanfaethlu	Valley 1	Valley 2	Llanfair-yn-Neubwll 1	Llanfair-yn-Neubwll 2	Trearddur 2	Kingsland	Holyhead Town				
Welsh Index of Multiple Deprivation overall	6	5	4	5	10	5	5	7	2	2	.	.	.	.
Income domain	5	6	5	4	9	5	5	8	2	1	.	.	.	.
Employment domain	5	5	6	5	9	7	7	7	2	2	.	.	.	.
Health domain	7	7	6	5	9	4	8	6	3	2	.	.	.	.
Education domain	4	7	7	4	8	5	5	9	3	3	.	.	.	.
Access to services domain	5	1	1	7	4	2	1	2	4	8	.	.	.	.
Community Safety domain	5	8	8	5	10	8	7	6	2	1	.	.	.	.
Physical environment domain	6	8	9	6	10	10	10	7	4	5	.	.	.	.
Housing domain	6	3	1	9	9	5	3	4	4	2	.	.	.	.

* Each of these LSOAs is in the Isle of Anglesey

** These areas are included as comparators. Note there are differences from the local, regional and national baseline tables, which use data that is not available at the site-specific level.

Table M-4 Site-specific data from Welsh Index of Multiple Deprivation – reported data for indicators within domains [RD207]

	Geographic population groups	Site-specific										Local & regional**			Wales**
		Near the Wylfa Newydd Development Area (Tregele & Cemaes)			Near the local road network (A5025, A55, A5 & A487)		Near Dalar Hir		Near Holyhead & Parc Cybi			Anglesey & North Wales			
	Representative LSOA*	001C	001E	004A	004E	004F	007D	007E	004D	003B	003A	Anglesey	Arfon	N. Wales	
	Ward name (for same area as LSOA)	Llanbadrig	Mechell	Llanfaethlu	Valley 1	Valley 2	Llanfair-yn-Neubwll 1	Llanfair-yn-Neubwll 2	Trearddur 2	Kingsland	Holyhead Town				
Income	income deprivation (percentage of population)	17%	13%	15%	19%	7%	15%	15%	8%	27%	37%	16%	.	.	16%
Employment	employment related benefits (percentage of working-age population)	11%	9%	7%	10%	5%	8%	8%	5%	15%	23%	10%	.	.	11%
Health	all cause death rate (indirectly age-sex standardised) (number per 100,000)	1,007.2	964.1	1,021.2	1,063.3	815.4	1,323.7	936.6	1,120.1	1,104.6	1,171.1	984.8	.	.	1,036.1
	cancer incidence (indirectly age-sex standardised) (number per 100,000)	578.0	496.8	565.6	574.2	595.1	615.1	474.2	540.1	676.6	782.7	585.9	.	.	597.5
	low weight single births (live births less than 2.5 kg) (percentage)	***	3.6%	6.3%	7%	***	4.8%	5.2%	***	7.9%	6.1%	5.4%	.	.	5.5%
Education	Key Stage 2 average points score (points score)	84	85	89	88	93	86	88	89	84	85	87	.	.	85
	Key Stage 4 capped points score (points score)	359	350	364	355	367	361	333	373	351	337	361	.	.	346
	repeat absenteeism (percentage)	6%	4%	4%	8%	4%	6%	6%	3%	9%	7%	6%	.	.	7%
	Key Stage 4 level 2 inclusive (percentage)	62%	66%	65%	42%	68%	63%	48%	60%	47%	45%	57%	.	.	56%
Community Safety	police recorded burglary (rate (per 100))	***	***	0.63	0.62	***	0.65	0.51	0.94	0.44	2	0.52	.	.	1.04
	police recorded violent crime (rate (per 100))	1.15	1.1	0.75	1.03	0.22	0.93	1.56	0.73	3.2	7.23	1.35	.	.	1.69
	police recorded theft (rate (per 100))	***	***	0.41	***	***	***	***	***	0.41	0.29	0.18	.	.	0.52

		Geographic population groups	Site-specific									Local & regional**			Wales**	
			Near the Wylfa Newydd Development Area (Tregele & Cemaes)			Near the local road network (A5025, A55, A5 & A487)		Near Dalar Hir		Near Holyhead & Parc Cybi		Anglesey & North Wales				
		Representative LSOA*	001C	001E	004A	004E	004F	007D	007E	004D	003B	003A	Anglesey	Arfon	N. Wales	
		Ward name (for same area as LSOA)	Llanbadrig	Mechell	Llanfaethlu	Valley 1	Valley 2	Llanfair-yn-Neubwll 1	Llanfair-yn-Neubwll 2	Trearddur 2	Kingsland	Holyhead Town				
		police recorded criminal damage (rate (per 100))	0.91	0.3	0.28	1.07	*	0.48	1.52	0.32	1.84	3.61	0.81	.	.	0.97
		fire incidences (rate (per 100))	0.26	0.46	0.34	0.24	0	0.14	0.35	1.61	0.4	0.28	0.32	.	.	0.38
		antisocial behaviour (ASB) (rate(per 100))	1.54	0.68	0.89	2.43	0.75	2.3	3.41	2.24	5.6	12.32	2.45	.	.	3.46
* ** *** '.'		Each of these LSOAs is in the Isle of Anglesey These areas are included as comparators. Note there are differences from the local, regional and national baseline tables, which use data that is not available at the site-specific level. Indicates low values that are not reported. Indicates that data item is not applicable.														

Table M-5 Site-specific data from representative post code areas for ambulance waiting times [RD179]

Geographic population groups	Population near the Wylfa Newydd Development Area (Tregele and Cemaes) (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)	Population of Anglesey and north Wales (local and regional)	Population of Wales and beyond the borders of Wales (national and international)
Post code district	LL67	LL65			Anglesey mean	Wales
Waiting Times (Median)	15:48	05:33			09:38	-
Responded within 8 minutes	21%	69%			37%	-

Table M-6 Site-specific data from representative Anglesey Well-being Assessment Areas [RD169]

	Geographic population groups	Population near the Wylfa Newydd Development Area (Tregele and Cemaes) (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)		
	Representative Anglesey Well-being Assessment Areas	Bro Aberffraw and Bro Rhosyr Area	Talybolion Area	Canolbarth Môn and Llifon Area	Caergybi and Ynys Cybi Area	Isle of Anglesey	Wales
Population size estimates	Males	4,250	3,150	7,378	6,782	34,498	1,521,315
	Females	4,413	3,158	7,621	6,949	35,671	1,570,721
	Total	8,663	6,308	14,999	13,731	70,169	3,092,036
Welsh speaking	Percentage	67.1%	66.3%	64.6%	41.5%	57.2%	19.0%
Appearance, street cleanliness	Percentage of streets without any rubbish	0%	0%	8%	0%	5%	-

	Geographic population groups	Population near the Wylfa Newydd Development Area (Tregele and Cemaes) (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)		
Indicators	Representative Anglesey Well-being Assessment Areas	Bro Aberffraw and Bro Rhosyr Area	Talybolion Area	Canolbarth Môn and Llifon Area	Caergybi and Ynys Cybi Area	Isle of Anglesey	Wales
	Percentage of streets with no more than three small items of rubbish	50%	0%	17%	6%	20%	-
	Percentage of streets on the whole free of rubbish and waste, excluding small items	37%	100%	75%	94%	71%	-
	Percentage of streets with wide distribution of rubbish with small concentrations	13%	0%	0%	0%	5%	-
Community responsibility, unpaid care	Percentage providing unpaid care a week	8.5%	8.3%	8.3%	8.0%	8.4%	8.7%
Health	Number of registered patients per GP	1,219	No surgery in the area (i.e. no main surgery)	1,307	1,438	1,370	1,584
Number of Crimes	Crime rate per 1,000 population 16 years old and over	57.4	46.0	94.1	148.3	83.4	-
Connections	Percentage households with no car/ van at home	10.9%	9.6%	16.3%	32.2%	18.0%	22.9%
Education and skills. The level 2+ threshold	Total percentage who achieve 5 A*-C GCSE or equivalent including English/Welsh and Maths	58.3%	65.2%	59.5%	48.6%	56.9%	57.9%
	Free School Meals Pupils	33.3%	50.0%	43.5%	35.7%	35.9%	31.6%
	Non Free School Meals Pupils	61.3%	67.2%	62.1%	51.7%	60.8%	64.1%
Education and skills. Highest level of qualification (percentage population aged 16 and over)	No qualification	23.7%	25.8%	23.5%	30.2%	24.2%	25.9%
	Level 1	12.0%	13.3%	12.7%	15.7%	12.7%	13.3%
	Level 2	15.5%	17.0%	17.4%	17.1%	16.2%	15.7%
	Level 3	11.9%	11.9%	12.7%	11.0%	11.9%	12.3%
	Level 4 or higher	27.7%	22.9%	25.1%	17.3%	26.1%	24.5%
	Apprenticeships/Other qualifications	9.2%	9.1%	8.5%	8.8%	8.9%	8.3%
Employment opportunities. Percentage of working population travelling to work	Less than 10km	36.0%	27.6%	38.5%	49.8%	39.8%	50.3%
	10km and over	40.2%	44.4%	41.5%	31.4%	37.8%	31.2%
	Mainly working from home	15.2%	18.5%	11.6%	9.5%	13.5%	10.6%
	Other	8.6%	9.5%	8.3%	9.4%	8.9%	7.8%

	Geographic population groups	Population near the Wylfa Newydd Development Area (Tregele and Cemaes) (site-specific)	Population near the local road network (A5025, A55, A5 and A487) (site-specific)	Population near Dalar Hir (site-specific)	Population near or in Holyhead and near Parc Cybi (site-specific)		
Indicators	Representative Anglesey Well-being Assessment Areas	Bro Aberffraw and Bro Rhosyr Area	Talybolion Area	Canolbarth Môn and Llifon Area	Caergybi and Ynys Cybi Area	Isle of Anglesey	Wales
Productive economy. Percentage of working population by occupation (all categories of qualifications)	Managers, directors and senior officials	12.6%	9.1%	10.5%	9.0%	10.5%	9.2%
	Professional occupations	7.9%	12.4%	14.1%	8.3%	11.8%	15.6%
	Associate professional and technical occupations	7.1%	10.3%	13.2%	9.7%	10.4%	10.5%
	Administrative and secretarial occupations	6.3%	6.1%	11.5%	10.0%	8.7%	11.2%
	Skilled trades occupations	25.1%	22.7%	16.6%	11.7%	19.4%	13.6%
	Caring, leisure and other service occupations	9.0%	10.1%	11.3%	15.4%	11.6%	10.6%
	Sales and customer service occupations	6.5%	7.9%	4.9%	12.1%	7.3%	9.1%
	Process, plant and machine operatives	12.2%	8.7%	8.4%	9.3%	8.2%	8.2%
	Elementary occupations	13.3%	12.6%	9.4%	14.5%	12.1%	12.1%
Productive economy. Percentage of the workforce who are economically active (all qualifications)	Economically active	76.9%	72.8%	76.9%	72.8%	75.2%	73.8%
	Economically inactive	23.1%	27.2%	23.1	27.2%	24.8%	26.2%
Affordability. Fuel poverty.	Percentage of households in fuel poverty.	18.2%	17.7%	16.4%	22.7%	17.7%	13.9%
Affordability. Accommodation type.	Percentage of households that are rented	30%	30%	32%	41%	31%	32%
Affordability. House prices.	Median house price (£)	£138,000	£150,000	£158,000	£110,000	£156,000	£141,000
	Income required to afford entry level price	£31,429	£34,714	£34,286	£22,321	£32,357	£28,571
	Median household income	£24,782	£24,419	£24,312	£19,996	£23,567	£24,271
	Households priced out of market (%)	62.2%	69.3%	70.8%	53.9%	64.1%	58.7%

[This page is intentionally blank.]

Quality Outcomes Framework data

M.2.6 Table M-7 provides data for Canolfan Iechyd Amlwch, which is the main GP Practice in the Llanbadrig ward. Table M-7 uses Quality Outcomes Framework (QOF) data as an indication of prevalence of health conditions in the local population. Data on the prevalence of specific diseases or health conditions are an important element of the QOF. They can potentially be used to examine variations in the prevalence of the individual diseases and health conditions covered by the QOF, but they should be interpreted with caution. The main caveats in relation to QOF data are as follows.

- QOF prevalence rates are known as 'raw' or 'crude' rates, which means that they take no account of differences between practice populations in terms of their age or gender profiles, or other factors that influence the prevalence of health conditions. A QOF prevalence rate is simply the total number of patients on the register, expressed as a proportion or percentage of the total number of patients registered with the practice at one point in time. This could mean, for example, that one practice with an older population might appear to have higher prevalence rates for age-related conditions such as cancer or stroke than another practice with a younger population.
- Some QOF registers are restricted to include only persons over a specific age. However, the QOF prevalence rates use as their denominator the total (all ages) number of patients registered to the practice at one point in time. Diabetes registers are based on patients aged 17 and over; chronic kidney disease and depression registers are based on patients aged 18 and over. This means that for these conditions the QOF-reported prevalence will appear lower than would be the case if the age restriction were also applied to the population denominator.
- Prevalence figures based on QOF registers may also differ from prevalence figures from other sources because of coding or definitional issues. For example, to be on the QOF diabetes register, the type of diabetes (type 1 or type 2) must be specified by the practice. If the type is not specified, the patient will not be counted in the register. Information on diabetes as reported elsewhere may not be subject to these restrictions.
- Whilst some QOF registers count patients with one specific disease or condition, others count patients with one or more of a list of multiple conditions. As well as age, there may be other criteria for inclusion on a QOF register, such as date of diagnosis (this applies to the cancer register, for example).
- Year-on-year changes in the size of QOF registers are influenced by various factors including demographic changes (such as an ageing population), improvements in case finding by practices and changes over time in the definition of the registers.
- QOF prevalence rates can also be affected by other factors such as health care seeking behaviour – people differ in the readiness with which

they seek health care when they are not well; access to services – people are more likely to consult for a condition if services are readily accessible; diagnostic practice – it is impossible to completely standardise the methods clinicians use to make diagnoses; and data recording – there may be variations in the completeness and accuracy of practice records.

- M.2.7 The data in table M-7 suggests that the population may be particularly sensitive to changes in air quality with above average levels of both asthma and COPD. Obesity and coronary heart disease levels are also recorded as above average, suggesting an increased sensitivity to changes in opportunities for physical activity. Due to the small population covered by Canolfan Iechyd Amlwch compared to Wales, the degree of certainty that results are significantly different is reduced. Average values are included to reduce the likelihood of single year variation.

Table M-7 QOF data 2013-2016 [RD154]

QOF prevalence	Canolfan Iechyd Amlwch *	Anglesey	Arfon	BCUHB	Wales
	Mean	Mean	Mean	Mean	Mean
Smoking	17.0%	16.4%	17.7%	16.4%	16.6%
Asthma	9.8%	8.1%	6.7%	7.2%	7.0%
Cancer	2.8%	2.9%	2.1%	2.6%	2.3%
Coronary heart disease	4.6%	4.3%	2.9%	4.1%	3.9%
COPD	3.4%	2.9%	2.1%	2.5%	2.2%
Dementia	0.5%	0.7%	0.6%	0.7%	0.6%
Diabetes	6.0%	5.9%	4.2%	5.5%	5.7%
Heart failure	1.1%	1.3%	0.8%	1.1%	1.0%
Hypertension	15.6%	17.0%	12.5%	16.4%	15.6%
Learning disabilities	0.5%	0.5%	0.5%	0.5%	0.4%
Mental health (bipolar disorder, schizophrenia, etc.)	0.7%	0.8%	0.8%	0.8%	0.9%
Stroke and transient ischaemic attacks	2.4%	2.3%	1.5%	2.0%	2.0%
Obesity	11.1%	10.0%	6.3%	9.6%	9.9%
Depression	5.5%	6.0%	4.9%	5.6%	5.5%

Notes: Calculated from means for available data from 2013 to 2016 (four years). For Smoking, data are only available for 2015 to 2016 (two years). For Anglesey and Arfon, data are only available for 2014 to 2016 (three years).

M.3 Local, regional and national baseline data

Introduction

- M.3.1 The Environmental Statement chapter C1 on socio-economics (Application Reference Number: 6.3.1) sets out population baseline information relevant to many of the wider determinants of health. This includes local authority estimates of personal well-being from the Annual Population Survey [RD208] and information from the Welsh Health Survey on lifestyle factors such as alcohol use and illicit drugs [RD209]. As these datasets are presented by local authority rather than parliamentary constituency, they do not directly correspond to the HIA local geographic baseline area of Anglesey and Arfon (together equivalent to the KSA where the majority of socio-economic effects from the Project are expected). For this reason, whilst relevant to the HIA and used by the HIA, such information is not duplicated in the HIA.
- M.3.2 The Environmental Statement socio-economic baseline has similarities and differences to the HIA baseline. This reflects different spatial scopes relevant to issues and outcomes under consideration and corresponding reference to different datasets. Any differences between the socio-economic and HIA baselines on similar issues are not expected to result in different trends or to change assessment findings.
- M.3.3 In line with proportionate assessment, the February 2016 local, regional and national baseline [RD210] is considered to be within acceptable limits for age of baseline data, which generally link to national census statistics that are gathered every 10 years (the last in was 2011).
- M.3.4 The HIA acknowledges that there are other baseline datasets for Anglesey, for example in relation to the *Well-being of Future Generations (Wales) Act 2015*. The HIA notes the important contribution that other baselines may offer in relation to monitoring. Reference has been made to such data in the site-specific baseline (see table M-6 in section M.2).
- M.3.5 The following sections set out the local, regional and national health profile.
- M.3.6 Table M-8 and table M-9 set out data from the Wales Health Survey 2015, showing health indicators by age bands.
- M.3.7 Table M-10 sets out the health baseline for the local (Anglesey and Arfon), regional (north Wales/BCUHB area) and national (Wales) geographic levels. The population health profile spans the wider determinants of health, providing information on:
- demographics;
 - deprivation;
 - economy and labour market;
 - education and skills;
 - health and well-being;
 - housing;
 - access to services; and
 - road accidents and casualties.

- M.3.8 The baseline draws on a data gathering exercise by the Welsh Government [RD210]. This source has been selected for its reporting on the Arfon area (for which routine statistics are not usually presented). The inclusion of the Arfon area allows the health baseline to align with the geographic area of the Environmental Statement KSA, which covers a wider area than just Anglesey, but a smaller area than the local authorities of Anglesey and Gwynedd combined. Alignment with the KSA contributes to consistency with other impact assessments, as it is a common spatial scope used across the HIA, Environmental Statement, WLIA (Application Reference Number: 8.21) and EqIA (Application Reference Number: 8.22).
- M.3.9 Additional notes on each indicator measure in table M-10 can be found at [RD210].

Table M-8 Child (age 0-15) health Wales Health Survey 2015 [RD211]

Measure	Local (equivalent of KSA)		Regional	National
	Isle of Anglesey	Arfon	North Wales	Wales
Good/very good general health	94%	-	95%	94%
Long-standing illness	19%	-	20%	20%
Limiting long-standing illness	6%	-	6%	6%
Eats fruit daily	68%	-	63%	62%
Eats vegetables daily	60%	-	56%	53%
Drinks soft drinks containing sugar daily	8%	-	8%	9%
Physically active every day in previous week	32%	-	36%	35%

Table M-9 Adult health by age category Wales Health Survey 2015 [RD211]

Age group	Local (equivalent of KSA)				Regional			National		
	Isle of Anglesey			No data	North Wales			Wales		
	16-44	45-64	65+		16-44	45-64	65+	16-44	45-64	65+
Fair or poor health	6%	19%	29%	-	8%	19%	30%	9%	23%	36%
Currently treated for illness	26%	53%	81%	-	29%	51%	79%	29%	55%	81%
Limited a lot by health problem/disability	3%	13%	30%	-	4%	13%	30%	5%	17%	34%
Limited at all by health problem/disability	14%	34%	60%	-	15%	34%	60%	15%	37%	63%
SF-36 physical component summary score (mean)	54	49	41	-	54	49	41	54	48	40
SF-36 mental component summary score (mean)	51	51	53	-	50	50	52	49	49	51
Smoker	29%	25%	11%	-	27%	22%	11%	26%	22%	11%
Drank above daily guidelines	44%	45%	21%	-	44%	48%	25%	44%	48%	26%

	Local (equivalent of KSA)				Regional			National		
	Isle of Anglesey			Arfon	North Wales			Wales		
Age group	16-44	45-64	65+	No data	16-44	45-64	65+	16-44	45-64	65+
Drank over twice daily guidelines	31%	25%	9%	-	31%	27%	10%	31%	28%	10%
Ate 5 portions fruit & veg	35%	37%	40%	-	33%	34%	38%	31%	33%	35%
Active 5 days in week	39%	35%	22%	-	37%	34%	20%	35%	31%	17%
Active 0 days in week	20%	27%	50%	-	22%	29%	50%	23%	33%	55%
Overweight or obese	51%	64%	61%	-	49%	66%	60%	49%	68%	62%
Obese	20%	27%	22%	-	18%	26%	20%	19%	28%	22%

Table M-10 Local, regional and national baseline by wider determinants of health [RD210]

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
Population by broad age group: 2014				
Population of all ages (thousands)	70.2	61.1	632.9	3,092.0
Share of the total population of the area:				
Aged 0 to 15	17%	18%	18%	18%
Aged 16 to 64	59%	65%	61%	62%
Aged 65 and over	24%	17%	21%	20%
Population by the level of deprivation of the area in which it is found: 2014				
Share of the total population of the area living in the:				
10% most deprived parts of Wales	2%	8%	6%	10%

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
10% to 20% most deprived parts of Wales	13%	0%	7%	10%
20% to 30% most deprived parts of Wales	4%	3%	8%	10%
30% to 50% most deprived parts of Wales	26%	24%	20%	20%
50% least deprived parts of Wales	54%	65%	59%	51%
Population by built-up area size: 2014				
Total population (thousands)	70.2	61.0	632.8	3,092.0
Share of the total population of the area in:				
Built up areas less than 2,000	50%	44%	26%	19%
Built up areas 2,000 or more but less than 10,000	34%	28%	29%	21%
Built up areas 10,000 or more but less than 25,000	16%	29%	30%	20%
Built up areas 25,000 or more but less than 100,000	0%	0%	15%	19%
Built up areas 100,000 or more	0%	0%	0%	21%
Births and deaths: 2014				
Number of live births (thousands)	0.7	0.6	6.8	33.5
Crude birth rate (number per 1,000 population)	10.6	10.4	10.8	10.8
Number of deaths (thousands)	0.8	0.5	6.8	31.4
Crude death rate (number per 1,000 population)	11.1	8.4	10.8	10.2
Life expectancy: three-year average, 2012-2014				
Male:				
Years at birth (three-year average)	78.7	79.4	78.7	78.5

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
Years at 65 (three-year average)	18.7	18.8	18.4	18.2
Female:				
Years at birth (three-year average)	83.0	82.5	82.3	82.3
Years at 65 (three-year average)	21.6	20.5	20.7	20.6
Economic activity status: two-year average, 2013 and 2014				
Employment level (thousands)	30.7	26.7	283.9	1,377.4
Employment rate	71%	69%	71%	69%
Unemployment rate	7%	7%	6%	7%
Economic inactivity rate (including students)	23%	25%	24%	25%
Economic inactivity rate (excluding students)	21%	20%	20%	21%
Employment by occupation: two-year average, 2013 and 2014				
Percentage of those employed in occupation groups:				
Managerial, professional, associate professional or technical occupations	41%	46%	40%	40%
Administrative, skilled trades and personal service occupations	34%	29%	34%	34%
Sales and customer service, process, plant and machine operatives and elementary occupations	25%	25%	27%	27%
Qualifications of persons aged 16 to 64: two-year average, 2013 and 2014				
Percentage of the population aged 16 to 64 with:				
No qualifications	9%	11%	9%	10%
Qualifications at National Qualification Framework level 1	14%	10%	15%	15%

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
Qualifications at National Qualification Framework level 2	20%	25%	23%	22%
Qualifications at National Qualification Framework level 3	22%	16%	20%	21%
Qualifications at National Qualification Framework level 4 or above	35%	38%	32%	32%
Gross full-time weekly earnings: three-year average, 2013-2015				
Mean gross weekly earnings for residents of the area	£558	£571	£548	£551
Mean gross weekly earnings for workplaces in the area	£567	£526	£542	£541
Distribution of weekly earnings for workplaces in the area:				
Lower quartile earnings (level which 25% of employees earn less than)	£350	£326	£344	£345
Median earnings (level which 50% of employees earn less than)	£483	£444	£482	£473
Upper quartile earnings (level which 75% of employees earn less than)	£650	£612	£660	£660
Inter-quartile range of earnings (upper quartile minus lower quartile)	£300	£286	£317	£315
Working-age benefit claimant rates: May 2015				
Key working-age benefit claimants per head of working-age population	15%	12%	14%	16%
Out-of-work working-age benefit claimants per head of working-age population	12%	10%	11%	12%
Number of employees in private businesses active in Wales by employee sizeband: 2015				
Number of employees in private businesses (thousands)	14.4	19.1	186.9	856.2
Share of employees in each sizeband:				
Micro: 1 to 9 employees	23%	15%	17%	17%
Small: 10 to 49 employees	26%	19%	21%	20%
Medium: 50 to 249 employees	13%	18%	15%	15%

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
Large: 250 or more employees	38%	48%	47%	48%
Number of employees in private businesses active in Wales by broad industrial classification: 2015				
Aggregate number of employees (thousands) by industry	14.4	19.1	186.9	856.2
Share of employees by broad industry:				
Agriculture, fishing, forestry and hunting	4%	1%	1%	1%
Production and construction	20%	17%	27%	23%
Services	76%	83%	71%	76%
Primary schools (not including nursery schools) summary data: 2015				
Pupils (thousands)	5.7	5.4	55.5	274.7
Percentage of pupils:				
with English as an additional language	0%	3%	4%	6%
entitled to free school meals	18%	16%	17%	20%
with Special Educational Needs	21%	24%	20%	21%
Secondary schools summary data: 2015				
Pupils (thousands)	3.9	4.2	37.6	185.5
Percentage of pupils:				
with English as an additional language	0%	1%	1%	3%
entitled to free school meals	16%	13%	15%	17%
with Special Educational Needs	20%	17%	20%	23%
School attainment rates by Key Stage and subject type: 2015				

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
Percentage of pupils achieving the Foundation Stage Indicator: (personal and social development, well-being and cultural diversity, language, literacy and communication skills)				
Foundation Stage	86%	88%	86%	87%
Percentage of pupils achieving the core subject indicator at: (maths, science and one of English or Welsh)				
Key Stage 2	92%	89%	88%	88%
Key Stage 3	85%	91%	86%	84%
Percentage of pupils achieving the National Qualification Framework level 2:	57%	64%	57%	58%
Average capped wider points score at: (measure of the totality of qualifications attained by all pupils)				
Key Stage 4	351	364	342	343
Key Stage 5	844	879	786	800
Higher education students living in each area: 2013/14				
Higher education students domiciled in the constituency area	2,110	2,010	18,740	98,855
Higher education students living in the constituency area during term-time	990	7,010	14,260	127,015
School absence rates by school type: 2015				
All absences rate: primary schools:				
All absences rate	5.3%	5.0%	5.2%	5.1%
Unauthorised absences rate	0.6%	0.3%	0.5%	1.0%
Percentage of persistent absentees	1.8%	1.3%	1.6%	1.4%
All absences rate: secondary schools:				
Percentage of persistent absentees	1.8%	1.3%	1.6%	1.4%

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
All absences rate	6.4%	5.6%	6.2%	6.2%
Unauthorised absences rate	1.1%	0.6%	1.0%	1.3%
Percentage of population 16 to 24 not in employment, education or training: three-year average, 2012-2014				
Percentage of population aged 16 to 24 not in employment, education or training	No data	No data	17%	18%
Percentage of the population aged 3 and over who can speak Welsh: 2011 Census				
Percentage aged 3+ who can speak Welsh	57%	66%	27%	19%
Average overall health scores: calculated from the 2012, 2013 and 2014 data collection				
Limited by health problem/disability (%)				
Limited a lot	13%	11%	14%	16%
Limited at all	33%	28%	32%	33%
Fair/Poor Health	17%	16%	17%	33%
SF-36 (score generated from 36 questions on health status, a higher score indicating better physical or mental health)				
Average mental component summary score	51.4	50.4	50.4	49.6
Average physical component summary score	51.4	50.4	50.4	49.6
Percentage of adults currently being treated for selected illnesses or conditions: calculated from the 2012, 2013 and 2014 data collection				
Adults currently treated for selected illnesses or conditions:				
Arthritis	12%	9%	11%	12%
A respiratory illness	14%	13%	13%	14%
Asthma	11%	10%	10%	10%

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
Any heart condition	9%	6%	8%	9%
High blood pressure	20%	14%	19%	20%
Diabetes	7%	6%	6%	7%
Any mental illness	9%	8%	10%	12%
Percentage of adults with selected lifestyle traits: calculated from the 2012, 2013 and 2014 data collection				
Adults who currently smoke	22%	24%	21%	21%
Adults meeting the physical exercise guidelines	34%	31%	31%	30%
Adults with zero active days	31%	30%	32%	34%
Adults who are obese - BMI 30 or more	23%	18%	21%	23%
Percentage of Welsh Health Survey respondents in selected age categories: calculated from the 2012, 2013 and 2014 data collection				
16-24	12%	23%	14%	15%
25-34	13%	13%	14%	14%
35-44	15%	16%	15%	15%
45-54	15%	16%	17%	17%
55-64	17%	13%	16%	15%
65-74	15%	10%	13%	13%
75+	13%	8%	11%	11%
General medical practitioners (GPs): 2014				
Number of NHS GPs serving area per:				

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
10,000 population	6.7	8.5	6.5	6.6
10,000 registered patients	7.1	7.7	6.3	6.4
Percentage of practices that offer appointments:				
before 08:30, at least two week mornings	18%	8%	10%	14%
at any time between 17:00 and 17:30, at least two week days	82%	92%	92%	96%
at any time between 17:30 and 18:00, at least two week days	82%	50%	52%	74%
at any time between 18:00 and 18:30, at least two week days	27%	8%	8%	23%
after 18:30 at least one day a week	0%	0%	0%	7%
House prices by property type: 2014				
Detached properties	£213,000	£208,000	£209,000	£229,000
Semi-detached properties	£113,000	£151,000	£131,000	£142,000
Terraced properties	£113,000	£114,000	£114,000	£116,000
Flats/maisonettes	£155,000	£99,000	£114,000	£122,000
All properties	£168,000	£146,000	£157,000	£158,000
Percentage of dwellings in council tax valuation bands: 31 March 2015				
Bands A – B (A = under £44,000; B = £44,001 to £65,000)	33%	43%	27%	36%
Bands C - D (C = £65,001 to £91,000; D = £91,001 to £123,000)	40%	41%	46%	38%

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
Bands E – F (E = £123,001 to £162,000; F = £162,001 to £223,000)	23%	14%	22%	21%
Bands G - I (G = £223,001 to £324,000; H = £324,001 to £424,000; and I = £424,001 and above)	4%	2%	5%	5%
Access to schools and services by private and public transport: 2014 (minutes)				
By private transport:				
Nearest NHS GP	3	3	3	3
Nearest pharmacy	3	3	2	2
Nearest primary school	2	2	2	2
Nearest secondary school	6	5	4	4
Nearest food shop	2	2	2	2
Nearest post office	2	2	1	1
Nearest library	5	4	4	4
Nearest leisure centre	6	4	4	4
Nearest petrol station	3	3	2	2
By public transport:				
Nearest NHS GP	17	12	13	12
Nearest pharmacy	19	14	13	12
Nearest primary school	9	6	8	8
Nearest secondary school	21	15	16	16
Nearest food shop	12	9	9	9

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
Nearest post office	11	8	9	9
Nearest library	21	14	16	16
Nearest leisure centre	23	16	17	17
Percentage of dwellings more than the given travel time by private and public transport: 2014				
By private transport:				
5 minutes from an NHS GP	17%	15%	12%	12%
5 minutes from a primary school	24%	20%	20%	18%
10 minutes from a secondary school	38%	21%	24%	21%
5 minutes from a food shop	8%	6%	5%	5%
5 minutes from a post office	5%	3%	3%	3%
5 minutes from a library	41%	34%	23%	21%
10 minutes from a leisure centre	19%	4%	6%	6%
5 minutes from a pharmacy	21%	16%	10%	8%
5 minutes from a petrol station	21%	13%	9%	8%
By public transport:				
15 minutes from an NHS GP	42%	21%	23%	20%
20 minutes from a primary school	7%	3%	4%	5%
30 minutes from a secondary school	23%	6%	9%	10%
10 minutes from a food shop	37%	33%	23%	17%
25 minutes from a post office	46%	33%	22%	18%

Measure	Local (equivalent of KSA)		Regional	National
	Anglesey	Arfon	North Wales	Wales
20 minutes from a library	43%	19%	22%	20%
30 minutes from a leisure centre	25%	12%	13%	13%
15 minutes from a pharmacy	10%	7%	5%	5%
Reported road accidents per 10,000 population: 2014				
Number of road accidents per 10,000 population	15.4	17.0	19.9	19.0
Of those accidents, the percentage that were:				
Fatal	3%	2%	2%	2%
Serious	28%	27%	22%	17%
Slight	69%	71%	76%	82%
Casualties of reported road accidents per 10,000 population: 2014				
Number of road casualties per 10,000 population	22.5	23.2	27.5	26.5
Of those casualties, the percentage that were:				
Fatal	2%	1%	1%	1%
Serious	23%	22%	18%	14%
Slight	75%	77%	80%	85%

N HIA appendix – consultation

N.1 Introduction

- N.1.1 The HIA has included opportunities for stakeholders and the public to comment on the approach to, and scope of, the HIA. For health stakeholders, the key opportunities have been via the HIA Steering Group and HIA consultation interviews, including a workshop with voluntary sector organisations. For the public, the key opportunity to date has been to comment on the HIA Scoping Report in 2014 and HIA Interim Report in 2016 (further details are provided in table N-2 and table N-3).
- N.1.2 Comments relating to health and well-being in response to the EIA scoping opinions in 2016 and 2017 have also informed the HIA, see table N-1.
- N.1.3 The HIA has sought to give a voice to local community understanding of, and concerns about, the Project. For example, a community survey was conducted with 509 randomly selected members of the public on the Isle of Anglesey in 2016. The HIA has also fed back many of the issues raised during the various consultations to the design and environmental assessment teams to inform their approach.
- N.1.4 The following sections summarise the main themes raised during consultation and how they were taken into account. In addition, the individual topic sections include a summary of relevant consultation feedback that has informed specific assessments.

N.2 Consultation with health stakeholders at a project level

- N.2.1 This section provides a topic-specific account of scoping, statutory and non-statutory consultation undertaken to support the assessment. For a full overview of the wider environmental consultation activities undertaken for the Project, refer to Environmental Statement chapter A7 (consultation with environmental stakeholders) (Application Reference Number: 6.1.7) and the Consultation Report (Application Reference Number: 5.1).

Planning Inspectorate EIA Scoping Opinion

- N.2.2 The three formal Scoping Opinions received by Horizon on the suggested content of the Environmental Statement (i.e. the scope of the EIA) also included information relevant to the scope of the HIA.
- N.2.3 In May 2017, Horizon submitted an Addendum to the March 2016 Wylfa Newydd DCO Project EIA Scoping Report to the Planning Inspectorate. Following a period of consultation with stakeholders, a supplementary Scoping Opinion (to that issued in April 2016) was received from the Secretary of State (via the Planning Inspectorate) in June 2017.
- N.2.4 Table N-1 provides an account of how comments raised by stakeholders in the 2010, 2016 and 2017 EIA Scoping Opinions have been considered in the HIA.

Table N-1 Key issues raised throughout scoping

Key issue raised	Action taken
In the June 2017 Scoping Opinion, the Secretary of State noted: "...it is a matter for the Applicant to decide whether or not to submit a stand-alone Health Impact Assessment (HIA)."	A stand-alone HIA is being submitted to support the application for development consent.
In the June 2017 Scoping Opinion, the IACC noted: "...comments ... raised by the Council in relation to the 2016 scoping opinion still remain valid."	These are discussed below.
In the June 2017 Scoping Opinion, the Llanbadrig Community Council noted that information should be provide in the Environmental Statement on a range of issues (not an exhaustive list):	The issues listed are relevant to the HIA scope and information is provided within HIA topic sections. These issues are also covered in the Environmental Statement (Application Reference Number: 6.1.6), WLIA (Application Reference Number: 8.21) and EqlA (Application Reference Number: 8.22).
"- the impact of workers on community facilities and amenities regardless of facilities offered onsite e.g. schools, health centres, emergency services etc. ..."	This is taken into consideration in volume C of this HIA Report. See HIA topic section on demand for medical and healthcare services (section C.6).
"- the impact of light pollution, noise, dust and emissions from plant especially where powered by diesel engines (more so in the Tregele and Cemaes areas) ..."	This is taken into consideration in volume D of this HIA Report. See HIA topic sections on air quality; noise; and community identity, social networks and culture (sections D.2, D.3 and D.4).
"- impact of having such a concentration of people on the Welsh language and culture ..."	This is taken into consideration in volumes C and D of this HIA Report. See HIA topic section on community identity, social networks and culture (see sections C.8 and D.4).
"- the implications of the project and its effect on the Anglesey Coastal Path ..."	This is taken into consideration in volume D of this HIA Report. See HIA topic section on physical activity (see section D.5).
In the June 2017 Scoping Opinion, PHE noted: "... we would ask the developer to confirm there is no new electrical infrastructure that may have a public health impact associated with the site,	See section A.5 if this HIA Report for a discussion of the scope of HIA in relation to non-ionising radiation.

Key issue raised	Action taken
otherwise PHE expects to see an assessment of the potential health impact associated with the electric and magnetic fields arising from such equipment, including substations and the connecting cables or lines.”	
In the April 2016 Scoping Opinion, the Secretary of State noted: “The Secretary of State recommends that there is a suitable degree of cross reference between these documents [including the HIA] and the relevant Sections of the [Environmental Statement] to minimise duplication and to assist in the overall cohesion of the environmental assessment information submitted as part of the DCO application.”	Appropriate cross-referencing is made between the HIA, Environmental Statement (Application Reference Number: 6.2 to 6.8), WLIA (Application Reference Number: 8.21) and EqIA (Application Reference Number: 8.22) to minimise duplication and to direct readers to information in other assessments on similar issues.
In the April 2016 Scoping Opinion, the Secretary of State noted: “The methodology for the HIA should be agreed with the relevant statutory consultees”	The HIA methods have been developed in conjunction with the HIA Steering Group. Comments on the HIA methods have been taken into account. With the exception of adopting WHO standards as a significance criterion for air quality effects (consensus within the Steering Group was not reached on this issue) the HIA methods have been agreed with the relevant statutory consultees.
In the April 2016 Scoping Opinion, the Secretary of State noted: “the HIA should... take into account mitigation measures for acute risks.”	The HIA has developed mitigation measures (including for acute and chronic risks).
In the April 2016 Scoping Opinion, the IACC noted: “It is vital that the [HIA] is accompanied by the development of appropriate mitigation. Given the potential impacts of this significant proposed development on vulnerable people (both during construction and operation) ...”	The HIA Report for the development consent application includes appropriate mitigation, including mitigation for vulnerable groups during construction and operation.
In the April 2016 Scoping Opinion, the IACC noted: “[The Well-being of Future Generations (Wales) Act 2015] must be fully acknowledged and taken into account by the applicant...”	The HIA Report for the development consent application includes appropriate regard to the Well-being of Future Generations (Wales) Act 2015. Table A-6 in volume A is provided to assist public bodies in discharging their duties with respect to the Act.

Key issue raised	Action taken
In the April 2016 Scoping Opinion, PHE noted: "It is important that the EIA identifies and assesses the potential public health impacts of the activities at, and emissions from, the installation. Assessment should consider the development, operational, and decommissioning phases."	Whilst the PHE statement is directed at the Environmental Statement, the likely significant public health effects of the Project are discussed in the HIA.
In the April 2016 Scoping Opinion, PHE noted: "There is a potential health impact associated with the electric and magnetic fields around substations and the connecting cables or lines."	See section A.5 if this HIA Report for a discussion of the scope of HIA in relation to non-ionising radiation.
In the April 2010 Scoping Opinion, the Secretary of State noted: the potential effects on human health and well-being, as well as potential effects on local demographics, should be considered.	Potential effects on human health and well-being are addressed throughout this HIA Report.
In the April 2010 Scoping Opinion BCUHB requested that a comprehensive HIA accompany the EIA.	Addressed through this comprehensive HIA Report.

Statutory consultation

Pre-Application Consultation Stage One (PAC 1)

- N.2.5 The aim of Pre-Application Consultation Stage One (PAC 1), undertaken in late 2014, was to share information available at the time with Horizon's key consultees and stakeholders, in order to consider feedback in ongoing design development. Consultation for the HIA Scoping Report was conducted in parallel to PAC 1. Table N-2 outlines how key issues raised in response to the HIA Scoping Report have been considered in the assessment.

Table N-2 Key issues raised during PAC 1

Key issue raised	Action taken
Food Standards Agency requested consideration of the health impacts to the wider UK outside Wales. This level should go between the national (Wales) and international (outside UK) areas.	This is taken into consideration. Specifically, the HIA appendix in volume L describes how the HIA considers the following geographic levels: site-specific; local (Anglesey and Arfon); regional (north Wales or BCUHB area); national (Wales and the rest of the UK); and international.
BCUHB raised concerns regarding increases in the population during the construction stage.	This is taken into consideration through the scope of HIA topics discussed in volume A (see section A.5) and the assessments undertaken in volumes C (project-wide

Key issue raised	Action taken
	effects), D (WNSA Development effects) and I (cumulative effects).
BCUHB raised concerns regarding effects on primary care; emergency departments; district general hospital services; and mental health services.	This is taken into consideration in volume C of this HIA Report. See HIA topic section on demand for medical and healthcare services (section C.6).
BCUHB raised concerns regarding increases in the population for the operation of the Power Station.	This is taken into consideration in volumes C (project-wide effects), D (WNSA Development effects) and I (cumulative effects) of this HIA Report.
BCUHB raised concerns regarding effect of increased transport during construction stage.	This is taken into consideration in volume C of this HIA Report. See HIA topic section on transport (section C.5).
BCUHB raised concerns regarding public health and safeguarding issues during construction stage, e.g. substance misuse, sexual health, safeguarding, health protection.	This is taken into consideration in volume C of this HIA Report. See HIA topic section on lifestyles and behaviour (section C.7).
BCUHB raised concerns regarding community understanding of the effects of nuclear power on mental and physical health and well-being, including health service capacity to respond to public requests for specialist advice, e.g. in relation to specific disease or illness in the area.	This is taken into consideration in volume C of this HIA Report. See HIA topic sections on demand for medical and healthcare services (section C.6) and public understanding of risk (section C.11).
BCUHB noted the opportunity for legacy benefits in terms of potential health and well-being facilities as well as broader public health benefits in areas such as community engagement, sport and leisure that could support the Health Board's role of supporting and promoting health and well-being.	This is taken into consideration throughout the HIA.
PHE requested that the applicant consider the cumulative effects from other projects or developments that are likely to occur within the same geographical area at the same time as the Project.	This is taken into consideration in volume I (cumulative effects).

Key issue raised	Action taken
PHE noted that the development involves new power lines and associated equipment.	This is taken into consideration in volume I (cumulative effects), which notes that a separate application, including a rapid HIA, is being undertaken by National Grid for the power line connection works to the Power Station.
People Against Wylfa B submitted a report concerning the sea to land transfer of radioactive material and the subsequent potential for adverse health effect.	The issue is considered in volume C of this HIA Report. This was discussed with the Environmental Statement Radiological Assessment team.

Pre-Application Consultation Stage Two (PAC 2)

- N.2.6 In September 2016, Horizon shared an HIA Interim Report as part of Pre-Application Consultation Stage Two (PAC 2). This presented interim details of the predicted health and well-being effects. Table N-3 outlines how key issues raised during PAC 2 have been considered in the assessment.

Table N-3 Key issues raised during PAC 2

Topics	Action taken
Use of national or WHO standards; effects on regional transport infrastructure (north Wales); operational stage; mitigation	This is taken into consideration in volumes C and D of this HIA Report. See the HIA topic sections on air quality (sections C.2 and D.2) and noise (sections C.3 and D.3). Methods, including reference to national and WHO standards are discussed in the HIA appendix in volume L. Effects on regional transport infrastructure are also considered in the Environmental Statement chapter C2 (Application Reference Number: 6.3.2).
Impacts on local and regional transport infrastructures; Menai and Britannia Bridges; A5025 east of the Wylfa Newydd Development Area; effects on emergency services; road safety; operational stage; active travel (workforce)	Transport effects are taken into consideration in volume C of this HIA Report. See HIA discussion on transport (section C.5). The scope of the HIA has been expanded to include the local road network (e.g. the A5025, A55, A5 and A487). Effects on regional transport infrastructure are also considered in the Environmental Statement chapter C2 (Application Reference Number: 6.3.2).

Topics	Action taken
Link between on-site and off-site provision; use of NHS services; emergency services; labour churn; need for detailed planning	Horizon is working with service providers to agree appropriate mitigation actions to protect the services provided to local communities. This is taken into consideration in volume C of this HIA Report. See HIA topic section on demand for medical and healthcare services (section C.6).
Interaction between community and workforce: alcohol; drug use; [sexual behaviour is addressed in <i>safeguarding</i> below]; drink-driving; injury and safety including fire risk	In its Workforce Management Strategy, Horizon sets out standards of behaviour for its workforce. This is taken into consideration in volume C of this HIA Report. See HIA topic section on lifestyle and behaviour (section C.7).
Labour churn with specific reference to health and social care community services; skills and other displacement effects	Horizon has been working with stakeholders to identify a range of measures, including the development of a Jobs and Skills Strategy (Application Reference Number: 8.3). Horizon has met with the IACC, BCUHB and PHW to discuss implications for health and social care community services.
Workforce health promotion. Changes to local environment, and/or facilities with regard to physical activity.	The occupational health service and the occupational hygiene service would promote healthy behaviour throughout the workforce. Physical activity is considered in section D.5.
Public comments regarding unplanned events.	These comments have informed the assessment. Suggested coverage of some issues, such as emergency planning, have not been included in this HIA Report as these are considered outside the HIA scope.
Question regarding methodology and data.	A report on methodology for the HIA was issued to stakeholders in April 2017. This is the methodology for the HIA and is set out in the HIA appendix in volume L.
Accessibility of HIA report; appropriateness of scope; suggested additions to population groups considered in the assessment.	This HIA Report seeks to provide a clear message while also providing the detail needed to demonstrate the analysis. The assessment is summarised in the standalone HIA non-technical summary accompanying the application for development consent. The scope of the HIA topics has remained consistent with the HIA Scoping Report, although there has been flexibility within topics to consider

Topics	Action taken
	any changes to the specific issues assessed, changes to the Project and/or comments by stakeholders. The HIA team has worked closely with the EIA team to ensure that the scope of the HIA has remained appropriate. The geographical range of population groups has been adapted to account for changes in design. The categories of vulnerable groups considered in the assessment has not been increased.
Data for population of Anglesey and Gwynedd; for workforce (including families and dependants).	The assessment uses a baseline that ranges from national to site-specific. This includes data from the Anglesey Well-being Assessment [RD169]. The baseline is available in the HIA appendix in volume M. Horizon has been working with Menter Newydd to further develop the workforce profile.
Methods: Participation Cymru; Outreach to specific population groups.	Horizon has conducted extensive outreach with communities and individuals across Anglesey. This was conducted in partnership with Medrwn Môn and the IACC, and it is documented in the Consultation Report (Application Reference Number: 5.1).
Effects on health and other public services of the Wylfa Newydd DCO Project and other developments, e.g. National Grid, decommissioning.	Cumulative effects are taken into consideration in the volume I of this HIA Report and in the volume I of the Environmental Statement (Application Reference Number: 6.9).
The gender balance of the workforce, i.e. the construction workforce would be predominantly male and the ancillary workforce would be predominantly female. Concern expressed about the implicit equalities messages this gives about gender roles on the Isle of Anglesey.	The gender balance of the workforce and the effects this can have on gender stereotyping is taken into consideration in the EqIA (Application Reference Number: 8.22). Horizon would operate a proactive approach to implementing its Equality policy.
Links of service providers to Horizon and the governance to strike an agreement.	Horizon is working closely with public service providers towards Statements of Common Ground.

Topics	Action taken
Ensure that the legislation, policy and guidance used in the assessments are relevant for the Anglesey and the Welsh context (with specific reference to well-being and to equalities).	This HIA Report makes reference to the <i>Well-being of Future Generations (Wales) Act 2015</i> ; <i>Social Services and Well-being (Wales) Act 2014</i> ; and IACC Supplementary Planning Guidance. The EqIA (Application Reference Number: 8.22) refers to the <i>Equality Act 2010 (Statutory Duties) (Wales) Regulations 2011</i> .
Link to radiological assessment and permitting process, as well as pylons and electromagnetic fields.	The radiological assessments will be provided under the Environmental Permit application and Article 37 submission. The HIA has a watching brief over the assessment being conducted. The radiological assessment is available in Environmental Statement chapter D14 (Application Reference Number: 6.4.14). The potential health effects from electromagnetic fields are under consideration. The assessment of the potential health and well-being effects arising from pylons is a matter for National Grid. This is considered qualitatively in the cumulative assessment.
With respect to adult social services (potential demand for direct and indirect sex work; trafficking) and safeguarding children and adults considered to be 'at risk' and with care and support needs.	Horizon is working with the IACC, BCUHB, WAS, PHW, NWFRS, NWP and Medrwn Môn to ensure that its provisions for security are aligned with local service providers.
Potable and waste water for the Site Campus; bathing water (Cemaes).	Horizon is working with NRW to ensure that the design of the Site Campus has no adverse impacts on water quality. This is being considered in the Environmental Statement chapter D8 (surface water and groundwater) (Application Reference Number: 6.4.8) and Environmental Statement chapter D13 (marine environment) (Application Reference Number: 6.4.13). The HIA team has had a watching brief on water issues to confirm that this issue should continue to be outside the scope of the HIA.

Topics	Action taken
Welsh language effects specific to health and other public services; translation services.	The HIA considers the potential effect of workforce churn on health and social care community services. This has explicit links to the importance of providing services in both Welsh and English. The WLIA (Application Reference Number: 8.21) provides an in-depth consideration of issues related to Welsh language and culture.
Policies for workforce (including contractors); opportunities for workforce health; smoke-free policy across construction site, in vehicles, in accommodation (smoking-cessation services); welfare facilities at Parc Cybi for drivers; code of behaviour/conduct.	The occupational health service and the occupational hygiene service would promote healthy behaviour throughout the workforce. In its Workforce Management Strategy, Horizon sets out standards of behaviour for its workforce. This is taken into consideration in volume C of this HIA Report. See HIA discussion on lifestyle and behaviour (section C.7).

Pre-Application Consultation Stage Three (PAC 3)

- N.2.7 Table N-4 outlines how key issues raised during Pre-Application Consultation Stage Three (PAC 3), undertaken from May to June 2017, have been considered in the assessment.

Table N-4 Key issues raised during PAC 3

Key issue raised	Action taken
Public risks from exposure to radiation.	The radiological assessments will be provided under the Environmental Permit application and Article 37 submission. The HIA has a watching brief over the assessment being conducted. The radiological assessment is available Environmental Statement chapter D14 (Application Reference Number: 6.4.14).
On-site healthcare providers to work with health agencies at an early stage to formulate plans, and mitigation actions, for workers, and their families if appropriate, in terms of: health and well-being; screening service engagement and provision; vaccine preventable diseases; health related communicable diseases; health related effects of environmental exposures	Consideration of health services for the workforce.
The multi-agency HIA steering group for this development last met	Horizon met with BCUHB and with PHW to discuss ongoing liaison and the role of the

Key issue raised	Action taken
on 03/03/17 and has not yet been able to consider the impact of the planned changes to the workforce and accommodation proposals in PAC3.	HIA Steering Group (July 2017). Further HIA Steering Group meetings to be scheduled in the pre-examination period.
Health Protection and linked healthcare provision, the way in which healthcare services will be provided onsite and alignment with existing healthcare services including screening services.	Consideration of health services for the workforce and for (non-home based) family and dependants.
Re-submission of PAC2 responses by PHW.	PAC2 responses taken into account in this HIA Report.

Non-statutory consultation

HIA Progress Report

- N.2.8 A draft HIA Report was shared with the HIA Steering Group for comment on 4 November 2015. Many useful comments were provided and an HIA Progress Report was issued to the HIA Steering Group as an update and for further feedback ahead of PAC 2. Table N-5 below summarises the main themes of comments made by the HIA Steering Group on the draft HIA Report. This sets out the ways in which these comments:
- were addressed as part of preparing the HIA Progress Report; or
 - informed the Interim HIA Report for PAC 2.
- N.2.9 In addition to the main themes that are set out in Table N-5, the Steering Group provided detailed comments on specific text sections. All comments were taken into consideration against the HIA scope and changes were adopted where appropriate.
- N.2.10 The HIA Progress Report was provided to the HIA Steering Group in 2016 with updated information on the design development and associated health and well-being assessment. Table N-5 outlines how key issues raised in feedback from these stakeholders have been considered in the assessment.

Table N-5 Key issues raised in response to the HIA Progress Report

Key issue raised	Action taken
Include a summary that can be used to inform the 'engagement' process of the HIA, as well as a very detailed 'technical document'. It was noted that the brief non-technical summary included was inadequate and did not appropriately reflect the potential adverse health effects.	The HIA Progress Report was a 'technical document' for the health stakeholder audience. A standalone HIA non-technical summary accompanied the HIA Interim Report at PAC 2 and a standalone HIA non-technical summary accompanies this HIA Report.

Key issue raised	Action taken
Baseline sections need to be clear about the use of areas such as wards and LSOAs. Appropriate caveats are needed to explain the use of QOF data.	This HIA Report includes additional explanatory text to clarify the discussion of wards and LSOAs (see HIA appendix on methods in volume L). Caveats provided by BCUHB have also been inserted and linked to use of QOF data (see HIA appendix on baseline in volume M).
It was noted that the policy context described by the HIA did not refer to some relevant documents.	Additional policy context detail has been included in this HIA Report. This includes reference to the <i>Well-being of Future Generations (Wales) Act 2015</i> . Suggested coverage of some issues, such as emergency planning and counter terrorism, has not been included as these are considered outside the HIA scope.
The reference to WHO guide values in the HIA's methodology for noise and air quality was noted. Comment was made on whether the current discussion of such thresholds and of emerging evidence for even lower thresholds of harm was appropriate. The potential inconsistency of including such information as part of a precautionary approach, whilst also adopting less stringent values used by regulators or set by statute was noted.	This issue has been discussed further with the Steering Group and individual members of the Steering Group. This HIA Report methodology recognises thresholds that are considered acceptable in the UK (e.g. statutory air quality limit values), and also considers the environmental and health baseline and evidence for health effects below these thresholds (see HIA appendix on methods in volume L). This issue was discussed further in June 2017 (see table N-7).
Further mitigation measures were suggested in relation to some potential health effects.	Mitigation measures suggested by the Steering Group have been taken into consideration in the commitments made by Horizon on mitigation (see HIA topic sections in this HIA Report).
Factual corrections and editing points were noted. For example, clearer signposting to the summary assessment tables for each chapter and improving the legibility of that information.	Edits were adopted where possible. These are not listed in detail in this table.

Key issue raised	Action taken
The benefits of a summary of potential decommissioning health effects were noted	A section has been included to this HIA Report summarising potential decommissioning health effects (see HIA appendix on methods in volume L in relation to the Power Station and HIA appendix in volume O in relation to Off-Site Power Station Facilities and Associated Development).

Draft HIA (including draft rapid HIA screening statements)

N.2.11 During September 2017, the draft HIA and its appendices were provided to the HIA Steering Group for comment. Table N-6 outlines key issues raised and how these have been addressed within the HIA.

Table N-6 Key issues raised in response to the draft HIA

Key issue raised	Action taken
Horizon's commitment to HIA, the methods used in the HIA, the Health and Well-being Monitoring Group and other mitigation measures included within the Project in response to stakeholder engagement.	The HIA welcomes and notes the following positive feedback on the September 2017 draft HIA report. PHW (which includes WHIASU, the authority on HIA guidance in Wales) stated that: <i>"All the necessary HIA components are contained within the main HIA report and the methodology followed is robust"</i> . The IACC response stated: <i>"IACC is satisfied that this Assessment contains all the required elements of a comprehensive Health Impact Assessment. It clearly identifies the various policy frameworks, the project itself and specific vulnerable groups."</i> BCUHB also noted that <i>"It is evident that a huge amount of work has been undertaken over many years on this HIA and the decision to undertake a full technical HIA on this development is to be commended."</i>
Request for further clarification of healthcare and emergency service provision for the construction workforce and the process by which this will be agreed.	Health service planning is discussed in section C.6 of this HIA Report (Application Reference Number: 8.19). Further detail has been added in table C-7 on the process by which agreement will be reached between Horizon and health stakeholders regarding the detail of provision of health services for the construction workforce. Further detail has also been added on the Site Campus Medical Centre which would provide on-site healthcare (including GP services) to the construction workforce. The construction workforce will be required, as set out in the Workforce Management Strategy (Application Reference Number: 8.5) to register with and prioritise the use of these facilities. For off-site provision, Horizon is committed to making appropriate contributions to meet the medical and healthcare needs of the construction workforce (secured through a s106 agreement).

Key issue raised	Action taken
Request for clarifications in relation to the scope of the HIA, including the Site Campus, Associated Development and EU Bathing Water at Cemaes Bay.	Confirmation that the scope and findings of the HIA Report (Application Reference Number: 8.19) (including rapid HIA screening) have been kept under review throughout the HIA work leading up to DCO submission. This includes taking into account the spring 2017 changes to the Wylfa Newydd Project and the likely worst-case scenarios of design parameters. Clarifications added to this HIA Report (Application Reference Number: 8.19) that the Site Campus (an Associated Development of the Project) has been assessed using comprehensive HIA methods (rather than rapid HIA methods) as a key component of the activities at the Wylfa Newydd Development Area (see volumes C and D). In relation to the construction workforce accommodated at the Site Campus, this group has been acknowledged as potentially sensitive within the HIA Report volume D chapters on air quality and noise. The HIA has been updated to make reference to Cemaes Bay EU Bathing Water and cross-refer to the Environmental Statement. The HIA team's watching brief on water issues has concluded that this determinant of health should continue to be outside the scope of the HIA (including in relation to the Site Campus).
Request for clarification on the ongoing process for health stakeholder involvement with the Project.	Horizon has held a series of meetings with, and will continue to work with health stakeholders through the Statement of Common Ground process. Horizon will establish and chair a Health and Well-being Monitoring Group that will consider monitoring data relevant to the Project. If appropriate the Group would discuss the need for additional mitigation or follow-up investigation. This HIA Report (Application Reference Number: 8.19) is expected to inform both Statements of Common Ground and the ongoing activities of the Health and Well-being Monitoring Group.

Key issue raised	Action taken
Request for clarification on the community consultation that has informed the HIA in light of the spring 2017 changes to the Project (notably the on-site Site Campus accommodation for circa 4,000 workers at peak).	Clarification added to this HIA Report (Application Reference Number: 8.19) that the HIA consultation has been part of extensive wider consultation for the Project, including Pre-Application Consultation Stage Three and work by Community Involvement Officers (see the Consultation Report (Application Reference Number: 5.1)). With regard to the Community Survey reported in volume Q of the HIA, clarification added that it is considered appropriate for this consultation to continue to inform the HIA and it would be not be proportionate to either disregard, or to re-run, the community survey. This conclusion relates both to their having been alternative plans for temporary workers' accommodation (for circa 3,000 workers at peak) within a similar area (5 miles) and that the change would be unlikely to reverse the generally more sceptical views already expressed in the community survey by people near Cemaes.
Support for the technical detail within the HIA, but request for improved clarity on the key messages.	An Executive Summary has been added at the beginning of the HIA Report (Application Reference Number: 8.19) to increase the accessibility of the technical headlines of the HIA, including its key conclusions. The HIA Non-Technical Summary (Application Reference Number: 8.18) has been edited to simply the technical content (e.g. project description) and clarify that the views expressed are those of Horizon.

Topic-specific stakeholder engagement

N.2.12 In addition to the three formal stages of consultation outlined above, topic-specific consultation has been undertaken with relevant stakeholders. Table N-7 summarises the details of the consultation that has taken place with respect to the HIA.

Table N-7 Key issues raised through stakeholder engagement

Date	Stakeholder	Format and title	Issues arising	Action taken
Eight meetings between April 2011 – October 2015	HIA Steering Group	Meeting: HIA Steering Group	Regular meetings to guide the HIA as it progresses.	Views considered within this HIA Report.
August 2011	Sub group of the HIA Steering Group	Workshop	Application of the IACC screening tool to the Project as part of the scoping process. Further details are in the HIA Scoping Report.	Views considered within this HIA Report.
July 2015	IACC	Interview (by telephone)	Expectations and concerns regarding the Project with special regard to change in housing demand and supply as well as changes to local air quality (including dust emissions) and noise.	Views considered within this HIA Report.
July 2015	IACC	Interview (by telephone)	Expectations and concerns regarding the Project with special regard to change in housing demand and supply and change in employment, income and economic development.	Views considered within this HIA Report.
September 2015	PHW	Interview (by telephone)	Expectations and concerns regarding the Project with regard to the public health agenda and PHW priorities.	Views considered within this HIA Report.
October 2015	BCUHB	Interview (by telephone)	Expectations and concerns regarding the Project with regard	Views considered within this HIA Report.

Date	Stakeholder	Format and title	Issues arising	Action taken
			to the public health agenda and BCUHB priorities.	
October 2015	People Against Wylfa B	Telephone and email correspondence	People Against Wylfa B comments on the HIA and the risks to the public from nuclear power plants.	A meeting was discussed with People Against Wylfa B. The offer was declined by People Against Wylfa B. People Against Wylfa B stated that they intend to respond to the PAC 2 Consultation Document.
October 2015	People Against Wylfa B	Email: Letter from Dr Ian Fairlie: Submission re HIA on the proposed nuclear power station at Wylfa B	Risks to the public from routine emissions at nuclear power plants.	Views considered within literature review (Appendix B to the HIA Progress Report issued to the HIA Steering Group in February 2016).
October 2015	Voluntary sector organisations	Workshop	Expectations and concerns regarding the Project with regard to the community health and well-being of people living and working on the Isle of Anglesey.	Views considered within this HIA Report.
October 2015	Energy Island Community Safety and Wellbeing Group	Meeting	Expectations and concerns regarding the Project with regard to service provision.	Views considered within this HIA Report.
February 2016	HIA Steering Group	Meeting: HIA Steering Group	Various.	Various relating to the working of the Steering Group and the process of the HIA.

Date	Stakeholder	Format and title	Issues arising	Action taken
February 2016	Voluntary sector representatives	Notes from phone calls with voluntary sector	Various relating to the role of the community and voluntary sector.	Views considered within this HIA Report.
June 2016	HIA Steering Group	Meeting: HIA Steering Group	Various.	Various relating to the working of the Steering Group and the process of the HIA.
July 2016	BCUHB and partners	Attendance at BCUHB workshop regarding health services	Health services for the workforce.	Consideration of health services for the workforce.
October 2016	IACC and partners	Community, Health, Well-being & Safety Group – HIA team attendance	Health and other services for the workforce.	Consideration of health services for the workforce.
October 2016	BCUHB and partners	Workshop: BCUHB Programme Group Workshop – HIA team attendance	Health services for the workforce.	Consideration of health services for the workforce.
October 2016	Resident and community groups	Workshop	Potential health and well-being effects, both positive and negative, of the proposals for the Power Station.	Views considered within this HIA Report.
October 2016	IACC and partners	Meeting: L4 Community Cohesion meeting – HIA team attendance	Project approach to community cohesion.	Approach to community cohesion considered.
December 2016	BCUHB	Teleconference: BCUHB meeting	Health services for the workforce.	Consideration of joint working to identify needs for health services for the workforce

Date	Stakeholder	Format and title	Issues arising	Action taken
December 2016	PHW	Teleconference: PHW meeting	Liaison between HIA team and PHW and the HIA Steering Group.	Set up further meeting with BCUHB and with HIA Steering Group.
December 2016	IACC	Meeting: Community Cohesion meeting – HIA team attendance	Coverage of community cohesion by the assessments.	Community Cohesion Report has been prepared (Environmental Statement appendix C1-3) (Application Reference Number: 6.3.10). Matters discussed have informed this HIA Report.
January 2017	PHW	Meeting: Briefing for Interim Chair of Wylfa Newydd HIA Steering Group	Update of Project and next steps; Terms of Reference for Steering Group; action since previous Steering Group; next Steering Group meeting.	Link between the HIA Steering Group and the Level 3 <i>Health and Well-being</i> Focus Group. The <i>Health and Well-being</i> Focus Group was one of eight Focus Groups. These were set up to develop, and as far as possible reach agreement on, the evidence base, an understanding of principal impacts and mitigation strategies for a number of key issues associated with the Project ahead of the submission of the application for development consent to the Planning Inspectorate. The Focus

Date	Stakeholder	Format and title	Issues arising	Action taken
				Groups operated within the Level 1 to 4 engagement framework that Horizon established with IACC, NRW and Welsh Government. The Focus Groups operated as Level 3 meetings, with the Level 4 meetings remaining to discuss matters of detail
January to May 2017	IACC; WG; BCUHB; PHW; WAS; NWP; NWFRS	Meetings: Level 3 Focus Group meetings	Identification of issues arising from PAC2 and Level 4 meetings and progress towards Statements of Common Ground.	A log of issues was maintained and updated following each meeting including actions taken at Level 4 meetings. The following documents were issued to the Focus Group: <i>Health and well-being: approach to assessment and common ground for the Wylfa Newydd Project</i> ; and <i>Health and well-being: mitigation and enhancement strategy for the Wylfa Newydd Project</i> . Comments on these documents from IACC have been taken into account in this HIA Report.

Date	Stakeholder	Format and title	Issues arising	Action taken
February 2017	IACC	Meeting: Wylfa Newydd Safeguarding	Safeguarding for vulnerable adults and children with regard to the Project.	Conducted interviews with the IACC, BCUHB, WAS, PHW, NWFRS, NWP and the Welsh Government with a view to confirming invitees for a workshop; Horizon shared the link to its current Modern Slavery Act 2015 Statement with the IACC.
February 2017	PHE	Teleconference: Wylfa Newydd HIA - Liaison with PHE	Coverage of radiological assessment within the application for development consent.	Confirmed that there had been no change to reactor technology between PAC 2 and PAC 3 and confirmed the timing of the radiological assessment. Confirmed that actual radiological risks to be considered in Environmental Statement, Environmental Permitting (Radioactive Substances Regulation) application and the Article 37 submissions. HIA to consider public understanding of risk
March to May 2017	IACC, BCUHB, WAS, PHW, NWFRS, NWP	Teleconferences (with each stakeholder): Safeguarding	Issues regarding safeguarding and discussion on how to move forward.	Identified a summary of issues with each partner. Scheduled a workshop with IACC, BCUHB, WAS,

Date	Stakeholder	Format and title	Issues arising	Action taken
	and the Welsh Government			PHW, NWFRS and NWP. Invited Medrwn Môn to take part in the workshop.
March 2017	BCUHB and partners	Meeting: Health Services Planning	Timeframe and process to reach agreement regarding health services.	Various including ongoing liaison regarding health services planning.
March 2017	HIA Steering Group	Meeting: HIA Steering Group	Progress update on Wylfa Newydd HIA and role of the Steering Group.	Provided detailed information on spring 2017 changes to the Project design and workforce. Various actions including provision of information to HIA Steering Group.
June 2017	IACC, PHW and NRW	Teleconference: HIA Air Quality	Approaches to non-threshold effects for some pollutants in the assessment of air quality.	Noted that matters regarding air quality remain unresolved. Views considered in this HIA Report.
June 2017	IACC and BCUHB	Meeting: Churn Health & Social Care	Potential effects and mitigation regarding labour churn in the health sector and for social care with particular attention to bilingual (Welsh-English) staff.	Provided further information about facilities management workforce (e.g. distribution in time of jobs over the construction period; breakdown by sector; salary levels).
July 2017	BCUHB and PHW	Meeting: Discussion regarding the process and the role of the HIA Steering Group	The role for the HIA Steering Group with regard to the Project and the process and timetable for the HIA and the DCO submission	Actions relating to ongoing liaison between BCUHB, PHW and Horizon and to

Date	Stakeholder	Format and title	Issues arising	Action taken
				the role of the HIA Steering Group.
July 2017	IACC, BCUHB, WAS, PHW, NWFRS, NWP and Medrwn Môn	Meeting: Safeguarding	Mitigation measures with regard to the construction workforce, the planned activity of the Project concerning safety and security and the requirement to safeguard children and adults 'at risk' with care and support needs.	Agreement that safeguarding must be clearly defined, the importance of organisational policies and priorities for this topic and that robust indicators of need are required. Further dialogue is also required. This is considered in the HIA Report.
November 2017	BCUHB and PHW	Teleconference: Discussion regarding the timing of the next process and the role of the HIA Steering Group	The role for the HIA Steering Group and the need for, and objectives, of a further meeting of the HIA Steering Group.	Contacting HIA Steering Group and arranging meeting.
December 2017	BCUHB, PHW and WAS	Meeting: Level 4: Wylfa Newydd HIA - Statements of Common Ground	Various including update on the Project and on the Statement of Common Ground process and comments on first draft of Statement of Common Ground.	Ongoing dialogue through Statement of Common Ground process.
January 2018	PHW	Meeting: Level 4: Wylfa Newydd HIA - Statements of Common Ground - PHW	Various including update on the Project and on the Statement of Common Ground process and comments on first draft of Statement of Common Ground.	Ongoing dialogue through Statement of Common Ground process.
January 2018	HIA Steering Group	Meeting: HIA Steering Group	Various including update on the Project and on the Statement of	Brought the Steering Group to a close; thanked all

Date	Stakeholder	Format and title	Issues arising	Action taken
			Common Ground process; high-level comments on the HIA Report.	Steering Group members for their commitment, input and advice; ongoing dialogue through Statement of Common Ground process.

N.3 HIA community consultation

Community consultation

- N.3.1 Community consultation has been conducted through the Community Involvement Officers funded by Horizon. Their role is to help strengthen links with local communities. The three officers are based at the IACC, Medrwn Môn and Horizon, and they have talked with people about a range of topics, for example the services people access in their communities, the ways that people access information and the major issues within communities. Over eight months, the Community Involvement Officers have engaged over 2,390 people [RD64].
- N.3.2 As noted in table N-7 above, the HIA team has organised two workshops with community groups. The first was in October 2015 and was for community and voluntary sector organisations. Issues raised included:
- travel infrastructure, transport and access;
 - mode of communication;
 - service provision;
 - commercial sex work and sexual violence;
 - employment;
 - education;
 - historic events;
 - housing; and
 - Welsh language.
- N.3.3 The findings from this workshop were used to inform the HIA Progress and Interim Reports.
- N.3.4 The second workshop was held at the Valley Hotel in Anglesey on 11 October 2016. The workshop was targeted at people aged 50 and over. Consultation with other age groups was conducted through the Community Involvement Officers and thus was not conducted specifically for the HIA. Thirty people attended the workshop. The workshop explored the potential health and well-being effects, both positive and negative, of the proposals for the Power Station. The workshop aimed to enable people to present their views, hopes and concerns regarding the proposals.
- N.3.5 The workshop was planned and facilitated in partnership with the Community Involvement Officers. The workshop was organised according to 'asset-based community development' principles [RD212]; [RD213]; [RD214]; [RD215] whereby people work together to identify important local qualities of an area (strengths and assets); to critically address hopes and challenges; and, finally, to devise solutions to challenges which draw on the important local qualities. Assets were grouped into the following themes:
- community life;
 - outdoor space;
 - transport; and

- local people and networks.
- N.3.6 Hopes and concerns relating to the construction and operation stages were summarised as follows
- environment;
 - housing;
 - transport;
 - access to healthcare and medical services;
 - lifestyle and behaviours;
 - crime, community safety and understanding of risk;
 - community identity, social networks and culture; and
 - education, training and the local economy.
- N.3.7 The findings from this workshop were used to inform the HIA Report.

Community survey

- N.3.8 A community survey was conducted. Telephone interviews were held with 509 randomly selected members of the public on the Isle of Anglesey between late September and October 2016. People on the Isle of Anglesey could choose to conduct the interviews in Welsh or English. The survey was undertaken by Beaufort Research, with each interview lasting approximately 10 minutes.
- N.3.9 The questionnaire was designed based on a conceptual model informed by a review of similar surveys, social science and psychology. Questions explored cognitive and emotional responses to the Project (e.g. cognitive: support or lack of support for the Project; emotional: feelings such as “concern” about the Project), and also attitudes towards its potential behavioural effects (e.g. changes in the behaviour of affected people).
- N.3.10 The community survey provides evidence for the assessment of subjective issues within the Project impact assessments (for example: this HIA Report, Environmental Statement (Application Reference Number: 6.3.1), WLIA (Application Reference Number: 8.21) and EqlA (Application Reference Number: 8.22), for which other evidence sources are limited. The results are available in volume Q of this HIA Report.

O HIA appendix – rapid HIA screening statements

O.1 Introduction and approach to rapid Health Impact Assessment screening

Purpose of this document

- O.1.1 This appendix contains the rapid HIA screening statements for the following Associated Development:
- Off-Site Power Station Facilities;
 - Park and Ride;
 - A5025 Off-line Highway Improvements; and
 - Logistics Centre.
- O.1.2 These inform volumes E to H, respectively, of this HIA Report prepared by Horizon Nuclear Power Wylfa Limited (Horizon) to support the application for development consent for the Wylfa Newydd DCO Project.
- O.1.3 The Site Campus (an Associated Development of the Wylfa Newydd DCO Project) has been assessed in the HIA Report as a component of the activities at the Wylfa Newydd Development Area (see volumes C and D). This prominence is due to the potential health and well-being effects associated with the Project's construction workforce (including the location of their accommodation) having a cross-cutting relevance to the scope of the HIA. For this reason the Site Campus is not the subject of a separate rapid HIA.
- O.1.4 These rapid HIA screening statements document the rapid HIAs; the conclusion that there would be no potentially significant health effects arising from each Associated Development that warrant further assessment; and that all issues are, therefore, screened out.
- O.1.5 The suite of rapid HIAs for the Project differ from typical practice in two regards. Firstly, the rapid HIAs are part of the wider comprehensive HIA work that appropriately covers many project-wide issues on health. Secondly, the HIA team were able to work closely and iteratively with the design teams and other assessment teams from the outset. This allowed for any potentially significant effects to be identified early and either be designed out or inform the Project wide mitigation to reduce potentially adverse health effects below the threshold of significance. As such, by the point of formal rapid HIA screening no potentially significant adverse effects remained, and the potentially beneficial effects did not warrant further assessment (e.g. due to coverage within the HIA Report). The project-wide mitigation measures informed by the Rapid HIAs are listed in volumes E to H of this HIA Report. This integrated approach to design and incorporation of specific health mitigation measures into codes of construction practice and the Workforce Management Strategy is considered best practice.

Background

- O.1.6 Horizon is applying to the Secretary of State under the Planning Act 2008 for development consent to construct, operate and maintain a new nuclear power

station on land west of Cemaes on Anglesey. Section 31 of the Planning Act 2008 provides that a Development Consent Order (DCO) is required to the extent that a development is, or forms part of, a Nationally Significant Infrastructure Project (NSIP). The Wylfa Newydd DCO Project is an NSIP.

HIA in general

- O.1.7 HIA is undertaken in order to identify and assess the potentially significant beneficial and adverse effects of a project on health and well-being. HIA suggests ways in which opportunities for health gain can be increased and risks to health can be avoided or mitigated. The HIA also highlights ways in which health effects may be distributed unevenly. It seeks to address existing health inequalities and avoid the creation of new ones.
- O.1.8 Health is understood as a positive concept that encompasses mental, physical and social well-being.
- O.1.9 Well-being is an intrinsic aspect of health that, while not always explicitly stated, is implicit in any reference to health. For clarity and ease of reading, population health and well-being is abbreviated to 'health' in the rest of the document.
- O.1.10 Determinants of health are the range of personal, social, economic and environmental factors which determine the health status of individuals or populations [RD2].
- O.1.11 A health outcome is a change in the health status of an individual, group or population which is attributable to a planned intervention or series of interventions, regardless of whether such an intervention was intended to change health status [RD2].

HIA across the Project

- O.1.12 The HIA work across the Project has followed Welsh guidance [RD1] and has been overseen by a steering group. The 'HIA Steering Group' ensures that local stakeholders have participation in, and a sense of ownership of, the HIA process. The HIA Steering Group comprises representatives from:
 - BCUHB;
 - the Wylfa Project Liaison Group (representing local community interests);
 - PHW;
 - the Welsh Government;
 - the WHIASU;
 - the IACC; and
 - Horizon.
- O.1.13 Natural Resources Wales, Public Health England and the ONR are observers at HIA Steering Group meetings.
- O.1.14 The HIA Steering Group terms of reference describe the role of the group as a process for guiding and reaching consensus between stakeholders on the screening, scoping, assessment, reporting and monitoring of the HIA work for the Project.

O.1.15 In agreement with the HIA Steering Group, two recognised types of HIA processes are being used:

- a 'comprehensive HIA' process for the application for development consent to the relevant Secretary of State, focusing on the construction, operation and decommissioning of the Power Station (but also including the findings from rapid HIA work).
- a 'rapid HIA' process for each of the *Town and Country Planning Act 1990* planning applications being made by Horizon to the IACC. Rapid HIA is also applied to some components within the application for development consent (e.g. Off-Site Power Station Facilities and some Associated Development).

O.1.16 Both types of HIA have the following steps [RD1]:

- screening: deciding whether to undertake an HIA;
- scoping: deciding the focus, methods and work plan of the HIA;
- appraisal of evidence: identifying the health effects of the relevant components of the project;
- reporting and recommendations; and
- monitoring and evaluation.

O.1.17 Volume I of the HIA Report for the Project application for development consent considers the health effects of all the components of the Project together by reporting on each of the rapid HIAs (including the potential for cumulative effects).

Rapid HIA screening statements

O.1.18 These rapid HIA screening statements draw information from the other assessments, notably the Environmental Statement (Application Reference Number: 6.5 to 6.8).

O.1.19 These rapid HIA screening statements have also been informed by the following information:

- baseline information;
- scientific literature on potential health effects; and
- the relevant legislative and policy context.

O.1.20 These information sources are used in all the HIA work for the Project and are reported in the HIA Report for the application for development consent. This information is not reported as part of this screening statement.

O.1.21 The Off-Site Power Station Facilities, Park and Ride, A5025 Off-line Highway Improvements and Logistics Centre would have relatively small construction, operational and, where relevant, decommissioning workforces. For the purposes of these rapid HIA screening statements, the smaller workforces are considered in isolation from the larger workforces for construction, operation and decommissioning of the Power Station. Volume C of the HIA Report for the Project application for development consent discusses the project-wide

effects of all the construction and operational workforces across the Project collectively.

- O.1.22 This appendix documents the screening stage of the rapid HIAs undertaken on the Off-Site Power Station Facilities, Park and Ride, A5025 Off-line Highway Improvements and Logistics Centre. Screening provides a preliminary picture of the potential health effects on relevant populations in order to help the decision-making process and determine the need for any further assessment. As all potentially significant health effects are screened out, no further rapid HIA scoping, appraisal or reporting is warranted.
- O.1.23 There is no fixed way of making a screening decision for HIA. These rapid HIA screening exercises are based upon the WHIASU guidance [RD1]. The guidance sets out lists of population groups and determinants of health to consider. As suggested by the WHIASU guidance, the reporting format and issues considered have been adapted to the local context. For example, the Isle of Anglesey HIA Tool [RD31] structure and the recognition of 'health status related groups' in the toolkit for Mental Well-being Impact Assessment [RD216] has informed the assessment. As the reporting relates to screening rather than assessment, columns used in WHIASU guidance [RD1] and the Isle of Anglesey HIA Tool [RD31] relating to scoring have been excluded.
- O.1.24 The following sections:
- introduce the Off-Site Power Station Facilities, Park and Ride, A5025 Off-line Highway Improvements and Logistics Centre;
 - set out rapid HIA screening tables for each development; and
 - conclude on the potential for significant health effects and the need for any further assessment.

O.2 Rapid HIA screening statement: Off-Site Power Station Facilities

The Off-Site Power Station Facilities

- O.2.1 The Off-Site Power Station Facilities would be located at Llanfaethlu, on a former bus depot that is currently being used as a garage and for vehicle parking. There are residential properties located to the north and south of the site. A new school, Llanfaethlu Primary School, is approximately 200m to the south-west of the site (due to open in Autumn 2017).
- O.2.2 The proposed Off-Site Power Station Facilities comprise the Mobile Emergency Equipment Garage (MEEG), Alternative Emergency Control Centre (AECC) and the Environmental Survey Laboratory (ESL).
- O.2.3 Unless indicated otherwise the potential effects discussed in this section relate collectively to the MEEG, AECC and ESL (the Off-Site Power Station Facilities). Where a potential effect is specific to a particular facility, reference is made the MEEG, AECC or ESL.
- O.2.4 The A5025 Highway Improvements would be completed prior to the commencement of construction of the Off-Site Power Station Facilities. The improvements include realigning the A5025 to the east of Llanfaethlu, with

works extending to the highway adjacent to the Off-Site Power Station Facilities.

- O.2.5 The following paragraphs introduce the MEEG, AECC or ESL. Further details of the proposed activities and timetable to which the rapid HIA screening has considered are set out in Environmental Statement chapter E1 (proposed development) (Application Reference Number: 6.5.1).

AECC

- O.2.6 The AECC would provide back-up command and communications facilities that would be used to remotely manage an incident at the Power Station if there was no access to the Power Station Site or in the event that the primary facilities on the Power Station Site were untenable.
- O.2.7 During normal operation of the Power Station, the AECC would be expected to be in use only once per year for an annual incident exercise. The AECC would not normally be staffed; however, should there be training or an incident, there could be more than 85 people working at the AECC.
- O.2.8 Training would take place at the AECC at regular intervals, involving a small number of staff using the main AECC area for a limited period of time. Approximately once a month, maintenance would need to be carried out at the facility, which may include running a back-up generator for a short time.

MEEG

- O.2.9 The MEEG would enable Horizon to store a number of specialist vehicles at a location close to, but separate from, the Power Station Site and allowing them to be deployed rapidly. The MEEG could also be used as a marshalling point for support arriving on the Isle of Anglesey before onward dispatch to the Power Station Site in an emergency situation.
- O.2.10 The MEEG would not be staffed during normal operation of the Power Station, except for an annual incident response exercise or periodic vehicle checks every six months to be undertaken during normal working hours. During an incident response exercise or incident, the MEEG would have an operational workforce of up to four staff and 12 drivers. Periodic vehicle checks would require a similar number of staff. During an incident, staff would be working at the facility 24 hours per day, seven days per week.

ESL

- O.2.11 The ESL would perform a normal operation function for environmental monitoring and, as such, would contain facilities such as radiation monitoring equipment to conduct radiological surveys in the local area.
- O.2.12 The ESL would have a day-to-day role for route sampling, and operate during normal working hours only. There would be an operational workforce of three staff at the ESL on a regular basis.

Approach

- O.2.13 This section comprises the screening stage of the rapid HIA undertaken on the Off-Site Power Station Facilities. As all potentially significant health effects are screened out, no further scoping, appraisal or reporting is warranted.

- O.2.14 No HIA monitoring specific to the Off-Site Power Station Facilities is proposed. Volume J of the HIA Report for the Project application for development consent discusses monitoring for the Project as a whole.
- O.2.15 Emergency scenarios are subject to separate permitting processes and are not part of the HIA scope that was agreed with the HIA Steering Group. In relation to the Off-Site Power Station Facilities, there are intrinsic links to emergency preparedness both in the location of the facility, the facilities themselves and operational levels of activity (including training exercises). Where appropriate, the rapid HIA screening discusses potential effects linked to such preparedness. However, the discussion is limited to normal operation and not operation under emergency conditions. This is considered appropriate, as in an emergency the local population may be evacuated and thus removed as receptors for increased activity at the Off-Site Power Station Facilities.
- O.2.16 Volume I of the HIA Report for the Project application for development consent considers the health effects of all the components of the Project together by reporting on each of the rapid HIAs (including the potential for cumulative effects).
- O.2.17 Table O-1 sets out issues potentially relevant to the rapid HIA screening that are the subject of separate specific assessments. Such studies are a useful source of information for the rapid HIA screening.

Table O-1 Issues assessed in other studies

Study	Issues assessed
Environmental Statement (Application Reference Number: 6.5)	Air quality; noise and vibration; landscape and visual; surface and groundwater; soils and geology; public access and recreation; traffic and transport; and socio-economic effects.
Welsh Language Impact Assessment (WLIA (Application Reference Number: 8.21))	The WLIA (Application Reference Number: 8.21) has identified that there are not expected to be significant effects to Welsh language from the Off-Site Power Station Facilities.

Screening by population groups

- O.2.18 The rapid HIA screening exercise has involved a review of project information (notably the Environmental Statement volume E on the Off-Site Power Station Facilities) and completion of the following tables.
- Table O-2 identifies vulnerable groups and the mechanisms (or ways) by which the groups might be affected, directly or indirectly, by the Off-Site Power Station Facilities.
 - Table O-3 looks at a list of determinants of health and, in the light of table O-2, considers their relevance for the Off-Site Power Station Facilities.
- O.2.19 The tables identify the effects that are most likely to occur and which have the potential to significantly affect health and inequalities (either beneficially or adversely).

O.2.20 The population groups in table O-2 are based on Appendix 2 of the WHIASU guidance [RD1].

Table O-2 Screening by population groups for the Off-Site Power Station Facilities

Population group	Type of effect	Mechanism
Age related groups		
Children	Direct	Potential for temporary construction-stage increases in noise and air pollution, as well as potential for a small reduction in road safety (including pedestrian routes near the site entrance) due to increased vehicle movements.
Young people		
Older people		
Children	Indirect	Potential for permanent operational-stage changes in community identity due to the introduction of security features (e.g. fencing and lighting).
Young people		
Older people		
Income related groups		
People on low incomes	Indirect	Due to use of existing workforce roles, direct construction-stage benefits related to employment are not expected.
Economically inactive		
Unemployed/workless		
Health status related groups		
The elderly, children and people affected by pre-existing health issues such as heart or lung disease.	Direct	Potential for temporary construction-stage increases in noise and air pollution, as well as potential for a small reduction in road safety (including pedestrian routes near the

Population group	Type of effect	Mechanism
People who are unable to work due to ill health		site entrance) due to increased vehicle movements. Potential for permanent operational-stage changes in community identity due to the introduction of security features (e.g. fencing and lighting).
	Indirect	Potential for temporary operational-stage disruption and disturbance during training events, as well as the potential for well-being effects linked to uncertainty about whether surges in activity are training or incident related.
Groups who suffer discrimination or other social disadvantage		
People with physical or learning disabilities/difficulties	N/A	No effect is expected that would be particular to these population groups. The Off-Site Power Station Facilities would be experienced in the same way by these groups, with no difference in population health outcomes expected due to discrimination or differences in social advantage. Any effects relating to health status are captured within the separate consideration of 'health status related groups' above. The experience of these population groups is not identified for further consideration in this rapid HIA screening.
Single-parent families		
Lesbian, gay and transgender people		
Refugee groups		
Black and minority ethnic groups		
People seeking asylum		
Religious groups		
Travellers		
Geographical groups		
People living in areas known to exhibit poor economic and/or health indicators	Direct	Potential for temporary construction-stage increases in noise and air pollution, as well as potential for a small reduction in road safety (including pedestrian routes near the site entrance) due to increased vehicle movements.
		Potential for permanent operational-stage changes in community identity due to the introduction of security features (e.g. fencing and lighting).
People living in close proximity to the Off-Site Power Station Facilities	Indirect	Potential for temporary operational-stage disruption and disturbance during training events, as well as the potential for well-being effects linked

Population group	Type of effect	Mechanism
		to uncertainty about whether surges in activity are training or incident related.
People living in isolated/over-populated areas	Direct	Potential during the construction-stage for Llanfaethlu residents living to the north of the Off-Site Power Station Facilities to experience temporary reductions in pedestrian access to amenities within the settlement to the south, including the new primary school.
People unable to access services and facilities		

Screening by determinants of health

- O.2.21 Table O-3 sets out the determinants of health that may be affected by Off-Site Power Station Facilities. A scoring of 'no' in table O-3 means that any potential population health effect is screened out and not considered further.
- O.2.22 Table O-3 shows that all potential population health effects were judged to be not significant. The table provides a rationale for all potential health effects being screened out as not requiring further assessment.
- O.2.23 The determinants of health in table O-3 are from Appendix 1 of the WHIASU guidance [RD1].
- O.2.24 For the Off-Site Power Station Facilities, the combined effects from all the determinants of health that have been individually screened out would also be screened out of further assessment.
- O.2.25 For the Off-Site Power Station Facilities, the cumulative effects with the Wylfa Newydd DCO Project (intra-project effects) and other third-party projects (inter-project effects) have also been considered.
- O.2.26 For example, although health effects have been screened out for the Off-Site Power Station Facilities, the Off-Site Power Station Facilities would be expected to contribute to cumulative adverse effects in combination with those from:
- the preceding A5025 Highway Improvements near Llanfaethlu (extending the duration of overall construction type disruption); and
 - the concurrent construction activities at the Wylfa Newydd Development Area (with traffic related effects on the A5025 acting simultaneously).
- O.2.27 As part of this HIA Report the potential for cumulative effects (including the Off-Site Power Station Facilities) has been considered, see volume I.

Table O-3 Screening by determinants of health for the Off-Site Power Station Facilities

Determinant of health	Score	Rationale
Lifestyles		
Diet	No	Any change in diet due to agricultural land take or access to shops (e.g. the Llanfaethlu convenience shop) during construction or operation is not expected to be significant. This is because the site is brown field (previous garage use) and only low levels of traffic are expected to be associated with the facility's construction, normal operation and decommissioning.
Physical activity	No	Construction and decommissioning activities could cause temporary noise, dust, visual and traffic effects that could reduce the appeal of nearby public footpaths (e.g. Public Rights of Way 29/008/1 and 29/009/1, as well as the pedestrian access across the entrance to the Off-Site Power Station Facility site). These footpaths are important for physical activity both locally, and as an attraction bringing visitors to the area (Heritage footpaths signposted from Llanfaethlu). The Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Off-Site Power Station Facilities sub-Code of Construction Practice (Application Reference Number: 8.9) would detail the good practice construction techniques and management practices to reduce any potential adverse effect. Given the temporary nature of any change and the small scale of construction and decommissioning activities, any effect on physical activity related health outcomes (including any use of footpaths in connection with active travel to and from the new Llanfaethlu primary school) is not expected to be significant. There are not expected to be any operational effects on physical activity; the normal working profile of site activity is expected to be no greater than the existing garage use. Peaks in activity during training events are infrequent and temporary so unlikely to affect population health outcomes.
Use of alcohol, cigarettes, non-prescribed drugs	No	The construction workforce is expected to be small (at its peak approximately 80 workers, although typically less than half this number) and unlikely to influence community behaviour. The nearest licenced venue that could attract off-shift construction workers would be the Black Lion Inn which is on the A5025 approximately 700m to the south-east of the Llanfaethlu settlement (and approximately 1km from the site of the Off-Site Power Station Facilities). The small workforce size and the relatively isolated location of this venue limit the potential for any adverse community effects for Llanfaethlu. The Off-Site Power Station Facilities are not expected to change the accessibility of alcohol, cigarettes or non-prescription drugs.

Determinant of health	Score	Rationale
Sexual activity	No	The Off-Site Power Station Facilities construction and operational workforces are expected to be small and predominantly already reside within north Wales. Sexually transmitted infections and other communicable diseases are not expected to change due to the Off-Site Power Station Facilities workforce.
Other risk-taking activity	No	Risk taking in relation to road safety is discussed within the separate consideration of road hazards (see row for 'Road hazards' below). The Off-Site Power Station Facilities are not expected to change the accessibility of other risk-taking activity (e.g. gambling).
Social and community influences on health		
Family organisation and roles	No	The Off-Site Power Station Facilities are not expected to change family roles through gender biases in working hours or employment opportunities. Although construction employment may follow existing demographic trends, the scale of employment is expected to be small and Horizon would expect contractors to operate equal opportunity policies.
Citizen power and influence	No	The Off-Site Power Station Facilities are not expected to change the ability of populations in the locality to participate in democratic activities. Consultation on the application for development consent (including on the Off-Site Power Station Facilities) is expected to contribute to greater community empowerment but no additional effects on population health outcomes are expected.
Social support and social networks	No	The context of the Off-Site Power Station Facilities site is of a relatively isolated brownfield location in an agricultural setting with approximately a dozen residential dwellings neighbouring to the north-east, north-west and south-west of the site. The dwellings are predominantly in a linear layout along the A5025, but also extend down a side road that runs along the northern perimeter of the site. A strip of tarmac running on the east side of the A5025 provides informal pedestrian access between some of the dwellings. It would be important that this pedestrian access route was maintained during construction, operation and decommissioning. HIA design input has included recommending that this pedestrian route be improved for localised health benefits. Improvements, such as formal pavement along the east side of the A5025 fronting this cluster of dwellings, could both facilitate social interaction and informal care (e.g. of older people), as well as forming part of a safe site entrance to the Off-Site Power Station Facilities. Improved connectivity between local dwellings could also contribute to reducing any perceived

Determinant of health	Score	Rationale
		separation between dwellings to the north and south of the Off-Site Power Station Facilities due to the introduction of the ancillary features such as fencing and lighting. However, the level and duration of disturbance associated with construction, operation or decommissioning activities of the Off-Site Power Station Facilities is expected to be small and temporary. Changes to the amenability of the pedestrian environment to social interactions (and any associated effect on population health outcomes) are therefore unlikely.
Neighbourliness	No	The loss of one bungalow dwelling to accommodate the Off-Site Power Station Facilities is not expected to change the availability of housing, or affect population numbers in Llanfaethlu. A change in the dynamics of neighbour relations between adjacent properties is therefore unlikely.
Sense of belonging	No	There would be no population relocation as a result of the Off-Site Power Station Facilities. A change in sense of belonging is therefore not expected.
Local pride	No	There is not expected to be a loss of local landmarks or changes in the nature of the communities as a result of the Off-Site Power Station Facilities. The new one-storey ESL building and two-storey MEEG/AECC building would be noticeable but would use simple building forms and a choice of natural colours in order to blend the facilities with the existing surrounding buildings and natural landscape where possible. The character would therefore be similar to industrial sheds associated with existing garage use. Given the small scale of development, a change in population health outcomes associated with sense of local pride is not expected.
Community identity	No	The Off-Site Power Station Facilities landscape design integrates the site into the surrounding landscape and reduces adverse effects on nearby landscape and visual receptors. Ancillary features such as fencing and lighting have the potential to change the character of the neighbourhood by introducing a 'gated' element. However, as with building design, a sensitive design ethos would be employed to soften the appearance of such necessary security measures (e.g. A linear belt of shrubs, trees and/or hedgerow would be planted to the site boundary where appropriate to provide visual screening and to help integrate the development into the surrounding landscape). The low levels of activity at the Off-Site Power Station Facilities during normal operation means there is limited potential to disrupt or detract from existing defining features of wider community identity. Within the immediate neighbourhood,

Determinant of health	Score	Rationale
		the operation of the MEEG represents a continuity between existing and proposed type of use (i.e. vehicle maintenance and storage). No appreciable change in community identity would therefore be expected. By contrast, the presence of the AECC does have the potential to influence community identity through its direct association with emergency events. This may remind local people of such risks, it may also offer reassurance as the location reflects expectations of a safe operating distance. Notwithstanding a range of potential views, any uncertainty about whether surges in activity at the AECC are training or incident related could affect well-being, and thus be a talking point that influences community identity. The ESL also has the potential to influence community identity. By its nature and location, the testing facility brings potentially contaminated samples into a community context. Whilst the level of risk associated with such samples, their testing and their removal, storage or disposal is very low (and appropriately regulated), well-being effects from the mere association may be greater and thus be a talking point that influences community identity. Despite these potential changes, neither the construction, operation or decommissioning of the Off-Site Power Station Facilities buildings are likely to be considered defining influences on communities beyond the immediate neighbourhood. Even within the immediate neighbourhood, the prominent new primary school 200m to the south-west of the site is likely to be the commonly used reference point for local people and visitors (rather than the Off-Site Power Station Facilities, which aims for an unimposing design). Any change in community identity within the immediate neighbourhood due to the presence of the AECC and ESL is not expected to be so great as to affect population health outcomes. It is expected that there would be appropriate provision of information to people in Llanfaethlu to forewarn them of training events and provide reassurance in relation to the safety of the operation on of the ESL (including in relation to the new primary school).
Divisions in community	No	The Off-Site Power Station Facilities are not expected to be associated with differences of opinion between community groups that would have any effect, beneficial or adverse, on community relations.
Social isolation	No	There is no change in housing or population as a result of the Off-Site Power Station Facilities. Accessibility to the dwellings in proximity to the Off-Site Power Station Facilities site would be retained during construction, operation and decommissioning, such that there would be no effect on visits to vulnerable members of Llanfaethlu. Consequently, no changes in social

Determinant of health	Score	Rationale
		isolation, or associated population health outcomes, are expected. For discussion on access at the entrance to the Off-Site Power Station Facilities see row for 'Social support and social networks' above.
Peer pressure	No	The Off-Site Power Station Facilities are not expected to create choices for which group conformity is an issue, e.g. in settings of schools, recreational activities or the workplace. Changes to peer pressure are therefore unlikely.
Cultural and spiritual ethos	No	Community attitudes and aspirations in relation to culture are not expected to be affected by the Off-Site Power Station Facilities. The construction workforce is expected to be small (at its peak approximately 80 workers, although typically less than half this number) and predominantly already reside within north Wales. Effects in relation to Welsh language have been considered separately as part of a WLIA (Application Reference Number: 8.21).
Racism	No	The Off-Site Power Station Facilities are not expected to have any prejudicial or discriminatory effect. Horizon would expect contractors to operate appropriate policies.
Social institutions	No	The Off-Site Power Station Facilities are not expected to affect social norms or affect formal or informal social institutions, e.g. community groups, such as those for younger people, older people and young mothers or sporting or other cultural groups.
Other social exclusion	No	The Off-Site Power Station Facilities are not expected to affect levels of social exclusion for minority social groups (e.g. categories of people who are differentiated, and/or who differentiate themselves, from the social majority).
Living/environmental conditions affecting health		
Built environment	No	The Off-Site Power Station Facilities would change the built environment during construction, operation or decommissioning; however, the small scale of such change means that it is unlikely there would be significant changes in population health outcomes. Although the construction duration is scheduled for 30 months, the main built environment changes would happen over a much shorter time period, with the remaining time allocated to relatively low impact fitting out and testing activities. Further detail on built environment changes are discussed though consideration of community identity, air quality, noise and road hazards (see

Determinant of health	Score	Rationale
		rows for 'Community identity', 'Noise including indoor environment', 'Air quality' and 'Road hazards').
Neighbourhood design	No	Changes in neighbourhood design are not expected as part of the Off-Site Power Station Facilities. Effects on social and environmental conditions in Llanfaethlu are discussed under the topics of noise, air quality and road hazards (see rows for 'Noise including indoor environment', 'Air quality' and 'Road hazards').
Housing	No	The loss of one bungalow dwelling to accommodate the Off-Site Power Station Facilities is not expected to change the availability of housing, or affect population numbers in Llanfaethlu. Construction, operation and decommissioning workforces are small in number and expected to be either home-based, or make use of existing housing on the Isle of Anglesey (e.g. hotels or private rental market). As discussed in Environmental Statement chapter E3 (socio-economics) (Application Reference Number: 6.5.3), the local housing market is expected to be able to meet this demand with no adverse effect. Effects on social and environmental conditions for dwellings near the Off-Site Power Station Facilities are discussed under the topics of noise, air quality and road hazards (see rows for 'Noise including indoor environment', 'Air quality' and 'Road hazards'). The siting of an electrical substation at the north-west of the Off-Site Power Station Facilities site is of potential interest in relation to electromagnetic field effects. There is considered to be an appropriate separation between the substation and the closest dwelling (approximately 10m), so changes in health outcomes are not likely [RD217]. This judgement is based on the precautionary findings of the UK Stakeholder Advisory Group on Extremely Low Frequency Electric and Magnetic Fields (SAGE). SAGE was initiated by National Grid and was adopted by the Department of Health in order to provide advice to the Government. SAGE notes that for ground-mounted final distribution substations, background electromagnetic field levels are achieved within two to five meters.
Noise including indoor environment	No	Although there is potential for construction and decommissioning activities to give rise to elevated levels of noise and vibration, the relatively small scale of the development and the relatively isolated location limit the potential for significant changes in population health outcomes. This issue, including transport related noise, is considered in detail by Environmental Statement chapter E6 (noise and vibration) (Application Reference Number:

Determinant of health	Score	Rationale
		6.5.6), the modelling outputs of which have defined the use of mitigation to reduce the level of effect. The appointed contractor would use standard good practice mitigation and measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Off-Site Power Station Facilities sub-Code of Construction Practice (Application Reference Number: 8.9). The occupants of residential properties adjacent to the Off-Site Power Station Facilities site would be most affected. The closest existing dwelling (immediately to the south) is to be demolished as part of the construction activities, removing it as a receptor. The new primary school in Llanfaethlu has also been considered sensitive to noise, but is not expected to be affected. Despite these sensitivities, the Off-Site Power Station Facilities are similar to the existing light-industrial garage use and similar to other small-scale light-industry developments that are routinely undertaken with residential neighbours. So, whilst some disturbance can be expected, the scale and duration is unlikely to result in significant changes in population health outcomes. Any construction and decommissioning noise effects are expected to be temporary and night-time work is not envisaged. The potential for sleep disruption and associated adverse health outcomes is therefore limited to those who normally rest during the day-time, e.g. shift workers. It is expected that there would be appropriate dissemination of information to people living adjacent to the Off-Site Power Station Facilities regarding noise. Regular updates on noise would enable communities to better prepare and manage potential disruption, particularly for any shift workers. During operation, the potential for fixed plant to be associated with emissions that are a significant detriment to health is limited, as the design would include appropriate noise attenuation (e.g. acoustic housing of the back-up generator). The nature of operational MEEG noise (i.e. the use of equipment and tools associated with vehicle maintenance) is expected to be similar to the existing garage use of the site. Night-time working (except under rare exceptional circumstances) is not expected. Operational aspects of the Off-Site Power Station Facilities (which would routinely be limited to the ESL activities) are also the subject of bespoke and standard good practice mitigation described in the Environmental Statement (Application Reference Number: 6.5.6), such that adverse effects to population health outcomes are not expected. Transport noise associated with the small construction, operational and decommissioning workforces are not expected to have any discernible effect on population health outcomes.

Determinant of health	Score	Rationale
Air quality	No	Air quality effects associated with the Off-Site Power Station Facilities that have the potential to affect health outcomes include dust generated during construction and decommissioning, as well as operational emissions associated with the back-up generator or on-site vehicle movements. Dust (e.g. from site clearance) could have respiratory effects (e.g. exacerbation of asthma or COPD) and non-respiratory effects (e.g. reduce mental well-being through annoyance). Furthermore, existing site contamination (from previous garage use) that is disturbed and mobilised as dust by ground works may have toxicological effects following dermal contact or ingestion. The Environmental Statement chapter E5 (air quality) (Application Reference Number: 6.5.5) notes that the appointed contractor would use standard good practice mitigation and management strategies (including an Unexpected Contamination Plan) set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Off-Site Power Station Facilities sub-Code of Construction Practice (Application Reference Number: 8.9). The adoption of such measures to appropriately remediate and manage any existing contamination would be expected to limit the potential for dust related effects, such that no significant change in population health outcomes would be expected. This expectation is consistent with the relatively small scale of the development and that adjacent dwellings are predominantly to the north and south, rather than to the east or west; thus, few are downwind under prevailing wind conditions. With regard to operational emissions, the small size of any plant, its relatively infrequent use, and the design and location of exhaust stacks to ensure good dispersion means it is unlikely there would be any perceptible change in concentrations of NO₂, PM₁₀ or PM_{2.5} at nearby sensitive locations. The potential for changes in population health outcomes is therefore limited. Similarly, emissions associated with the low number of normal operation vehicle movements are unlikely to constitute a significant effect on population health outcomes. None of these air quality effects are expected to be associated with potentially significant changes in population health outcomes. Any change that does take place is expected to be within UK AQO levels. This screening decision acknowledges that some non-threshold health effects may occur due to slight increases in concentrations of nitrogen dioxide and fine particulate matter. However, taking into account baseline environmental and population health conditions, such a small change is not considered to constitute a significant population health effect. As good practice and in view of the potential

Determinant of health	Score	Rationale
		for non-threshold health effects, it is expected that the contractor would reduce levels of such pollutants as low as reasonably practicable.
Water quality	No	Environmental Statement chapter E8 (surface water and groundwater) (Application Reference Number: 6.5.8) does not anticipate any significant effects to surface water or groundwater due to the Off-Site Power Station Facilities (including consideration of existing ground contamination due to existing or historic garage use). Any existing contamination would be suitably remediated or managed such that any source-pathway-receptor pollution linkage to local communities (including occupants of adjacent dwellings) was broken. The presence of a well on-site is noted and appropriately discussed in the Environmental Statement. The main potential during operation for health effects would be associated with fuel leakages. However, appropriate avoidance and management measures are set out in the Environmental Statement. On this basis, no significant change in population health outcomes would be expected due to changes in water quality.
Attractiveness of area	No	The Off-Site Power Station Facilities are not expected to significantly change the visual amenity or tranquillity of the area. The Off-Site Power Station Facilities buildings would be noticeable but would be of a similar character to existing industrial sheds associated with the existing garage use. The Off-Site Power Station Facilities would also be maintained to a high standard of repair and site tidiness. In this regard, the Off-Site Power Station Facilities may contribute to improved perceptions of the neighbourhood. Construction effects would be temporary. A change in population health outcomes associated with attractiveness of the area is therefore unlikely.
Green space	No	There is not expected to be a change in the green space available for community use. The land take is predominantly from brownfield use. The design includes areas of grass and additional tree and hedge planting to integrate the Off-Site Power Station Facilities into the surrounding landscape. No significant change in population health outcomes is therefore expected.
Community safety	No	Actual or perceived levels of crime are not expected to change as a result of the Off-Site Power Station Facilities (police services are therefore unlikely to be affected). Any security associated with the facility (e.g. cameras, lighting and the perimeter fencing) are not expected

Determinant of health	Score	Rationale
		to be intrusive to neighbouring dwellings or communities. No significant change in population health outcomes is therefore expected.
Smell/odour	No	The Off-Site Power Station Facilities are not expected to introduce new odour sources that would be considered detrimental to health and well-being (e.g. nuisance odour). Any construction-related odour would be temporary. Operational odours associated with vehicle maintenance are expected to be reduced compared to previous site use as a garage, due to lower frequency of vehicle checks.
Waste disposal	No	The Off-Site Power Station Facilities construction and decommissioning wastes would be managed to avoid posing a significant risk to health. Any health effect in relation to construction dust is captured within the separate discussion of 'air quality' (see row for 'Air quality' below). Standard good practice construction mitigation measures would be applied to avoid (or address existing) ground contamination. Operational MEEG wastes, including those related to vehicle maintenance would be appropriately managed so as not to pose a risk to health. Operational ESL wastes would be managed in accordance with regulatory requirements so as not to pose a risk to health.
Road hazards	No	Significant changes in road safety are not expected as a result of the Off-Site Power Station Facilities. The construction stage (which benefits from the completed A5025 Highway Improvements) is not expected to introduce a significant number of additional vehicle movements onto the local road network. Access via the A5025 would avoid reductions in road safety (e.g. road sweeping and vehicle washing would form part of standard good practice mitigation measures). Transport associated with the small operational workforce is not expected to have any discernible effect on population health outcomes. Increased vehicle movements associated with training events may temporarily increase congestion near the site entrance, but would be unlikely to perceptibly affect road safety. However, as any increase in vehicle numbers affects accident risk to a small degree, it is expected that there would be appropriate coordination of training events, where feasible, to avoid peak drop-off and pick-up times at the new Llanfaethlu primary school. It is also expected that a safe pedestrian route across the site entrance would be maintained at all times (which includes the crossing of the A5025 to link Public Rights of Way 29/008/1 and 29/009/1).

Determinant of health	Score	Rationale
Injury hazards	No	The Off-Site Power Station Facilities are not expected to significantly change the risk of accidental injury (e.g. falls by older people or other requirements for emergency services). During construction, operation or decommissioning, access to the site itself would be restricted by a perimeter fence (2.4m high wire mesh fencing); no risk to the public from on-site hazards is therefore expected. Any potentially hazardous equipment and/or materials stored at the Off-Site Power Station Facilities (e.g. for construction or maintenance) would not be publicly accessible and would be subject to appropriate good practice management.
Quality and safety of play areas	No	The Off-Site Power Station Facilities are not expected to change the speed or volume of road traffic adjacent to play areas. No play areas are located in the locality of the site itself. Changes in population health outcomes are therefore not expected.
Economic conditions affecting health		
Unemployment	No	Moving from unemployment to employment is associated with important health benefits, both for those employed and their dependants. However, there are not expected to be a significant number of jobs created in response to the Off-Site Power Station Facilities. Existing construction roles within north Wales are expected to be utilised (safeguarding those roles). During operation, employment opportunities associated with the small workforce at the ESL are considered positive, but not expected to have any discernible effect on population health outcomes. The occasional training and maintenance activities at the MEEG and AECC are not expected to represent significant job creation; the majority of these roles would be associated with the Power Station (making only temporary use of the MEEG and AECC). Any changes in population health outcomes associated with employment are therefore not expected to be significant. As the existing garage facility is understood to be relocating, there are not expected to be any job losses due to change of use of the current site.
Income	No	Greater income can offer more opportunities for expenditure on health-promoting goods, services and activities. Neither direct employment from, nor indirect economic activity in, local communities by the construction, operation or decommissioning workforces are expected to result in significant changes in income levels (effects are expected to be limited to occasional use of the Llanfaethlu convenience shop). Changes in population health outcomes are therefore not expected.

Determinant of health	Score	Rationale
Economic inactivity	No	Other economically inactive members of society (e.g. students or retired people) are not expected to be affected by the Off-Site Power Station Facilities. No changes in the levels of economic inactivity are therefore expected.
Type of employment	No	Skilled roles or roles with training progression are generally more beneficial for health outcomes. The limited employment offered by the Off-Site Power Station Facilities is not expected to change the availability of good-quality jobs within the local employment market. Opportunities to improve the quality of local jobs are considered limited.
Workplace conditions	No	Construction, operation (e.g. MEEG vehicle maintenance) and decommissioning have inherent hazards. Contractors would operate under standard good practice occupational training and safety regimes. The Off-Site Power Station Facilities are not expected to involve working conditions that differ from industry standards. Changes in population health outcomes are therefore not expected.
Access and quality of services		
Medical services	No	The Off-Site Power Station Facilities are not expected to change journey times for emergency or non-emergency receipt of health care. As the construction workforce is expected to be small and predominantly from north Wales, there are not anticipated to be implications for health service planning. The small operational workforce is not expected to have any discernible effect on health services (but would be considered as part of wider service planning for the Project as a whole).
Other caring services	No	The Off-Site Power Station Facilities are not expected to affect other caring services. This includes no expected increase in journey times for time-critical healthcare (e.g. ambulance blue-light journeys). No change is expected in social care provision or staffing (e.g. employment churn effects). Significant changes in population health outcomes are therefore not expected.
Careers advice	No	Construction and decommissioning of the Off-Site Power Station Facilities is not expected to offer long-term employment or training opportunities. The provision of local careers advice in relation to operational employment is a possibility; however, the small employment offer associated with this aspect of the Project means that any positive effect is unlikely to be associated with significant changes in population health outcomes.

Determinant of health	Score	Rationale
Shops and commercial services	No	The Off-Site Power Station Facilities are not expected to affect local shops or other commercial services (e.g. the existing garage would relocate). Any indirect economic activities by the construction or operational workforce (i.e. purchases in the Llanfaethlu convenience shop) are unlikely to provide a contribution to the local economy that would be associated with significant changes in population health outcomes. The viability of shops and other commercial services (which have implications for local health, including diet, elderly mobility and physical activity) are therefore unlikely to be affected.
Public amenities	No	Public amenities (public toilets, public telephones, information signage, etc.) are not expected to change as a result of the Off-Site Power Station Facilities. There is a general lack of public toilets along the A55 and A5025. However, as the AECC and MEEG require critical infrastructure protection status, provision of public amenities is inappropriate for this site. This issue may be better addressed through public toilets as part of a visitor centre.
Transport including parking	No	There is a noted sensitivity in the local baseline to changes in access related deprivation. However, the small scale of the development and its associated vehicle movements mean it is unlikely there would be a significant change in access to schools or other services during construction, operation or decommissioning. Parking in communities near the Off-Site Power Station Facilities is not expected to change. Additional parking is provided as part of the design to accommodate training exercises. The existing garage and associated vehicle parking would relocate. Changes in population health outcomes linked to transport and parking are therefore not expected.
Education and training	No	Longer school journey times could mean children need to be woken earlier for school, which may potentially cause disruption to daily life and some annoyance. However, any changes in school journey times due to the Off-Site Power Station Facilities or construction delays are expected to be small and therefore not associated with changes in educational outcomes (an important determinant of health). There are not expected to be a large number of jobs created in response to the Off-Site Power Station Facilities. No significant change in population health outcomes is therefore expected from associated occupational education and training.

Determinant of health	Score	Rationale
Information technology	No	The Off-Site Power Station Facilities are not expected to change access to broadband or other information technology mediums. The contractors would work closely with utility providers to incorporate utility diversions to reduce any disruption.
Macro-economic, environmental and sustainability factors		
Government policies	No	The Project is supported by NPS EN-1 [RD7] and NPS EN-6 [RD8]. The Off-Site Power Station Facilities would be a step towards the delivery of the Project and would therefore facilitate the delivery of energy in accordance with NPS EN-1 [RD7] and NPS EN-6 [RD8]. However, the Off-Site Power Station Facilities alone are not expected to affect energy supply.
Gross domestic product	No	The scale of investment and economic activity associated with the Off-Site Power Station Facilities is not expected to have an effect on gross domestic product.
Economic development	No	Although a component of the investment associated with the Project, the Off-Site Power Station Facilities element is not expected to have macro-economic effects for the wider region.
Biological diversity	No	Publicly accessible areas of biodiversity interest can encourage active travel with benefits for health and well-being from increased physical activity. Although the Off-Site Power Station Facilities would include some measures in relation to biodiversity, there is not expected to be a significant change in population health outcomes.
Climate	No	Although a component of the Project (a low carbon power generating technology), the Off-Site Power Station Facilities element is not expected to contribute directly to reduced emissions of climate altering emissions.

Determinants of health from WHIASU [RD1]

Conclusion

- O.2.28 This rapid HIA screening statement has been prepared for the proposed Off-Site Power Station Facilities in Llanfaethlu. The Off-Site Power Station Facilities comprise the MEEG, AECC and ESL.
- O.2.29 The Off-Site Power Station Facilities are an important component for delivery of the Wylfa Newydd DCO Project. The facilities provide supporting infrastructure essential to emergency preparedness and monitoring. By their nature, the facilities are required to be located separate from the Power Station Site. During normal operation, there would be limited activity at the Off-Site Power Station Facilities.
- O.2.30 The design and mitigation for the Off-Site Power Station Facilities has been informed by iterative discussion as part of this rapid HIA screening and the wider HIA work for the Project.
- O.2.31 Those affected by the Off-Site Power Station Facilities are likely to include vulnerable groups (see table O-11). Potentially significant health effects to such groups (and the general public) were considered (see table O-12). The rapid HIA screening concluded that there are no health effects requiring further assessment.
- O.2.32 It was judged that changes due to the Off-Site Power Station Facilities would have some effects on health. Those changes that were judged to be generally beneficial for health, but not likely to be significant, were screened out of further assessment. These would be the potential for the following small operational stage improvements in:
- perceptions of the neighbourhood due to the Off-Site Power Station Facilities being maintained to a high standard of repair and site tidiness;
 - the frontage of the Off-Site Power Station Facilities allowing for an improved pedestrian access across the entrance; and
 - job opportunities contributing to direct and indirect economic benefits.
- O.2.33 Those potential changes that were judged to be generally adverse for health, but not likely to be significant, were also screened out of further assessment. These were the potential for:
- levels of daytime noise for a few dwellings that may/could lead to annoyance during construction;
 - management of any ground contamination during construction due to existing garage use;
 - operational visual change due to security requirements and occasional surges in activity for training exercises that could affect community identity;
 - operational community uncertainty about the safety of testing undertaken at the ESL, including how potentially contaminated samples would be managed; and

- construction and operational temporary disruption to pedestrian access near the site entrance that may discourage physical activity (including for the new Llanfaethlu primary school).
- O.2.34 As set out in the Environmental Statement, construction activities would be subject to standard good practice mitigation and measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Off-Site Power Station Facilities sub-Code of Construction Practice (Application Reference Number: 8.9).
- O.2.35 In summary, the conclusion of the rapid HIA screening for the Off-Site Power Station Facilities is that there are no potentially significant health effects that warrant further assessment.

O.3 Rapid HIA screening statement: Park and Ride

The Park and Ride

- O.3.1 The Park and Ride (with up to 1,900 spaces) would be located at Dalar Hir on land immediately to the north of Junction 4 of the A55. The facility would serve those Wylfa Newydd construction workers living on the Isle of Anglesey who would commute to the Wylfa Newydd Development Area daily, as well as those workers who would be resident at the Site Campus who would leave their vehicles at the facility for the duration of their rotation.
- O.3.2 The Park and Ride is a key component of the Project's Integrated Traffic and Transport Strategy. The Park and Ride would reduce the number of vehicles using local roads.
- O.3.3 Following approximately 18 months' construction, the Park and Ride would operate for 10 years, before being reinstated to agricultural use.
- O.3.4 The site and surrounding area is rural in nature. Bryn Goleu farmhouse (approximately 200m east) is the closest residential receptor. A number of other dwellings are approximately 300m or more to the north and south. The Gwyddfôr Residential Home is located approximately 250m north-east of the site. The nearest settlements are Llanfihangel-yn-Nhywyn, located 400m to the south, and Caergeiliog, approximately 900m to the south-west. There are no Public Rights of Way or footpaths within or near to the site. The nearest footpath is 300m to the north.
- O.3.5 Further details of the proposed activities and timetable which the rapid HIA screening has considered are set out in Environmental Statement chapter F1 (proposed development) (Application Reference Number: 6.6.1).

Approach

- O.3.6 This section comprises the screening stage of the rapid HIA undertaken on the Park and Ride. As all potentially significant health effects are screened out, no further scoping, appraisal or reporting is warranted.
- O.3.7 Volume C of the HIA Report for the Project application for development consent discusses the transport benefits on the A5025 from use of the

operational Park and Ride by the construction workforce of the Wylfa Newydd DCO Project.

- O.3.8 No HIA monitoring specific to the Park and Ride is proposed. Volume J of the HIA Report for the Project application for development consent discusses monitoring for the Project as a whole.
- O.3.9 Volume I of the HIA Report for the Project application for development consent considers the health effects of all the components of the Project together by reporting on each of the rapid HIAs (including the potential for cumulative effects).
- O.3.10 Table O-4 sets out issues potentially relevant to the rapid HIA screening that are the subject of separate specific assessments. Such studies are a useful source of information for the rapid HIA screening.

Table O-4 Issues assessed in other studies

Study	Issues assessed
Environmental Statement (Application Reference Number: 6.6)	Air quality; noise and vibration; landscape and visual; surface and groundwater; soils and geology; public access and recreation; traffic and transport; and socio-economic effects.
Welsh Language Impact Assessment (WLIA (Application Reference Number: 8.21))	The WLIA (Application Reference Number: 8.21) has identified that there are not expected to be significant effects to Welsh language from the Park and Ride.

Screening by population groups

- O.3.11 The rapid HIA screening exercise has involved a review of project information (notably the Environmental Statement volume F on the Park and Ride) and completion of the following tables.
- Table O-5 identifies vulnerable groups and the mechanisms (or ways) by which the groups might be affected, directly or indirectly, by the Park and Ride.
 - Table O-6 looks at a list of determinants of health and, in the light of table O-5, considers their relevance for the Park and Ride.
- O.3.12 The tables identify the effects that are most likely to occur and which have the potential to significantly affect health and inequalities (either beneficially or adversely).
- O.3.13 The population groups in table O-5 are based on Appendix 2 of the WHIASU guidance [RD1].

Table O-5 Screening by population groups for the Park and Ride

Population group	Type of effect	Mechanism
Age-related groups		
Children	Direct	Potential for temporary disruption and increases in noise, air pollution and visual disturbance due to Park and Ride construction and decommissioning.
Young people		
Older people		Operational road safety benefits due to fewer Wylfa Newydd construction worker vehicles on the road network (compared to not having a Park and Ride). Small localised and temporary reductions in road safety near the Park and Ride due to peaks in vehicle movements at shift changes. Potential for operational disturbance (e.g. noise or night-time light) at times of rest, e.g. at Gwyddfor Residential Home.
Children	Indirect	Potential for small improvements in prosperity for family members and carers (influencing the support for vulnerable dependants) due to employment during Park and Ride construction, operation and decommissioning.
Young people		
Older people		
Income-related groups		
People on low income	Direct	Potential for small improvements in skills, knowledge and experience linked to employment during Park and Ride construction, operation and decommissioning.
Economically inactive		
Unemployed/workless		
Health status related groups		
Elderly, children and people affected by pre-existing health issues such as heart or lung disease.	Direct	Potential for temporary disruption and increases in noise, air pollution and visual disturbance due to Park and Ride construction and decommissioning. Operational road safety benefits due to fewer Wylfa Newydd construction worker vehicles on the road network (compared to not having a Park and Ride). Small localised and temporary reductions in road safety near the Park

Population group	Type of effect	Mechanism
		and Ride due to peaks in vehicle movements at shift changes. Potential for operational disturbance (e.g. noise or night-time light) at times of rest, e.g. at Gwyddfor Residential Home.
People who are unable to work due to ill-health	Indirect	Potential for small improvements in prosperity for family members and carers (influencing the support for vulnerable dependants) due to employment during Park and Ride construction, operation and decommissioning.
Groups who suffer discrimination or other social disadvantage		
People with physical or learning disabilities/difficulties	N/A	No effect is expected that would be particular to these population groups. The Park and Ride would be experienced in the same way by these groups, with no difference in population health outcomes expected due to discrimination or differences in social advantage. Any effects relating to health status are captured within the separate consideration of 'health status related groups' above. The experience of these population groups is not identified for further consideration in this rapid HIA screening.
Single parent families		
Lesbian and gay and transgender people		
Refugee groups		
Black and minority ethnic groups		
People seeking asylum		
Religious groups		
Travellers		
Geographical groups		
People living in areas known to exhibit poor economic and/or health indicators	Direct	Potential for temporary disruption and increases in noise, air pollution and visual disturbance due to Park and Ride construction and decommissioning. Operational road safety benefits due to fewer Wylfa Newydd construction worker vehicles on the road network (compared to not having a Park and Ride).
People living in close proximity to the Park and Ride		Small localised and temporary reductions in road safety near the Park and Ride due to peaks in vehicle movements at shift changes. Potential for operational disturbance (e.g. noise or night-time light) at times

Population group	Type of effect	Mechanism
		of rest, e.g. at Gwyddfor Residential Home.
	Indirect	Potential for small improvements in prosperity for family members and carers (influencing the support for vulnerable dependants) due to employment during Park and Ride construction, operation and decommissioning.
People living in isolated/over-populated areas	Indirect	Change in access deprivation levels and emergency service response times due to road works at Junction 4 of the A55 or additional traffic on highways at peak times of Park and Ride construction, operation and decommissioning.
People unable to access services and facilities		Operational access benefits due to fewer Wylfa Newydd construction worker vehicles on the road network (compared to not having a Park and Ride).

Screening by determinants of health

- O.3.14 Table O-6 sets out the determinants of health that may be affected by the Park and Ride. A scoring of 'no' in table O-6 means that any potential population health effect is screened out and not considered further.
- O.3.15 Table O-6 shows that all potential population health effects were judged to be not significant. The table provides a rationale for all potential health effects being screened out as not requiring further assessment. The determinants of health in table O-6 are from Appendix 1 of the WHIASU guidance [RD1].
- O.3.16 For the Park and Ride, the combined effects from all the determinants of health that have been individually screened out would also be screened out of further assessment. For the Park and Ride, the cumulative effects with the Wylfa Newydd DCO Project (intra-project effects) and other third party projects (inter-project effects) have also been considered.
- O.3.17 For example, being inherently remote from the Wylfa Newydd Development Area, there is limited potential for the construction, operation or decommissioning of the Park and Ride to have cumulative effects with activities at that location or with other elements of the Project. The Park and Ride would be accessed directly from roads with high capacity (the A5 and A55), reducing the potential for traffic related cumulative effects. The phasing of the Park and Ride development would mean there would be some overlap in operation of some areas whilst others were still under construction. Effects may be greater for this short period.

O.3.18 As part of this HIA Report the potential for cumulative effects (including the Park and Ride) has been considered, see volume I.

Table O-6 Screening by determinants of health for the Park and Ride

Determinant of health	Score	Rationale
Lifestyles		
Diet	No	Any change in diet due to agricultural land take during construction, operation or decommissioning of the Park and Ride is not expected to be significant. This is because the site is low-quality agricultural land that is expected to be restored to agricultural use following decommissioning. Access to other surrounding agricultural land would be maintained throughout. Any effect is therefore limited (in food production terms) and temporary. No change in access to shops is expected.
Physical activity	No	There are no Public Rights of Way or footpaths within or near to the site. The nearest footpath is 300m to the north. The potential for construction, operation or decommissioning activities to cause noise, dust and visual effects that could affect the amenity value on such routes is therefore limited. The potential to discourage physical activity in private outdoor space by residents, including residents (and/or staff) of the Gwyddfor Residential Home, is also considered limited. This is due to the temporary and small-scale nature of the construction and decommissioning works, the standard good practice mitigation and the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Park and Ride sub-Code of Construction Practice (Application Reference Number: 8.10) agreed with the IACC to reduce the level of any effect. There are not expected to be any operational effects on community physical activity. Wylfa Newydd construction workers using the Park and Ride may benefit from increased walking as part of regular multi-modal transport. Whilst beneficial, such effects do not warrant further assessment.
Use of alcohol, cigarettes, non-prescribed drugs	No	The Park and Ride workforce is expected to be relatively small (approximately 50 construction workers and approximately 25 operational workers) and unlikely to influence community behaviour. The Park and Ride is not expected to change the accessibility of alcohol, cigarettes or non-prescription drugs. The Wylfa Newydd DCO Project construction workforce would be 'in transit' between their places of residence, the Park and Ride and the Wylfa Newydd Development Area so are not expected to have any discernible economic or social effects on population health outcomes whilst travelling. An opportunity for health and well-being lies in the potential for health promotion activities with the Wylfa Newydd construction workforce (e.g. use

Determinant of health	Score	Rationale
		of buses and waiting areas for education and awareness-raising on cultural and health promotion issues).
Sexual activity	No	The Park and Ride construction, operation and decommissioning workforces are expected to be small and predominantly already reside within north Wales. Sexually transmitted infections and other communicable diseases are not expected to change due to the Park and Ride workforce. The Wylfa Newydd DCO Project construction workforce is not expected to have any effect on community sexual health outcomes whilst using the Park and Ride. The Park and Ride site is isolated, closed to the public and does not include accommodation or recreational facilities, i.e. it is distinctly different from 'truck stops' that health literature sometimes associates with communicable disease (including sexually transmitted infections).
Other risk-taking activity	No	Risk taking in relation to road safety is captured within the separate consideration of road hazards (see row for 'Road hazards' below), including the benefits of less driving by the Wylfa Newydd construction workforce, thus reducing accident risk. The Park and Ride is not expected to change the accessibility of other risk-taking activity (e.g. gambling) during construction, operation or decommissioning.
Social and community influences on health		
Family organisation and roles	No	The Park and Ride is not expected to change family roles through gender biases in working hours or employment opportunities. Although the Park and Ride construction and decommissioning employment may follow existing demographic trends, the scale of employment is expected to be small and Horizon would expect contractors to operate equal opportunity policies. The small Park and Ride operational workforce is not expected to have any discernible effect on population health outcomes. The use of the Park and Ride by the Wylfa Newydd construction workforce is similarly unlikely to affect family roles. However, there may be some benefit for single car families of locally resident employees who make use of the drop-off and pick-up facilities. This may increase family mobility and role flexibility (from car use during the day), including access to education, employment and affordable healthy food. Whilst beneficial, such effects do not warrant further assessment.
Citizen power and influence	No	The Park and Ride is not expected to change the ability of populations in the locality to participate in democratic activities. Consultation on the application for development consent

Determinant of health	Score	Rationale
		(including on the Park and Ride) is expected to contribute to greater community empowerment but no additional effects on population health outcomes are expected.
Social support and social networks	No	Disturbance at, or reduced access to, the Gwyddfor Residential Home has the potential to reduce the social interactions of residents (e.g. less use of gardens or fewer visits by friends and family). The level and duration of disturbance associated with construction, operation or decommissioning activities of the Park and Ride is expected to be limited. Any temporary reduction to the amenity of the outdoor areas of the Gwyddfor Residential Home is considered unlikely to affect health outcomes. As the access to the residential home would be maintained at all times during construction, operation and decommissioning, no effect on social support and social networks relating to visiting is expected. No social effects are expected at other locations due to the relatively isolated location of the Park and Ride.
Neighbourliness	No	There is not expected to be a change in housing or population as a result of the Park and Ride. Similarly, access between residential properties would be unaffected. A change in the dynamics of neighbour relations between adjacent properties is therefore unlikely.
Sense of belonging	No	There would be no population relocation as a result of the Park and Ride. A change in population health outcomes associated with sense of belonging is therefore unlikely.
Local pride	No	Park and Ride would be noticeable from surrounding locations, as 'urban' elements (including night-time lighting) would be introduced into a relatively rural landscape, albeit influenced by the existing A5, A55, Cartio Môn Go Karting centre and Driver and Vehicle Standards Agency site. Where there are changes to views, the presence of the Park and Ride may act as an ongoing reminder of the wider Project. For some people, the reminder that the area has secured future jobs and investment from the Project may increase mental well-being. For others, the loss of scenic and tranquil elements in the landscape may reduce mental well-being. Any health effect due to a change in local pride (i.e. the degree of admiration held by local communities for their area), is expected to be limited due to the temporary nature of the facility, the lack of immediately neighbouring receptors and the limited role the land currently plays in determining local pride. The change at the Gwyddfor Residential Home is expected to be reduced through planting and enhancement of existing hedgerows on the northern and eastern boundaries of the Park and Ride site. The orientation of, and existing planting around, the residential home also reduces direct views. Typically, as residents often rest during the

Determinant of health	Score	Rationale
		day, care homes have good blackout curtains/blinds. The Park and Ride's night-time lighting would minimise spill whilst ensuring a safe workforce environment. The residual effect is unlikely to result in significant population health effects.
Community identity	No	Communities are often defined, or define themselves, by prominent features of the natural, cultural or economic landscape. The Park and Ride would have a sympathetic design ethos befitting of the context (i.e. buildings would be in keeping with local vernacular to integrate the development into the surroundings). The facility would also be maintained to a high standard of repair and site tidiness. The Park and Ride is unlikely to be considered a defining influence on communities beyond the immediate neighbourhood (e.g. Gwyddfor Residential Home). Even for this community, there is limited potential to detract from the wider defining features of community identity (e.g. the panoramic agricultural landscape dominating most views). Mature trees in the grounds of the Gwyddfor Residential Home contribute to screening, and the orientation of the buildings limits direct views of the Park and Ride. The temporary nature of the facility is also relevant, although for some older people effects should be considered permanent. The construction workforce is expected to be relatively small and predominantly already reside within north Wales. Such a home-based workforce would be unlikely to affect local community identity. The small operational workforce is not expected to have any discernible effect on community identity. A change in population health outcomes associated with a community identity is therefore unlikely.
Divisions in community	No	The Park and Ride is not expected to be associated with differences of opinion between community groups that would have any effect, beneficial or adverse, on community relations.
Social isolation	No	There is not expected to be a change in housing or population as a result of the Park and Ride. Accessibility to the dwellings in proximity to the site would be unaffected. Construction, operation and decommissioning of the facility are not expected to affect visits to vulnerable members of local communities (e.g. at the Gwyddfor Residential Home). Consequently, no changes in social isolation, or associated health outcomes, are expected.
Peer pressure	No	The Park and Ride is not expected to create choices for which group conformity is an issue, e.g. in settings of schools, recreational activities or the workplace. Changes to peer pressure are therefore unlikely.

Determinant of health	Score	Rationale
Cultural and spiritual ethos	No	Community attitudes and aspirations in relation to culture are not expected to be affected by the Park and Ride. The facility's construction, operational and decommissioning workforces are expected to be relatively small and to predominantly already reside within north Wales, so would not introduce new cultural elements. The Wylfa Newydd construction workforce would be 'in transit' between their places of residence, the Park and Ride and the Wylfa Newydd Development Area so are not expected to have any discernible cultural effects on community health outcomes whilst travelling. It is expected that all signs associated with the Park and Ride would be bilingual. Screening in relation to Welsh language has been considered separately by the WLIA (Application Reference Number: 8.21).
Racism	No	The Park and Ride is not expected to have any prejudicial or discriminatory effect. Horizon would expect contractors for all workforces to operate appropriate policies.
Social institutions	No	The Park and Ride is not expected to affect social norms or affect formal or informal social institutions, e.g. community groups, such as those for younger people, older people and young mothers or sporting or other cultural groups.
Other social exclusion	No	The Park and Ride is not expected to affect levels of social exclusion for minority social groups (e.g. categories of people who are differentiated, and/or who differentiate themselves, from the social majority).
Living/environmental conditions affecting health		
Built environment	No	The Park and Ride would change the built environment during construction, operation and decommissioning; however, the remote location and lack of public access mean it is unlikely there would be significant changes in population health outcomes. This issue is discussed in further detail through consideration of air quality, noise and road hazards (see rows for 'Noise including indoor environment', 'Air quality', and 'Road hazards').
Neighbourhood design	No	There are no changes in neighbourhood design as part of the Park and Ride. Effects on social and environmental conditions for existing residential areas in the locality are discussed through consideration of air quality, noise and road hazards (see rows for 'Noise including indoor environment', 'Air quality' and 'Road hazards').

Determinant of health	Score	Rationale
Housing	No	The loss of the Bryn Goleu farmhouse during the construction of the Park and Ride is not expected to affect the availability of housing. The presence of the Park and Ride is not expected to promote or restrict other housing development. Construction, operation and decommissioning workforces are small in number and expected to be either home-based, or make use of existing housing on the Isle of Anglesey (e.g. hotels or private rental market). As discussed in Environmental Statement chapter F3 (socio-economics) (Application Reference Number: 6.6.3), the local housing market is expected to be able to meet this demand with no adverse effect.
Noise including indoor environment	No	Although there is potential for construction and decommissioning activities to give rise to elevated levels of noise and vibration, the relatively isolated location limits the potential for significant changes to population health outcomes. This issue, including transport related noise, is considered in detail by Environmental Statement chapter F6 (noise and vibration) (Application Reference Number: 6.6.6); the modelling outputs of which have defined the use of mitigation to reduce the level of effect. The appointed contractor would use standard good practice mitigation and measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Park and Ride sub-Code of Construction Practice (Application Reference Number: 8.10). The presence of the Gwyddfor Residential Home raises the potential for disrupted sleep to some elderly residents who normally rest during the day-time. Older people, whilst no more sensitive to annoyance and sleep disturbance than other adults, are more sensitive to cardiovascular health effects from noise [RD45]. Despite such sensitivity, significant effects from sleep disruption are considered unlikely as the construction and decommissioning noise effects would be temporary and night-time work is not envisaged. During operation, the potential for fixed plant to be associated with noise levels that could affect health outcomes is limited as the design would include appropriate noise attenuation (e.g. acoustic housing of back-up generators). The nature of operational vehicle noise (i.e. the arrival and departure of the Wylfa Newydd construction workforce in private vehicles and buses) is expected to be similar in profile to the existing dominant noise source of the A5 and A55 (and, during the day, the Go-Kart Racing Circuit). Although the Park and Ride would operate 24 hours per day, the potential for sleep disturbance is considered unlikely due to the distance to dwellings (including Gwyddfor Residential Home) and the use of low noise diesel-

Determinant of health	Score	Rationale
		hybrid buses. Transport noise associated with the small Park and Ride operational workforce is not expected to have any discernible effect on community health outcomes. Based on the findings of the Environmental Statement noise assessment, significant changes in population health outcomes due to the construction, operation or decommissioning of the Park and Ride are unlikely.
Air quality	No	Air quality effects associated with the Park and Ride that have the potential to affect health outcomes include dust generated during construction and decommissioning, as well as operational emissions associated with the on-site facilities or on-site vehicle movements. Dust (e.g. from site clearance) could have respiratory effects (e.g. exacerbation of asthma or COPD) and non-respiratory effects (e.g. reduced mental well-being through annoyance). The potential for existing site contamination from agricultural use to produce toxicological dust effects is considered low. The baseline context is that there is currently no risk of the relevant UK AQOs for any air pollutants being exceeded in the vicinity of the Park and Ride site. Residual construction or decommissioning dust effects are unlikely to be significant as there are few sensitive locations in close proximity to the site (the closest being 200m away from the Park and Ride site boundary). The Environmental Statement chapter F5 (air quality) (Application Reference Number: 6.6.5) notes that the appointed contractor would use standard good practice mitigation and management strategies (including an Unexpected Contamination Plan) set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Park and Ride sub-Code of Construction Practice (Application Reference Number: 8.10). The Environmental Statement air quality assessment describes how such measures would reduce the level of effect such there are no potentially significant effects. Other construction or decommissioning emissions (e.g. nitrogen dioxide or fine particulate matter) from vehicle/plant exhausts are not likely to be significant due to relatively low plant/machinery use. The operational use of low-emission diesel-hybrid buses would help to reduce traffic emissions. Emissions from Wylfa Newydd construction worker private vehicles are not likely to be significant due to intermittent nature of journeys and the distance to nearby human receptors. The effect on the wider road network of vehicles using the Park and Ride is not expected to exceed UK AQOs. Based on the findings of the Environmental Statement air quality assessment, significant changes in population health outcomes due to the construction,

Determinant of health	Score	Rationale
		operation or decommissioning of the Park and Ride are unlikely. This screening decision acknowledges that some non-threshold health effect may occur due to slight increases in concentrations of nitrogen dioxide and fine particulate matter. However, taking into account baseline environmental and population health conditions, such a small change is not considered to constitute a significant population health effect. As good practice, and in view of the potential for non-threshold health effects, it is expected that the contractor would reduce levels of such pollutants as low as reasonably practicable.
Water quality	No	The Park and Ride site is located within the base of a shallow valley which is orientated broadly running from north to south. A small stream flows from the north to the south along the base of the valley (the Nant Dalar Hir). The site is drained by Nant Dalar Hir and other minor drains. The Park and Ride layout and drainage strategy designs-out potentially significant effects to health due to changes in water quality or flood risk. Based on the findings of the Environmental Statement chapter F8 (surface water and ground water) (Application Reference Number: 6.6.8) and chapter F7 (soils and geology) (Application Reference Number: 6.6.7), significant changes in population health outcomes due to the construction, operation or decommissioning of the Park and Ride are unlikely.
Attractiveness of area	No	The Park and Ride would introduce some change to the visual amenity and tranquillity of the area and would add to neighbouring existing non-rural landscape elements, e.g. the A5, A55, Cartio Môn Go Karting centre and Driver and Vehicle Standards Agency site. Environmental Statement chapter F10 (landscape and visual) (Application Reference Number: 6.6.10) describes the use of planting to blend buildings into the surrounding landscape. Effects would be greatest for the immediate neighbourhood (e.g. Gwyddfor Residential Home and Bryn Goleu farmhouse). However, even for these small communities there is limited potential for the Park and Ride to dominate the existing panoramic agricultural landscape. The orientation of the Gwyddfor Residential Home (with most windows facing north-west or south-east) and its layout of green space to the east suggest that the Park and Ride (to the south-west) would have a relatively small effect on the overall attractiveness of the area. The presence of some mature planting around residential properties and the temporary nature of the Park and Ride are also relevant. A change in population health outcomes associated with attractiveness of area is therefore unlikely.

Determinant of health	Score	Rationale
Green space	No	There is not expected to be a change in the green space available for community use. The land take is predominantly from agricultural use, with no footpaths or Public Rights of Way crossing the Park and Ride site. No significant change in population health outcomes is therefore expected.
Community safety	No	Actual or perceived levels of crime are not expected to change as a result of the Park and Ride (police services are therefore unlikely to be affected). Any security associated with the facility (e.g. cameras, lighting and the perimeter fence) are not expected to be intrusive to neighbouring communities. No significant change in population health outcomes is therefore expected.
Smell/odour	No	The Park and Ride is not expected to introduce new odour sources that would be considered detrimental to health (e.g. nuisance odour). Any construction-related odour would be temporary (e.g. asphalt-laying on access roads). Operational odours associated with vehicle exhausts are similar to the existing context of the A55 and link to the discussion of air quality (with UK AQOs met) (see row for 'Air quality').
Waste disposal	No	The Park and Ride construction wastes would be managed to avoid posing a significant risk to health. Any health effect in relation to construction dust is discussed under 'air quality' (see row for 'Air quality'). Operational wastes, including those related to vehicles and on-site toilet facilities would be appropriately managed so as not to pose a risk to health.
Road hazards	No	Significant reductions in road safety are not expected as a result of the Park and Ride. The construction and decommissioning stages are not expected to introduce a significant number of additional vehicle movements to the road network (i.e. would not cause any road capacity concerns). Standard good practice mitigation, the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Park and Ride sub-Code of Construction Practice (Application Reference Number: 8.10) agreed with the IACC would reduce the level of effect (e.g. road sweeping and vehicle washing). The Park and Ride design includes appropriate improvements to facilitate access onto the A5 and A55. The construction of the junction improvements is similar to most other minor road improvement works and the works are not expected to result in significant changes to road hazards for road users. Operational use of the Park and Ride would be an embedded mitigation of the Project against adverse effects on the A5025 due to additional vehicle movements associated with the Wylfa Newydd construction

Determinant of health	Score	Rationale
		workforce. Road safety effects and health trip journey time effects during the construction at the Wylfa Newydd Development Area are discussed in volume C of the HIA Report for the application for development consent (including the beneficial role of the Park and Ride). So, whilst beneficial, such effects do not warrant further assessment here. Transport associated with the small Park and Ride operational workforce is not expected to have any discernible effect on population health outcomes.
Injury hazards	No	The Park and Ride is not expected to significantly change the risk of accidental injury (e.g. falls by older people or other requirements for emergency services). As the site would not be accessible to the public, no risk from on-site hazards is expected. Any potentially hazardous equipment and/or materials stored at the Park and Ride (e.g. for construction or maintenance), would not be publicly accessible and would be subject to appropriate good practice management.
Quality and safety of play areas	No	The Park and Ride is not expected to change the speed or volume of road traffic adjacent to play areas. No play areas are located close to the site itself. Changes in health outcomes are therefore not expected.
Economic conditions affecting health		
Unemployment	No	Moving from unemployment to employment is associated with important health benefits, both for those employed and their dependants. However, there are not expected to be a significant number of jobs created in response to the construction, operation or decommissioning of the Park and Ride. Existing construction roles within north Wales are expected to be utilised (safeguarding these roles). During operation, Park and Ride operational workforce employment opportunities are considered beneficial, but are not expected to have any discernible effect on population health outcomes. The temporary nature of the facility limits long-term employment health benefits. Any changes in health outcomes associated with employment are therefore not expected to be significant. There are not expected to be any job losses due to change of use of the current site.
Income	No	Greater income can offer more opportunities for expenditure on health-promoting goods, services and activities. Neither direct employment from, nor indirect economic activity in, local communities due to the construction, operation or decommissioning of the Park and Ride is

Determinant of health	Score	Rationale
		expected to result in significant changes in income levels. Any changes in health outcomes associated with income are therefore not expected to be significant. No indirect economic community benefits are expected from the Wylfa Newydd construction workforce whilst they are using the Park and Ride or 'in transit' to the Wylfa Newydd Development Area.
Economic inactivity	No	Other economically inactive members of society (e.g. students or retired people) are not expected to be economically affected by the Park and Ride. No significant changes in associated health outcomes are therefore expected.
Type of employment	No	Skilled roles or roles with training progression are generally more beneficial for health outcomes. The limited employment offered by construction, operation or decommissioning of the Park and Ride is not expected to represent a significant change in the availability of good quality jobs within the local employment market. Opportunities associated with the Park and Ride to improve the quality of local jobs are considered limited.
Workplace conditions	No	Construction-type work, including road junction improvements, has inherent hazards. Horizon would expect contractors to operate under standard good practice occupational training and safety regimes. The Park and Ride is not expected to involve working conditions that differ from industry standards. Changes in population health outcomes are therefore not expected.
Access and quality of services		
Medical services	No	The Park and Ride is not expected to change journey times for emergency or non-emergency receipt of health care (including for emergency ambulance services). During construction of the junction improvements to facilitate access to the A5 and A55, any disruption would be temporary and would not limit access. The priority given to ambulances travelling under blue lights would be expected to reduce any changes in journey times to emergency incidents. For non-emergency journeys to healthcare facilities, there would be the potential for some increase in journey times. However, due to the temporary nature of the works, and ability for people to adapt to known planned roadworks (e.g. leave slightly earlier), such delays are not expected to significantly change population health outcomes. As the facility's construction, operation and decommissioning workforces are expected to be relatively small and predominantly already reside within north Wales, there are not anticipated to be implications for health service planning. Service planning for the Wylfa Newydd construction

Determinant of health	Score	Rationale
		workforce is discussed in volume C of the HIA Report for the application for development consent (and would be unaffected by the Park and Ride). The operational use of the Park and Ride by the Wylfa Newydd construction workforce would be associated with increases in traffic volumes on the road network around the Park and Ride (e.g. arrival and departure of private vehicles). This could cause some delay at certain times (linked to shift changes). The need to avoid exacerbating effects associated with HGVs queuing at the Driver and Vehicle Standards Agency site is noted. The travel planning and junction improvements as part of the scheme would greatly reduce the potential for any effect. Access to the Gwyddfor Residential Home and Cartio Môn Go Karting centre (which are the most likely destinations/sources for medical care trips in the vicinity) would be maintained at all times. Operational use of the Park and Ride would be an embedded mitigation of the Project against congestion (and thus medical service access reductions) on the A5025 due to additional vehicle movements associated with the Wylfa Newydd construction workforce. This beneficial effect is discussed in volume C of the HIA Report for the application for development consent, so does not warrant further assessment here.
Other caring services	No	The Park and Ride is not expected to affect other caring services. This includes no expected increase in journey times for time-critical healthcare (e.g. ambulance blue-light journeys). Access to the Gwyddfor Residential Home would be maintained at all times. No change is expected in social care provision or staffing (e.g. labour churn effects – the movement of workers between positions which may result in the need to back fill some roles). Significant changes in population health outcomes are therefore not expected.
Careers advice	No	Construction of the Park and Ride is not expected to offer long-term employment or training opportunities. The provision of local careers advice in relation to operational employment is a possibility; however, the small employment offer associated with this aspect of the Project means that any beneficial effect is unlikely to be associated with significant changes in population health outcomes.
Shops and commercial services	No	The Park and Ride is not expected to affect local shops or other commercial services. Any indirect economic activities by the Park and Ride workforces (i.e. purchases in Bodedern shops to the north) are unlikely to provide a contribution to the local economy that would be associated with significant changes in population health outcomes. No shops or commercial

Determinant of health	Score	Rationale
		services are expected to be used by the Wylfa Newydd construction workforce whilst they are using the Park and Ride or 'in transit' to the Wylfa Newydd Development Area.
Public amenities	No	Public amenities (public toilets, public telephones, information signage, etc.) are not expected to change as a result of, or be affected by, the Park and Ride. Significant changes in population health outcomes are therefore not expected. Due to restricted public access of the site, the Park and Ride is not considered an appropriate opportunity for provision of additional public amenities.
Transport including parking	No	There is a noted sensitivity in the local baseline to changes in access related deprivation. However, the small scale of junction works at the Park and Ride and its associated vehicle movements mean it is unlikely there would be significant changes in access to schools or other services. Changes in population health outcomes are therefore not expected. No disruption to public transport is expected during construction, operation or decommissioning of the Park and Ride. A bus stop on the A5 would be accessible from the Park and Ride via a short pedestrian walkway promoting more sustainable travel to the site by the Wylfa Newydd construction workforce and the Park and Ride's operational workforce. Whilst beneficial, such effects do not warrant further assessment. The large increase in parking due to the Park and Ride would not be accessible to the public, so would not change community parking provision. The Park and Ride provides embedded mitigation for the Project against additional parking at the Wylfa Newydd Development Area or use of parking provision in communities near the Wylfa Newydd Development Area. This benefit is discussed in volume C of the HIA Report for the application for development consent.
Education and training	No	The sensitivity of schools in surrounding communities is noted (e.g. Ysgol Uwchradd Bodedern, north of the Park and Ride site, on London Road, which forms part of the site access). However, no changes in school journey times are expected to be associated with the Park and Ride due to junction improvements and travel planning. Access to the school would be maintained at all times. The Park and Ride provides an embedded mitigation of the Project against congestion (and longer travel-to-school times) on the A5025 due to additional vehicle movements associated with the Wylfa Newydd construction workforce. Such effects are discussed in volume C of the HIA Report for the application for development consent. There is not expected to be a significant number of jobs created by the Park and Ride's construction,

Determinant of health	Score	Rationale
		operation or decommissioning workforces. No significant change in population health outcomes is therefore expected from associated occupational education and training.
Information technology	No	The Park and Ride is not expected to change access to broadband or other information technology media. The contractors would work closely with utility providers to incorporate utility diversions to reduce any disruption.
Macro-economic, environmental and sustainability factors		
Government policies	No	The Project is supported by NPS EN-1 [RD7] and NPS EN-6 [RD8]. The Park and Ride would be a step towards the delivery of the Project and would therefore facilitate the delivery of energy in accordance with NPS EN-1 [RD7] and NPS EN-6 [RD8]. However, the Park and Ride alone is not expected to affect energy supply.
Gross domestic product	No	The scale of investment and economic activity associated with the Park and Ride is not expected to have a significant effect on gross domestic product.
Economic development	No	Although a component of the investment associated with the Project, the Park and Ride element is not expected to have macro-economic effects for the wider region.
Biological diversity	No	Publicly accessible areas of biodiversity interest can encourage active travel with benefits for health and well-being from increased physical activity. Although the Park and Ride may include some measures in relation to biodiversity, there is not expected to be a significant change in population health outcomes as the site would not be publicly accessible.
Climate	No	The Park and Ride (including the use of diesel-hybrid buses) would promote a reduction in private car use and its associated climate-altering emissions. Although a component of the Project (a low-carbon power-generating technology), the Park and Ride element is not expected to result in a significant change in population health outcomes associated with climate change.

Determinants of health from WHIASU guidance [RD1].

Conclusion

- O.3.19 This rapid HIA screening statement has been prepared for the proposed Park and Ride.
- O.3.20 The Park and Ride is an important component for delivery of the Wylfa Newydd DCO Project. The facility is a key component of the Project's Integrated Traffic and Transport Strategy. The Park and Ride would reduce the number of vehicles using local roads.
- O.3.21 The design and mitigation for the Park and Ride has been informed by iterative discussion as part of this rapid HIA screening and the wider HIA work for the Project.
- O.3.22 Those affected by the Park and Ride are likely to include vulnerable groups (see table O-11). Potentially significant health effects to such groups (and the general public) were considered (see table O-12). The rapid HIA screening concluded that there are no health effects requiring further assessment.
- O.3.23 It was judged that changes due to the Park and Ride would have some effects on health. Those changes that were judged to be generally beneficial for health, but not likely to be significant, were screened out of further assessment. These would be the potential for the following small operational stage improvements:
- use of the Park and Ride may increase walking as part of regular multi-modal transport, benefiting physical activity;
 - the public transport link to the Park and Ride may further facilitate sustainable and multi-modal travel by workers;
 - small numbers of Park and Ride operative jobs may contribute to direct and indirect economic benefits; and
 - single car families (of local Wylfa Newydd construction workers) may benefit from the drop-off and pick-up facilities, increasing family mobility, role flexibility and access to education, employment and affordable healthy food.
- O.3.24 The rapid HIA screening notes that operational use of the Park and Ride would reduce additional vehicle movements on the A5025 associated with the Wylfa Newydd construction workforce (mitigating any adverse effect on road safety and health trip journey times). However, for the purposes of rapid HIA screening, and in line with proportionate assessment, the beneficial effect was noted but screened out as not requiring further assessment here. The Park and Ride's role as embedded mitigation for the Project is discussed in volume C of the HIA Report for the application for development consent.
- O.3.25 Those potential changes that were judged to be generally adverse for health, but not likely to be significant, were also screened out of further assessment. These were the potential for:
- potential for temporary levels of daytime noise for a few dwellings that may/could lead to annoyance (including a residential care home for the elderly) during construction, operation and decommissioning;

- potential for visual change, including from night-time lighting, during the 24-hour operation of the Park and Ride;
 - small, localised and temporary reductions in road safety near the Park and Ride due to peaks in vehicle movements at shift changes; and
 - temporary construction related reductions in access during junction improvements.
- O.3.26 As set out in the Environmental Statement, construction activities would be subject to standard good practice mitigation and measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Park and Ride sub-Code of Construction Practice (Application Reference Number: 8.10).
- O.3.27 In summary, the conclusion of the rapid HIA screening for the Park and Ride is that there are no potentially significant health effects that warrant further assessment.

O.4 Rapid HIA screening statement: A5025 Off-line Highway Improvements

The A5025 Off-line Highway Improvements

- O.4.1 The main vehicular route to and from the Wylfa Newydd Development Area is the A5025, which connects to Valley approximately 18km to the south. To the east, the A5025 connects the Wylfa Newydd Development Area to Cemaes and a number of other settlements on the northern and eastern coasts of Anglesey.
- O.4.2 Transportation surveys and studies undertaken by Horizon between the periods of 2010 to 2015 indicate that sections of the A5025 route currently have width restrictions, bends that do not meet current highway design standards, and other constraints that affect existing traffic flows and movements. The surveys also identified that construction and worker traffic associated with the Project could generate potential effects on local communities.
- O.4.3 Horizon is therefore proposing to carry out works to upgrade and improve sections of the A5025 to address these constraints.
- O.4.4 Two types of improvement are planned:
- On-line Highway Improvements (within and immediately adjacent to the existing highway boundary, e.g. road widening, new signs or road markings); and
 - Off-line Highway Improvements (beyond the highway boundary, e.g. bypasses around villages).
- O.4.5 The On-line Highway Improvements form a separate package of measures independent of the application for development consent. The A5025 On-line Highway Improvements have been considered by a standalone rapid HIA screening statement, which concluded that there are no potentially significant health effects that warrant further assessment. The A5025 On-line Highway Improvements are included in volume I as cumulative effects.

- O.4.6 This rapid HIA screening statement addresses the potential effects of the A5025 Off-line Highway Improvements only.
- O.4.7 The follow paragraphs summarise the main features of the A5025 Off-line Highway Improvements that are relevant to this HIA. Further details of the proposed activities and timetable which the rapid HIA screening has considered are set out in Environmental Statement chapter G1 (proposed development) (Application Reference Number: 6.7.1).

Valley Bypass

- O.4.8 The Valley Bypass would be a new four-arm roundabout to the east of Valley linking the A5 and the A5025. The bypass would reduce traffic using the existing signalised junction in Valley, including reducing the number of vehicles passing some dwellings (benefiting noise, air quality and road safety).

Llanfachraeth Bypass

- O.4.9 A new highway would provide a bypass to the east of Llanfachraeth village. The bypass would reduce the number of vehicles passing through the village (benefiting noise, air quality and road safety) and increase overtaking opportunities along the A5025. There are four Public Rights of Way that would be affected by the proposed alignment. Three would be appropriately diverted (including one by-passing under the highway). One Public Right of Way is proposed to be closed due to lack of current usage (with access retained via a side road instead). A noise fence or bund would be included as appropriate to reduce effects from the new alignment on Llanfachraeth.

Llanfaethlu Bypass

- O.4.10 The Llanfaethlu Bypass would eliminate two existing substandard bends near the Black Lion pub and at Llanfaethlu village. The bypass would reduce the number of vehicles passing close to the village (benefiting noise and air quality). The bypass would pass into a cutting as it passes the village, further reducing noise and visual effects. A footway/cycleway would be provided between Llanfaethlu village and the Black Lion Inn. The northern end of the highway improvements terminate at the proposed location of the Off-Site Power Station Facilities. A new footpath would be provided to the west of the highway to allow pedestrians to access Llanfaethlu village from the properties to the north of the bypass. A safe crossing point would be provided across the A5025 representing an improvement on the existing conditions where there are currently no pedestrian provisions. The highway design has given consideration to the new primary school in Llanfaethlu.

Cefn Coch Bypass

- O.4.11 The Cefn Coch Bypass would eliminate two existing substandard radius bends in Llanrhwydrus near two farms. The highway improvement would slightly increase the proximity of the highway to a small number of isolated dwellings, whilst reducing proximity to others. Additional planting would help screen views of earthworks and traffic from the nearby dwellings and integrate the road into the landscape. A Public Right of Way would be diverted to an appropriate crossing point, retaining access.

Approach

- O.4.12 This section comprises the screening stage of the rapid HIA undertaken on the A5025 Off-line Highway Improvements. As all potentially significant health effects of the A5025 Off-line Highway Improvements themselves are screened out, no further scoping, appraisal or reporting is warranted.
- O.4.13 Volume C of the HIA Report for the Project application for development consent discusses use of the operational A5025 Off-line Highway Improvements by the construction stage transport requirements of the Wylfa Newydd DCO Project.
- O.4.14 No HIA monitoring specific to the A5025 Off-line Highway Improvements is proposed. Volume J of the HIA Report for the Project application for development consent discusses monitoring for the Project as a whole.
- O.4.15 Volume I of the HIA Report for the Project application for development consent considers the health effects of all the components of the Project together by reporting on each of the rapid HIAs (including the potential for cumulative effects).
- O.4.16 Table O-7 sets out issues potentially relevant to the rapid HIA screening that are the subject of separate specific assessments. Such studies are a useful source of information for the rapid HIA screening.

Table O-7 Issues assessed in other studies

Study	Issues assessed
Environmental Statement (Application Reference Number: 6.7) volume G	Air quality; noise and vibration; landscape and visual amenity; surface water and groundwater; soils and geology; public access and recreation; traffic and transport; and socio-economic effects.
Welsh Language Impact Assessment (WLIA (Application Reference Number: 8.21))	The WLIA (Application Reference Number: 8.21) has identified that there are not expected to be significant effects to Welsh language and culture from construction or operation of the A5025 Off-line Highway Improvements.

Screening by population groups

- O.4.17 The rapid HIA screening exercise has involved a review of project information (notably the Environmental Statement volume G on the A5025 Off-line Highway Improvements) and completion of the following tables.
- Table O-8 identifies vulnerable groups and the mechanisms (or ways) by which the groups might be affected, directly or indirectly, by the A5025 Off-line Highway Improvements.
 - Table O-9 looks at a list of determinants of health and, in the light of table O-8, considers their relevance for the A5025 Off-line Highway Improvements.

O.4.18 The tables identify the effects that are most likely to occur and which have the potential to significantly affect health and inequalities (either beneficially or adversely).

O.4.19 The population groups in table O-8 are based on Appendix 2 of the WHIASU guidance [RD1].

Table O-8 Screening by population groups for the A5025 Off-line Highway Improvements

Population group	Type of effect	Mechanism
Age related groups		
Children	Direct	Potential for temporary construction-stage disruption and increases in noise, air pollution and travel times due to roadworks.
Young people		Potential for permanent operational-stage improvement in road safety; community identity, social networks and culture; physical activity; air quality; and noise from fewer vehicles within or passing close to the settlements of Valley, Llanfachraeth, Llanfaethlu and Llanrhuddlad (at Cefn Coch).
Older people		
Children	Indirect	Potential for small operational-stage improvements in prosperity for family members and carers (influencing the support for vulnerable dependants) due to wider economic benefits on the Isle of Anglesey associated with the improved road network.
Young people		
Older people		
Income related groups		
People on low income	Indirect	Due to use of existing workforce roles, direct construction-stage benefits related to employment are not expected.
Economically inactive		Potential for small operational-stage improvements in skills, knowledge and experience linked to wider economic benefits on the Isle of Anglesey associated with the improved road network.
Unemployed/workless		
Health status related groups		

Population group	Type of effect	Mechanism
The elderly, children and people affected by pre-existing health issues such as heart or lung disease.	Direct	Potential for temporary construction-stage disruption and increases in noise, air pollution and travel times due to roadworks. Potential for permanent operational-stage improvement in road safety; community identity, social networks and culture; physical activity; air quality; and noise from fewer vehicles within or passing close to the settlements of Valley, Llanfachraeth, Llanfaethlu and Llanrhuuddlad (at Cefn Coch).
People who are unable to work due to ill health	Indirect	Potential for small operational-stage improvements in prosperity for family members and carers (influencing the support for vulnerable dependants) due to wider economic benefits on the Isle of Anglesey associated with the improved road network.
Groups who suffer discrimination or other social disadvantage		
People with physical or learning disabilities/difficulties	N/A	No effect is expected that would be particular to these population groups. The A5025 Off-line Highway Improvements would be experienced in the same way by these groups, with no difference in population health outcomes expected due to discrimination or differences in social advantage. Any effects relating to health status are captured within the separate consideration of 'health status related groups' above. The experience of these population groups is not identified for further consideration in this rapid HIA screening.
Single-parent families		
Lesbian, gay and transgender people		
Refugee groups		
Black and minority ethnic groups		
People seeking asylum		
Religious groups		
Travellers		
Geographical groups		
People living in areas known to exhibit poor economic and/or health indicators	Direct	Potential for temporary construction-stage disruption and increases in noise, air pollution and travel times due to roadworks. Potential for permanent operational-stage improvement in road safety; community identity, social networks

Population group	Type of effect	Mechanism
People living in close proximity to the A5025 Off-line Highway Improvements		and culture; physical activity; air quality; and noise from fewer vehicles within or passing close to the settlements of Valley, Llanfachraeth, Llanfaethlu and Llanrhuddlad (at Cefn Coch).
	Indirect	Potential for small operational-stage improvements in prosperity due to wider economic benefits on the Isle of Anglesey associated with the improved road network.
People living in isolated/over-populated areas	Indirect	Potential for temporary construction-stage change in access deprivation levels and emergency service response times.
People unable to access services and facilities		Potential for small operational-stage improvements in access associated with the improved road network.

Screening by determinants of health

- O.4.20 Table O-9 sets out the determinants of health that may be affected by the A5025 Off-line Highway Improvements. A scoring of 'no' in table O-9 means that any potential population health effect is screened out and not considered further.
- O.4.21 Table O-9 shows that all potential population health effects were judged to be not significant. The table provides a rationale for the majority of potential health effects being screened out as not requiring further assessment.
- O.4.22 The determinants of health in table O-9 are from Appendix 1 of the WHIASU guidance [RD1].
- O.4.23 For the A5025 Off-line Highway Improvements, the combined effects from all the determinants of health that have been individually screened out would also be screened out of further assessment.
- O.4.24 For the A5025 Off-line Highway Improvements, the cumulative effects with the Wylfa Newydd DCO Project (intra-project effects) and other third party projects (inter-project effects) have also been considered.
- O.4.25 For example although screened out, the operation of the A5025 Off-line Highway Improvements would be expected to contribute to cumulative beneficial effects to road safety in combination with the operation of the A5025 On-line Highway Improvements (the subject of a separate assessment accompanying a *Town and Country Planning Act 1990* planning application for those works).
- O.4.26 As part of this HIA Report the potential for cumulative effects (including the A5025 Off-line Highway Improvements) has been considered, see volume I.

Table O-9 Screening by determinants of health for the A5025 Off-line Highway Improvements

Determinant of health	Score	Rationale
Lifestyles		
Diet	No	Any change in diet due to agricultural land take during construction or operation is not expected to be significant. Small positive effects may occur during operation from increased accessibility (shorter travel time) to shops in Amlwch. During both construction and operation, the viability of local shops in bypassed communities may be affected. Any health effect is expected to be captured within the separate consideration of access to shops and commercial services (see row for 'Shops and commercial services').
Physical activity	No	During construction, access may be temporarily reduced to some Public Rights of Way or private accesses. However, such temporary changes in access are not expected to be associated with changes in population health outcomes. Standard good practice measures to limit noise, control dust and reduce visual intrusion during construction would reduce temporary disturbance. During operation, new cycle routes and crossings are expected to be beneficial for health outcomes, particularly for regular users of the Public Rights of Way for which access across the A5025 is improved. The permanent reduction in vehicle traffic within bypassed communities (Valley, Llanfachraeth and Cefn Coch) is likely to promote walking and cycling. The highway improvements at Llanfaethlu would also support improved active travel (particularly from properties along the A5025 to the north of the main settlement), including access to the new primary school. These improvements that promote physical activity are noted, but do not necessitate further assessment.
Use of alcohol, cigarettes, non-prescribed drugs	No	The construction workforce for the A5025 Off-line Highway Improvements is expected to be small (a maximum of 171 workers at any one time) and unlikely to influence community behaviour. The A5025 Off-line Highway Improvements are not expected to change the accessibility of alcohol, cigarettes or non-prescription drugs.
Sexual activity	No	The construction workforce for the highway improvements is small and is predominantly expected to already reside within north Wales. Sexually transmitted infections and other communicable diseases are not expected to change due to the highway improvements workforce.
Other risk-taking activity	No	Risk taking in relation to road safety is discussed within the separate consideration of road hazards (see row for 'Road hazards' below). The A5025 Off-line Highway Improvements are not expected to change the accessibility of other risk-taking activity (e.g. gambling).

Determinant of health	Score	Rationale
Social and community influences on health		
Family organisation and roles	No	The A5025 Off-line Highway Improvements are not expected to change family roles through gender biases in working hours or employment opportunities. Although construction employment may follow existing demographic trends, the scale of employment is expected to be small and Horizon would expect contractors to operate equal opportunity policies.
Citizen power and influence	No	The A5025 Off-line Highway Improvements are not expected to change the ability of populations in the locality to participate in democratic activities. Consultation is expected to contribute to greater community empowerment but no additional effects on population health outcomes are expected.
Social support and social networks	No	There is potential for health benefits from stronger social networks and greater social support in bypassed communities due to reduced traffic (i.e. reduced severance, noise, traffic speeds and congestion). These factors are likely to contribute to a pedestrian environment that is more amenable to social interaction (e.g. people meeting up socially more often). Such changes are likely to be positive for mental well-being and generally protective for the health in these communities (e.g. informal care of older people). These likely improvements to social support and social networks are noted, but do not necessitate further assessment.
Neighbourliness	No	There is not expected to be a change in housing or population along the A5025 as a result of the A5025 Off-line Highway Improvements. A change in the dynamics of occupant interaction between adjacent properties is therefore unlikely. Any health effect is expected to be captured within the separate consideration of social support and social networks and community identity (see rows for 'Social support and social networks' and 'Community identity').
Sense of belonging	No	There would be no population relocation as a result of the A5025 Off-line Highway Improvements. A change in sense of belonging is therefore not expected. Any health effect is expected to be captured within the separate consideration of social support and social networks and community identity (see rows for 'Social support and social networks' and 'Community identity').
Local pride	No	There is not expected to be a loss of local landmarks or changes in the nature of the communities along the A5025. A change in local pride is therefore not expected. Any health effect is expected to be captured within the separate consideration social support and social networks and community identity (see rows for 'Social support and social networks' and 'Community identity').

Determinant of health	Score	Rationale
Community identity	No	The A5025 Off-line Highway Improvements may redefine the identity of some communities from the point of view of either residents or visitors. Bypassed communities may gain a greater sense of identity from being a destination rather than a place that is passed through. Residents may also be more apparent to each other as the passing transitory population would be largely absent. People recognising each other more often may gain a stronger sense of being part of a community. The increased tranquillity within bypassed communities may improve social interaction through a better psychosocial environment, both at the small-group and community-wide level. In such a context, it would be expected that there would be more protective effects for health and health inequalities. These likely improvements to community identity are noted, but do not necessitate further assessment.
Divisions in community	No	The A5025 Off-line Highway Improvements are not expected to be associated with differences of opinion between community groups that would have any effect, beneficial or adverse, on community relations.
Social isolation	No	There is not expected to be a change in housing or population along the A5025 as a result of the A5025 Off-line Highway Improvements. There may be some benefit from increased accessibility encouraging more frequent visiting of vulnerable members of society; however, such an effect is likely to be small and therefore unlikely to be associated with significant changes in population health outcomes. Any health effect is expected to be captured within the separate consideration of social support and social networks (see row for 'Social support and social networks').
Peer pressure	No	The A5025 Off-line Highway Improvements are not expected to create choices for which group conformity is an issue, e.g. in settings of schools, recreational activities or the workplace. Changes to peer pressure are therefore unlikely.
Cultural and spiritual ethos	No	Community attitudes and aspirations in relation to culture are not expected to be affected by the A5025 Off-line Highway Improvements. The construction workforce for the highway improvements is expected to be small and predominantly already reside within north Wales. Effects in relation to Welsh language have been considered separately as part of a WLIA (Application Reference Number: 8.21).
Racism	No	The A5025 Off-line Highway Improvements are not expected to have any prejudicial or discriminatory effect. Horizon would expect contractors to operate appropriate policies.

Determinant of health	Score	Rationale
Social institutions	No	The A5025 Off-line Highway Improvements are not expected to affect social norms or affect formal or informal social institutions, e.g. community groups, such as those for younger people, older people and young mothers or sporting or other cultural groups.
Other social exclusion	No	The A5025 Off-line Highway Improvements are not expected to affect levels of social exclusion for minority social groups (e.g. categories of people who are differentiated, and/or who differentiate themselves, from the social majority). There may be some benefit to access-related domains of deprivation. Any health effect is expected to be captured within the separate consideration of social support and social networks and access to shops and commercial services (see rows for 'Social support and social networks' and 'Shops and commercial services').
Living/environmental conditions affecting health		
Built environment	No	Although the A5025 Off-line Highway Improvements would change the built environment, any potential changes in population health outcomes are discussed under the topics of air quality, noise and road hazards (see rows for 'Noise including indoor environment', 'Air quality', and 'Road hazards').
Neighbourhood design	No	Changes in neighbourhood design are not expected as part of the A5025 Off-line Highway Improvements. Effects on social and environmental conditions due to changes in traffic are discussed under the topics of air quality, noise and road hazards (see rows for 'Noise including indoor environment', 'Air quality' and 'Road hazards').
Housing	No	Changes in housing are not expected as part of the A5025 Off-line Highway Improvements. Effects on social and environmental conditions due to changes in traffic are discussed under the topics of air quality, noise and road hazards (see rows for 'Noise including indoor environment', 'Air quality' and 'Road hazards').
Noise including indoor environment	No	Highway improvement construction noise (including from operations associated with the Temporary Construction Compound) is expected to be temporary. This issue, including transport related noise, is considered in detail by Environmental Statement chapter G6 (noise and vibration) (Application Reference Number: 6.7.6); the modelling outputs of which have defined the use of mitigation to reduce the level of effect. The appointed contractor would use standard good practice mitigation and measures in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-Code of Construction Practice (Application Reference Number: 8.12).

Determinant of health	Score	Rationale
		Consequently, whilst there may be some temporary annoyance for some residents due to noise and traffic related to construction, this is not expected to have any significant changes in population health outcomes. During operation, new road surfaces and permanent new alignments that move traffic further from most dwellings (and/or into cuttings) would be expected to contribute to a quieter environment, with benefits for population health, particularly in Valley, Llanfachraeth, Llanfaethlu and Cefn Coch. These likely improvements to community noise levels are noted, but do not necessitate further assessment. In a few locations, the A5025 Off-line Highway Improvements would bring traffic closer to dwellings, for example at Parc Llynnon in Llanfachraeth. For this small population, there may be some ongoing annoyance due to traffic related noise. For those properties where existing transport noise effects could increase, the Environmental Statement noise assessment indicates that the changes would be relatively small and below thresholds where health is likely to be affected. The familiar tonal profile of vehicular noise is likely to be less intrusive compared to more variable and novel tonal profiles associated with construction activities). The issue of potential concern is that at these few dwellings, and at other dwellings unaffected by the A5025 Off-line Highway Improvements, the additional construction stage traffic of the Wylfa Newydd DCO Project may cause higher levels of disturbance, including at night. Use of diesel-hybrid buses and use of the Logistics Centre would reduce the likelihood of adverse effects; however, the potential for annoyance and sleep disturbance remains. As this effect is wider than the Off-line Highway Improvements (being relevant to all dwellings near the A5025 (and potentially the wider road network)), this issue is noted here and is considered further in volume C of the HIA Report for the Project application for development consent.
Air quality	No	Highway improvement construction air pollutant emissions (including from operations associated with the Temporary Construction Compound) are expected to be temporary and within UK AQO levels. The Environmental Statement chapter G5 (air quality) (Application Reference Number: 6.7.5) notes that the appointed contractor would use standard good practice mitigation and management strategies (including an Unexpected Contamination Plan) set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-Code of Construction Practice (Application Reference Number: 8.12). Consequently, whilst there may be some temporary reduction in air quality for some residents due to construction activities, this is not expected to have any significant changes in population health outcomes. During operation, the permanent new alignments would move traffic further from most dwellings. The greater dispersion distances would be expected to contribute to improved traffic related air quality particularly in Valley,

Determinant of health	Score	Rationale
		Llanfachraeth, Llanfaethlu and Cefn Coch. However, as the air quality conditions both at baseline and following the realignment would be within UK AQO thresholds, whilst beneficial, such further reductions (e.g. in nitrogen dioxide and fine particulate matter) are considered not significant in assessment terms (an acceptable standard for the UK having already been met). These likely improvements to community air quality are noted, but do not necessitate further assessment. In a few locations, the A5025 Off-line Highway Improvements would bring traffic closer to dwellings, for example at Parc Llynnon in Llanfachraeth. For this small population, there may be some ongoing small reduction in air quality. For those properties, the Environmental Statement air quality assessment indicates that any change that does take place is expected to be within UK AQO levels. The issue of potential concern is that at these few dwellings, and at other dwellings unaffected by the A5025 Off-line Highway Improvements, the additional construction stage traffic of the Wylfa Newydd DCO Project may cause higher levels of traffic related air pollution. As this effect is wider than the Off-line Highway Improvements (being relevant to all dwellings near the A5025 (and potentially the wider road network)), this issue is noted here and is considered further in volume C of the HIA Report for the Project application for development consent. This screening decision acknowledges that some non-threshold health effect may occur due to slight increases in concentrations of nitrogen dioxide and fine particulate matter. However, taking into account baseline environmental and population health conditions, such a small change is not considered to constitute a significant population health effect. As good practice, and in view of the potential for non-threshold health effects, it is expected that the contractor would reduce levels of such pollutants as low as reasonably practicable.
Water quality	No	The potential for significant changes in population health outcomes as a result of changes in pollutants or source-pathway-receptor linkages is considered limited. The design of the A5025 Off-line Highway Improvements has taken into consideration and mitigated surface water and groundwater effects.
Attractiveness of area	No	The A5025 Off-line Highway Improvements may introduce some changes in visual amenity and tranquillity. Construction effects are expected to be temporary. During operation, the appeal of bypassed villages may increase due to reduced through traffic (benefiting residents and attracting visitors). Any health effect associated with this benefit is expected to be captured within the separate consideration of community identity (see row for 'Community identity'). In the wider areas of the bypasses, new embankments, views of vehicles and bridges would change existing views. Where feasible, the design has sought to integrate such changes into the landscape (e.g. through use of cuttings or planting to screen views). As the highway improvements are modest changes to an

Determinant of health	Score	Rationale
		existing transport route of similar capacity (rather than an entirely new road or number of vehicle lanes), the changes to the attractiveness of the area (and any associated population health effect) are considered limited.
Green space	No	Although there would be land take to accommodate the A5025 Off-line Highway Improvements, there is not expected to be a change in the green space available for community use. The land take is predominantly from agricultural usage. Any health effect is expected to be captured within the separate consideration of physical activity (see row for 'Physical activity' above).
Community safety	No	Actual or perceived levels of crime are not expected to change as a result of the A5025 Off-line Highway Improvements (police services are therefore unlikely to be affected).
Smell/odour	No	The A5025 Off-line Highway Improvements are not expected to introduce new odour sources that would be considered detrimental to health and well-being (e.g. nuisance odour). Any construction-related odour (e.g. from asphalt laying) would be temporary. Although there may be some benefit to bypassed communities from reduced odour associated with road traffic emissions, any health effect is expected to be captured within the separate consideration of air quality (see row for 'Air quality').
Waste disposal	No	The A5025 Off-line Highway Improvement construction wastes would be managed to avoid posing a significant risk to health. Any health effect in relation to construction dust is captured within the separate discussion of 'air quality'. Good practice mitigation measures would be applied to avoid (or address existing) ground contamination in accordance with the management strategies (including an Unexpected Contamination Plan) set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-Code of Construction Practice (Application Reference Number: 8.12).
Road hazards	No	Changes in road safety are a key outcome of the highway improvements. The construction of the A5025 Off-line Highway Improvements offers fewer risks compared to many other road improvement works, as the majority of the work would be undertaken on road sections not yet open to the public. The connection of the new highway section to the existing A5025 would be undertaken using standard good practice approaches, including reduced speeds and traffic management as required. Health effects for the workforce are considered within 'workplace conditions'. Once operational, beneficial effects on health are expected from safer driving conditions and less traffic in bypassed communities where the road environment is most often shared with pedestrians. Young people and older people

Determinant of health	Score	Rationale
		would be most likely to benefit, particularly as pedestrians and cyclists. Improved crossings and cycle lanes along the A5025 are also expected to improve road safety (e.g. through improved visibility). These permanent improvements to road safety are noted, but do not necessitate further assessment. For those who regularly use the A5025 between Valley and Cemaes there is also the potential for a small reduction in road safety. This is due to faster speeds at some locations due to the highway improvements (accident risk and severity being partly a function of speed). An initial unfamiliarity with the new road layout may also temporarily increase accident risk for some people accustomed to the existing road layout (although the design and appropriate signage would greatly reduce such risks). Overall, the A5025 Off-line Highway Improvements are expected to have a net beneficial effect on improving road safety. The additional construction stage traffic of the Wylfa Newydd DCO Project using the improved A5025 may also increase accident risk (simply from greater numbers of vehicles on the road). As this effect is wider than the Off-line Highway Improvements (being relevant to all dwellings near the A5025 (and potentially the wider road network)), this issue is noted here and is considered further in volume C of the HIA Report for the Project application for development consent.
Injury hazards	No	The A5025 Off-line Highway Improvements are not expected to change the hazards for accidental injury (e.g. falls by older people or other requirements for emergency services). Construction areas would not be accessible to the public. There may be some beneficial effect from improved road surfacing. Any health effect is captured within the separate discussion of 'road hazards'. Compounds, where any potentially hazardous equipment and/or materials would be stored (e.g. fuel and power tools), would not be publicly accessible and would be subject to appropriate good practice management.
Quality and safety of play areas	No	The A5025 Off-line Highway Improvements, once operational, are not expected to increase the speed or volume of road traffic adjacent to play areas. There may be some benefit in bypassed communities from a safer street environment when accessing local play areas. Any health effect is captured within the separate discussion of 'road hazards'.
Economic conditions affecting health		
Unemployment	No	Moving from unemployment to employment is associated with important health benefits, both for those employed and their dependants. However, there are not expected to be a large number of jobs created in response to the A5025 Off-line Highway Improvements. Existing highway design, construction and maintenance jobs within north Wales are expected to be used (safeguarding those

Determinant of health	Score	Rationale
		roles). During operation of the A5025 Off-line Highway Improvements, reduced journey times may offer some benefit from improved access to employment opportunities. However, as the scale of reduced travel time is expected to be small, changes in population health outcomes are not expected.
Income	No	Greater income can offer more opportunities for expenditure on health-promoting goods, services and activities. Neither direct employment from, nor indirect economic activity in, local communities by the construction workforce for the A5025 Off-line Highway Improvements is expected to result in significant changes in income levels. Changes in population health outcomes are therefore not expected.
Economic inactivity	No	Other economically inactive members of society (e.g. students or retired people) are not expected to be affected by the A5025 Off-line Highway Improvements. No changes in the levels of economic inactivity are therefore expected.
Type of employment	No	Skilled roles or roles with training progression are generally more beneficial for health outcomes. The limited employment offered by the A5025 Off-line Highway Improvements is not expected to change the availability of good-quality jobs within the local employment market. Opportunities to improve the quality of local jobs are considered limited.
Workplace conditions	No	Highway construction and maintenance have inherent hazards from working in proximity to moving vehicles. Contractors would operate under standard good practice occupational training and safety regimes. The A5025 Off-line Highway Improvements are not expected to involve working conditions that differ from industry standards. Changes in population health outcomes are therefore not expected.
Access and quality of services		
Medical services	No	Journey times may change for health-related trips. There is no hospital with accident and emergency facilities on the Isle of Anglesey; the closest is Ysbyty Gwynedd located in Bangor. Health-related trips are already affected by the rural context (e.g. access deprivation). During construction, the priority given to ambulances travelling under blue lights would be expected to reduce any changes in journey times to emergency incidents. For non-emergency journeys to healthcare facilities there would be the potential for some increase in journey times during periods of highway construction. However, as the majority of the A5025 Off-line Highway Improvements would be completed whilst the existing routes were available, the potential for delays is limited. Where delays are expected (during

Determinant of health	Score	Rationale
		connection of new highway sections to the existing route), these would be subject to standard works scheduling and traffic management measures to reduce any delay (e.g. diversions, off-peak working, variable traffic signals and advertising of expected delays). The temporary nature of the works, and ability for people to adapt to known planned roadworks (e.g. leave slightly earlier) would also be expected to reduce the potential for changes in population health outcomes. As the construction workforce for the highway improvements is expected to be small and predominantly expected to already reside within north Wales, there are not anticipated to be implications for health service planning. The additional construction stage traffic of the Wylfa Newydd DCO Project using the improved A5025 may increase journey times (simply from greater numbers of vehicles on the road). As this effect is wider than the Off-line Highway Improvements (being relevant to all sections of the A5025 (and potentially the wider road network)), this issue is noted here and is considered further in volume C of the HIA Report for the Project application for development consent. Notwithstanding potential delays during periods of the construction stage of the Wylfa Newydd DCO Project, the long-term operational use of the improved A5025 is expected to improve journey times for the rural community, including access to healthcare, schools and services in larger settlements (e.g. Amlwch, Holyhead and Bangor). This permanent improvement to travel times is noted, but does not necessitate further assessment.
Other caring services	No	Any temporary increased journey time to other caring services is not expected to be time-critical for health. Significant changes in population health outcomes are therefore not expected.
Careers advice	No	The A5025 Off-line Highway Improvements are not expected to offer long-term employment or training opportunities. The provision of local careers advice in relation to such employment is therefore unlikely to be associated with changes in population health outcomes.
Shops and commercial services	No	A reduction in passing trade due to less through traffic in bypassed communities (Valley, Llanfachraeth and Llanrhuuddlad (at Cefn Coch)) could affect the viability of shops and other commercial services. Should this threaten the economic viability of hospitality, retail and service provision within these communities, there could be some adverse effect on health. For example, changes to retail provision could affect access to food, mobility and levels of physical activity, such as older people ceasing to have a shop within walking distance. As it is expected that there would be appropriate signposting of such community assets from the new sections of highway, the potential for significant changes in population health outcomes are considered limited.

Determinant of health	Score	Rationale
Public amenities	No	Public amenities (public toilets, public telephones, information signage, etc.) are not expected to change as a result of the Off-line Highway Improvements. There is a general lack of public toilets along the A55 and A5025. Whilst the A5025 Off-line Highway Improvements potentially offer the opportunity to provide additional facilities, it is considered that this issue is better addressed in other ways, such as public toilets as part of a visitor centre.
Transport including parking	No	The A5025 Off-line Highway Improvements respond to the need to upgrade specific highway sections to accommodate Project vehicle movements. The associated general improvement to community access to services and quality of transport, are captured within the separate consideration of physical activity, air quality, noise, road hazards and access to medical or commercial services (see rows for 'Physical activity', 'Noise including indoor environment', 'Air quality', 'Road hazards', 'Medical services' and 'Shops and commercial services'). Parking in communities near the A5025 is not expected to change as a result of the Off-line Highway Improvements.
Education and training	No	Longer school journey times could mean children need to be woken earlier for school, which may potentially cause disruption to daily life and some annoyance. However, any changes in school journey times due to the A5025 Off-line Highway Improvements or construction delays are expected to be small and therefore not associated with changes in educational outcomes (an important determinant of health). There are not expected to be a large number of jobs created in response to the A5025 Off-line Highway Improvements. No significant change in population health outcomes is therefore expected from associated occupational education and training.
Information technology	No	The A5025 Off-line Highway Improvements are not expected to change access to broadband or other information technology media. The appointed contractor would work closely with utility providers to incorporate utility diversions to reduce any disruption. It is noted that the A5025 Off-line Highway Improvements potentially allow for the laying of ducting as part of realignment or resurfacing work. Such ducting could support extending a broadband network in the region, and such improvements in information technology could promote greater employment flexibility and economic prosperity in the region, with associated health and well-being outcome benefits.
Macro-economic, environmental and sustainability factors		
Government policies	No	The Project is supported NPS EN-1 [RD7] and NPS EN-6 [RD8]. The A5025 Off-line Highway Improvements would be a step towards the delivery of the Project and would therefore facilitate the

Determinant of health	Score	Rationale
		delivery of energy in accordance with NPS EN-1 [RD7] and NPS EN-6 [RD8]. However, the A5025 Off-line Highway Improvements alone are not expected to affect energy supply.
Gross domestic product	No	The scale of investment and economic activity associated with the A5025 Off-line Highway Improvements is not expected to have an effect on gross domestic product.
Economic development	No	The A5025 Off-line Highway Improvements would contribute to beneficial economic effects to the wider region from an improved highway network. This could include an increase in tourism and a more efficient distribution network for businesses (i.e. the road being more suitable for larger haulage vehicles). Whilst the scale of change is expected to be small, the effect could operate over a wide area and into the long term. The local economy of Anglesey may thus receive long-term benefits. The north and west parts of Anglesey are most likely to benefit. Although a modest effect, the rural economy's reliance on transport infrastructure (and economic sensitivity to transport costs) suggests the potential for the Off-line Highway Improvements to make an important contribution (particularly given existing access deprivation). This promotion of economic development is noted, but does not necessitate further assessment.
Biological diversity	No	Publicly accessible areas of biodiversity interest can encourage active travel with benefits for health and well-being from increased physical activity. Although the A5025 Off-line Highway Improvements would include some measures in relation to biodiversity, there is not expected to be a significant change in population health outcomes.
Climate	No	The A5025 Off-line Highway Improvements are not expected to change decisions around private car use and any associated climate-altering emissions. Although there may be some incremental effect on climate change from the A5025 Off-line Highway Improvements indirectly promoting the use of private road vehicles, changes in population health outcomes are not expected.

Determinants of health from WHIASU guidance [RD1].

Conclusion

- O.4.27 This rapid HIA screening statement has been prepared for the proposed A5025 Off-line Highway Improvements.
- O.4.28 The A5025 Off-line Highway Improvements are an important component for delivery of the Wylfa Newydd DCO Project. The improvements would reduce potentially adverse transport effects of the Project, particularly for people living near the A5025, and would improve the standard of the existing carriageway.
- O.4.29 The A5025 Off-line Highway Improvements would involve works to upgrade and improve sections of the A5025 beyond the existing highway boundary, including a new four-arm roundabout providing a bypass to the east of Valley; a new bypass to the east of Llanfachraeth village; a new alignment at Llanfaethlu to eliminate two existing substandard bends; and a new bypass at Cefn Coch.
- O.4.30 The A5025 Off-line Highway Improvements are required as part of the wider transport strategy for delivery of the Wylfa Newydd DCO Project, the design and mitigation for which has been informed by iterative discussion as part of this rapid HIA screening and the wider HIA work for the Project.
- O.4.31 Those affected by the A5025 Off-line Highway Improvements are likely to include vulnerable groups (see table O-8). Potentially significant health effects to such groups (and the general public) were considered (see table O-9). The rapid HIA screening concluded that there are no health effects requiring further assessment.
- O.4.32 It was judged that changes due to the A5025 Off-line Highway Improvements would have some effects on health. Those changes that were judged to be generally beneficial for health, but not likely to be significant, were screened out of further assessment. These would be the potential for the following small operational stage improvements:
- promotion of physical activity through improvements to cycle routes and crossing points on the A5025 for existing Public Rights of Way, improving physical health (e.g. cardiovascular health) and mental health conditions (e.g. stress, anxiety or depression);
 - a greater sense of community identity in bypassed communities as destinations (rather than places passed through), benefiting mental health through underlying social determinants of community cohesion; and
 - improved separation from traffic emissions for most dwellings contributing to better air quality, particularly in bypassed communities, supporting reduced risks of adverse respiratory health outcomes.
- O.4.33 Furthermore, some beneficial operational changes due to the A5025 Off-line Highway Improvements were considered to have the potential for significant health effects. However, for the purposes of rapid HIA screening, and in line with proportionate assessment, these were screened out as not requiring further assessment. These issues were as follows:
- the potential for stronger social networks and greater social support in bypassed communities due to an improved pedestrian environment,

providing protective effects for health and health inequalities through factors linked to community cohesion and thus with mental health;

- reduced traffic noise for most dwellings contributing to a quieter environment, particularly in bypassed communities, reducing adverse effects of disturbance on physical and mental health;
- safer conditions for driving (and crossing) the A5025 for all road users, including safer conditions in bypassed communities for pedestrians and cyclists due to less traffic. Reducing risks of serious injuries or fatalities;
- improved journey times for rural community when accessing healthcare, schools and services in larger settlements, reducing access deprivation and supporting receipt of time-critical healthcare; and
- wider economic benefits of an improved highway supporting tourism and a more efficient distribution network for businesses, promoting prosperity and the health promoting lifestyle choices it affords.

O.4.34 Volume I of the HIA Report for the Project application for development consent considers these potentially significant health effects.

O.4.35 Those potential changes that were judged to be generally adverse for health, but not likely to be significant, were also screened out of further assessment. These were the potential for:

- temporary construction stage increases in noise, air pollution and travel times;
- temporary construction stage reductions in emergency service response times due to increased road congestion;
- permanent operational stage small increases in traffic related noise and air pollution for a small number of dwellings;
- permanent operational stage change in the viability of local shops in bypassed communities due to a reduction in passing trade (affecting local diet, elderly mobility and physical activity); and
- permanent operational stage increases in views of the new highway (and vehicles) for a small number of dwellings.

O.4.36 As set out in the Environmental Statement, construction activities would be undertaken by the appointed contractor in line with the good practice mitigation in accordance with the management strategies set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-Code of Construction Practice (Application Reference Number: 8.12).

O.4.37 In addition, the following adverse effects were noted relating to the use of the operational A5025 Off-line Highway Improvements by the construction stage transport requirements of the Wylfa Newydd DCO Project (e.g. HGVs and buses):

- noise disturbance, including at night;
- air pollution related to traffic emissions;
- increased accident risk due to more vehicles on the road; and

- increased health related journey times due to more vehicles on the road.
- O.4.38 As these effects would be wider than the Off-line Highway Improvements (being relevant to all sections of the A5025 (and potentially the wider road network)), these issues are noted in this rapid HIA screening statement and are considered further in volume C of the HIA Report for the Project application for development consent.
- O.4.39 In summary, the conclusion of the rapid HIA screening for the A5025 Off-line Highway Improvements is that there are no potentially significant health effects that warrant further assessment.

O.5 Rapid HIA screening statement: Logistics Centre

The Logistics Centre

- O.5.1 The Logistics Centre forms part of the Wylfa Newydd DCO Project. This Logistics Centre would be used during the construction stage of the Power Station to control the flow of Project related traffic along the A5025.
- O.5.2 The site is located approximately 2km to the south-east of Holyhead town, in the Parc Cybi employment area (close to Junction 2 of the A55). The residential area of Kingsland is situated approximately 1km to the north-west of the Logistics Centre site (including Ysgol Kingsland and Ysgol Gymraeg Morswyn schools). The residential area of Trearddur Bay is situated approximately 0.5km to the south (including Fairway Nursing Home approximately 1km to the south). A local cycle route (the Lôn Trefignath cycle path) connects Parc Cybi and Holyhead and provides a car-free route through Parc Cybi, crossing the site entrance. The site is bounded by the A55 to the north, an existing B-road to the south and open countryside to the east and west. It is approximately 19km south-west of the Wylfa Newydd Development Area.
- O.5.3 The proposals for the Logistics Centre consist of:
- a welfare/security building;
 - security kiosks (at the entrance/exit of the site);
 - a covered inspection bay;
 - an HGV Scanner; and
 - parking zones consisting of 100 parking bays for use by HGVs, Medium Goods Vehicles and Light Goods Vehicles, and 12 staff parking bays (including 1 disabled space).
- O.5.4 The Logistics Centre would be a temporary secure facility from which deliveries to the Wylfa Newydd Development Area would be managed to reduce traffic and impacts to the local road network. Vehicles would be despatch controlled to relieve traffic pressures on the A5025 and in the Wylfa Newydd Development Area (e.g. avoid convoys of HGVs travelling on the A5025, or congestion at the Wylfa Newydd Development Area site entrance).
- O.5.5 The facility would be operational 24 hours per day for a maximum of 10 years, with up to 14 staff. The perimeter of the site would be secured with 2.4m-high

Paladin-type fencing. The main entrance would have gated access manned by security personnel on a 24/7 basis.

- O.5.6 Access to the facility would be via an existing B-road to the south-west of the site, approximately half a mile from an intersection with the A55.
- O.5.7 Following construction of the Power Station, the site would be available for another appropriate employment use.
- O.5.8 Further details of the proposed activities and timetable which the rapid HIA screening has considered are set out in Environmental Statement chapter H1 (proposed development) (Application Reference Number: 6.8.1).

Approach

- O.5.9 This section comprises the screening stage of the rapid HIA undertaken on the Logistics Centre. As all potentially significant health effects are screened out, no further scoping, appraisal or reporting is warranted.
- O.5.10 No HIA monitoring specific to the Logistics Centre is proposed. Volume J of the HIA Report for the Project application for development consent discusses monitoring for the Project as a whole.
- O.5.11 Volume I of the HIA Report for the Project application for development consent considers the health effects of all the components of the Project together by reporting on each of the rapid HIAs (including the potential for cumulative effects).
- O.5.12 Table O-10 sets out issues potentially relevant to the rapid HIA screening that are the subject of separate specific assessments. Such studies are a useful source of information for the rapid HIA screening.

Table O-10 Issues assessed in other studies

Study	Issues assessed
Environmental Statement (Application Reference Number: 6.8)	Air quality; noise and vibration; landscape and visual; surface and groundwater; soils and geology; public access and recreation; traffic and transport; and socio-economic effects.
Welsh Language Impact Assessment (WLIA (Application Reference Number: 8.21))	The WLIA (Application Reference Number: 8.21) has identified that there are not expected to be significant effects to Welsh language and culture from the Logistics Centre.

Screening by population groups

- O.5.13 The rapid HIA screening exercise has involved a review of project information (notably the Environmental Statement volume H on the Logistics Centre) and completion of the following tables.
 - Table O-11 identifies vulnerable groups and the mechanisms (or ways) by which the groups might be affected, directly or indirectly, by the Logistics Centre.

- Table O-12 looks at a list of determinants of health and, in the light of Table O-11, considers their relevance for the Logistics Centre.

O.5.14 The tables identify the effects that are most likely to occur and which have the potential to significantly affect health and inequalities (either beneficially or adversely).

O.5.15 The population groups in table O-11 are based on Appendix 2 of the WHIASU guidance [RD1].

Table O-11 Screening by population groups for the Logistics Centre

Population group	Type of effect	Mechanism
Age-related groups		
Children	Direct	Potential for temporary disruption and increases in noise, air pollution and visual disturbance due to the Logistics Centre's construction, operation and decommissioning.
Young people		
Older people		
Children	Indirect	Potential for small improvements in prosperity for family members and carers (influencing the support for vulnerable dependants) due to employment linked to the Logistics Centre.
Young people		
Older people		
Income-related groups		
People on low income	Direct	Potential for small improvements in skills, knowledge and experience linked to employment for the Logistics Centre.
Economically inactive		
Unemployed/workless		
Health status-related groups		
The elderly, children and people affected by pre-existing health issues such as heart or lung disease	Direct	Potential for temporary disruption and increases in noise, air pollution and visual disturbance due to the Logistics Centre's construction, operation and decommissioning (e.g. at Fairway Nursing Home).
People who are unable to work due to ill health	Indirect	Potential for small improvements in prosperity for family members and carers (influencing the support for vulnerable dependants) due to employment linked to the Logistics Centre.
Groups who suffer discrimination or other social disadvantage		
People with physical or learning disabilities/difficulties	N/A	No effect is expected that would be particular to these population groups. The Logistic Centre would be experienced in the same way by these
Single-parent families		

Population group	Type of effect	Mechanism
Lesbian, gay and transgender people		groups, with no difference in population health outcomes expected due to discrimination or differences in social advantage. Any effects relating to health status are captured within the separate consideration of ‘health status related groups’ above. The experience of these population groups is not identified for further consideration in this rapid HIA screening.
Refugee groups		
Black and minority ethnic groups		
People seeking asylum		
Religious groups		
Travellers		
Geographical groups		
People living in areas known to exhibit poor economic and/or health indicators	Direct	Potential for increases in noise and air pollution, as well as potential for a small reduction in road safety (including pedestrian and cycle routes near the site entrance) due to increased vehicle movements. Potential for changes in community identity due to the introduction of security features (e.g. fencing and lighting).
People living in close proximity to the Logistics Centre site	Indirect	Potential for small improvements in prosperity for family members and carers (influencing the support for vulnerable dependants) due to employment linked to the Logistics Centre.
People living in isolated/over-populated areas	Direct	Potential for small changes in access at Kingsland to the north due to additional vehicle movements on routes shared with local communities between the site entrance and the A55. Potential for communities being discouraged from using the pedestrian and cycle route that passes the site entrance (e.g. users of Trearddur Country Park Caravan Site to the south when accessing Holyhead).
People unable to access services and facilities		

Screening by determinants of health

- O.5.16 Table O-12 sets out the determinants of health that may be affected by the Logistics Centre. A scoring of 'no' in table O-12 means that any potential population health effect is screened out and not considered further.
- O.5.17 Table O-12 shows that all potential population health effects were judged to be not significant. The table provides a rationale for all potential health effects

being screened out as not requiring further assessment. The determinants of health in table O-12 are from Appendix 1 of the WHIASU guidance [RD1].

- O.5.18 For the Logistics Centre, the combined effects from all the determinants of health that have been individually screened out would also be screened out of further assessment.
- O.5.19 For the Logistics Centre, the cumulative effects with the Wylfa Newydd DCO Project (intra-project effects) and other third-party projects (inter-project effects) have also been considered.
- O.5.20 For example, being inherently remote from the Wylfa Newydd Development Area, there is limited potential for the construction, operation or decommissioning of the Logistics Centre to have cumulative effects with activities at that location or with other elements of the Project. The Logistics Centre would be accessed from roads with high capacity (a purpose-built B-road for Parc Cybi and the A55), reducing the potential for traffic related cumulative effects.
- O.5.21 As part of this HIA Report the potential for cumulative effects (including the Logistics Centre) has been considered, see volume I.

Table O-12 Screening by determinants of health for the Logistics Centre

Determinant of health	Score	Rationale
Lifestyles		
Diet	No	Any change in diet due to agricultural land take during the Logistics Centre is not expected to be significant. Although historically agricultural, the site is not currently in agricultural use. No change in access to shops is expected, as the B4545 (the B-road parallel to that used to access the site and which would be unaffected by the Logistics Centre) provides the main access between the communities of Trearddur Bay, Kingsland and Holyhead.
Physical activity	No	The Logistics Centre site is in a relatively remote location with no dwellings or community amenities in close proximity. A small section of the access route from Junction 2 of the A55 would be shared with that for residential areas of Kingsland and the Holyhead Leisure Centre (located approximately 1km to the north-west). However, as the route is high capacity, no change in access is expected. The Logistics Centre site entrance requires crossing of two cycle paths. One is a dedicated cycle lane alongside the B-road, the other a parallel paved cycle path set back from the road. Both cycle routes provide important physical activity opportunities between the residential areas of Kingsland and Holyhead to the north and scenic rural areas of Holyhead island to the south (including sites of interest, such as the historic Trefignath Burial Chamber approximately 30m from the Logistics Centre site). The population at and near the Trearddur Country Park Caravan Site (further to the south) may also be sensitive to changes in this route as it is the most direct access to amenities in Holyhead. During the early stages of construction, the cycle paths passing the site entrance would be temporarily closed and diverted onto the road while the new site entrance of the Logistics Centre was established. The cycle paths would then be reopened. The footpath along the B-road is not expected to be affected, as it is on the other side of the road, so would not be crossed by traffic associated with the Logistics Centre. It is expected that during early construction, the diversion of the cycle paths onto the Parc Cybi B-road would be clearly signposted (bilingually) and appropriate use would be made of traffic management measures, e.g. reduced speeds. Furthermore, it is expected that the operation of the new site entrance to the Logistics Centre would be safe for cyclists on both cycle paths crossing the entrance. As the B-road route has relatively low vehicle use and good quality cycle path infrastructure, the temporary diversion and new site entrance are considered unlikely to change population health outcomes due to discouraged physical activity. There may be opportunities to promote

Determinant of health	Score	Rationale
		active travel by operational staff (e.g. using the cycle routes). However, whilst beneficial, the small number of operational staff suggests any effect would not be significant in population health terms.
Use of alcohol, cigarettes, non-prescribed drugs	No	The Logistics Centre construction workforce is expected to be small (at its peak approximately 50 workers) and predominantly already reside within north Wales. The workforce is thus unlikely to influence community behaviour. The operation of the Logistics Centre would involve both a small number of staff (at peak around 14) as well as a transient population of lorry drivers who may stay overnight on-site in their own vehicles (and who would use basic welfare facilities at the Logistics Centre). The site would be secured and not accessible to the public. Neither the presence of the Logistics Centre workforces, nor the presence of the lorry drivers, would be expected to change the accessibility of alcohol, cigarettes or non-prescription drugs. An opportunity for health lies in the potential for health-promotion activities to the lorry drivers using the Logistics Centre (e.g. providing materials within the welfare building areas for education and awareness-raising on cultural and health promotion issues). This opportunity is noted, but does entail further assessment.
Sexual activity	No	The Logistics Centre construction and operational workforces are small and predominantly expected to already reside within north Wales. Sexually transmitted infections and other communicable diseases are not expected to change due to the Logistics Centre workforces. The presence of a transitory lorry driver population close to Holyhead is of potential interest, as similar 'truck stop' populations are sometimes associated with markets for prostitution and people trafficking. However, the Logistics Centre site would be a secure, self-contained site that was not accessible to the public. Vehicles would be scanned and checked to ensure no-unauthorised occupants. The onward journey of vehicles to the Wylfa Newydd Development Area is not considered a destination likely to promote authorised passengers. The Logistics Centre site, and its approaches, are therefore unlikely to promote illicit markets. The relatively remote and secure site location with on-site facilities limits the likelihood of lorry drivers travelling into surrounding communities whilst awaiting dispatch instructions. Any effect on population health outcomes due to sexual activity is therefore considered less likely than that associated with a conventional public truck stop. The potential for lorry drivers using the Logistics Centre to walk to the neighbouring Road King truck stop and café to the north on Parc Cybi is noted. Once beyond the Logistics Centre boundary, Horizon would have little

Determinant of health	Score	Rationale
		influence on lorry driver behaviour. The degree to which these neighbouring facilities may be used would depend on the relative quality of facilities provided at the Logistics Centre. It is expected that there would be an appropriate quality of facilities, health promotion and working with local safeguarding agencies, including North Wales Police, (linking with the mitigation discussed in volume J of the HIA Report). Even with some use of neighbouring truck stop facilities by lorry drivers from the Logistics Centre, levels of community interaction are expected to be minimal, and high standards of conduct are expected to be enforced down the contractor's distribution and logistics supply chain. Changes in population health outcomes linked to sexual activity are therefore not expected.
Other risk-taking activity	No	Risk taking in relation to road safety is discussed within the separate consideration of road hazards (see row for 'Road hazards' below). The Logistics Centre is not expected to change the accessibility of other risk-taking activity (e.g. gambling).
Social and community influences on health		
Family organisation and roles	No	The Logistics Centre is not expected to change family roles through gender biases in working hours or employment opportunities. Although Logistics Centre employment may follow existing demographic trends, the scale of employment is expected to be small, and Horizon would expect contractors to operate equal opportunity policies.
Citizen power and influence	No	The Logistics Centre is not expected to change the ability of populations in the locality to participate in democratic activities. Consultation with regard to the Logistics Centre is expected to contribute to greater community empowerment, but no additional effects on population health outcomes are expected.
Social support and social networks	No	The Logistics Centre is unlikely to affect the amenity of the environment to an extent where social networks are affected and where greater social support would be required. This corresponds to findings in the Environmental Statement (Application Reference Number: 6.8) of limited pollution and disturbance associated with the Logistics Centre (the site is remote from local communities).
Neighbourliness	No	There is no expected change in housing or population near the Logistics Centre site as a result of the Logistics Centre. A change in the dynamics of neighbour relations between adjacent properties is therefore unlikely.

Determinant of health	Score	Rationale
Sense of belonging	No	There would be no population relocation as a result of the Logistics Centre. A change in sense of belonging is therefore not expected.
Local pride	No	The construction, operation and decommissioning of the Logistics Centre would be visible from some community areas (e.g. the south of Kingsland and from some Public Rights of Way). The changes, including night-time lighting, may be seen to detract from the essentially rural character and tranquillity of the area. However, although industrial elements would be introduced, the Parc Cybi area is within the context of the existing A55 and aluminium works to the north. As described in Environmental Statement chapter H10 (landscape and visual) (Application Reference Number: 6.8.10), the use of landscaping including hedge planting along the site boundary and the retention of an area of rock outcrop within the site would help integrate the Logistics Centre into the surrounding landscape. Where there are changes to views, the presence of the Logistics Centre may act as an ongoing reminder of the wider Wylfa Newydd DCO Project. For some people, the reminder that the area has secured future jobs and investment from the Wylfa Newydd DCO Project may increase mental well-being. For others, the loss of scenic and tranquil elements in the landscape may reduce mental well-being. Any health effect due to a change in local pride (i.e. the degree of admiration held by local communities for their area) is expected to be limited due to the temporary nature of the facility, the lack of immediately neighbouring receptors and the limited role the land currently plays in determining local pride. The Logistics Centre's night-time lighting would minimise spill whilst ensuring a safe working environment. The residual effect is unlikely to result in significant population health effects.
Community identity	No	Communities are often defined, or define themselves, by prominent features of the natural, cultural or economic landscape. The relatively unobtrusive activities of vehicle parking, checking and dispatch, together with the isolated location and temporary nature of the Logistics Centre means that it is not expected to redefine community identity and thus trigger heightened emotional responses and sensitivities that could affect population health outcomes. The Logistics Centre construction workforce is expected to be relatively small and predominantly already reside within north Wales. Such a home-based workforce would be unlikely to affect local community identity. The small operational workforce is not expected to have any discernible effect on community identity. Community interaction with the transient lorry driver population is expected to be minimal, as appropriate facilities for their short periods

Determinant of health	Score	Rationale
		of stay would be provided within the secured boundary of the Logistics Centre. Changes in population health outcomes linked to community identity are therefore not expected.
Divisions in community	No	The Logistics Centre is not expected to be associated with differences of opinion between community groups that would have any effect, beneficial or adverse, on community relations.
Social isolation	No	There is not expected to be a change in housing, housing access or population as a result of the Logistics Centre.
Peer pressure	No	The Logistics Centre is not expected to create choices for which group conformity is an issue, e.g. in settings of schools, recreational activities or the workplace. Changes to peer pressure are therefore unlikely.
Cultural and spiritual ethos	No	Publicly accessible areas of cultural interest can encourage active travel with benefits for health from increased physical activity. Trefignath Burial Chamber (and associated Ty Mawr Standing Stone, Holyhead) are sites of such potential interest to the public, the former located approximately 30m south of the proposed Logistics Centre site on a cycle route. However, as described in Environmental Statement chapter H11 (cultural heritage) (Application Reference Number: 6.8.11), the location of the Logistics Centre buildings and parking would reduce visual intrusion into the settings of these features, such that only minor cultural effects would be expected. Consequently, there is not expected to be a significant change in population health outcomes as a result. Community attitudes and aspirations in relation to culture are not expected to be affected by the Logistics Centre. The construction and operational on-site workforces are expected to be small and predominantly already reside within north Wales. Levels of community interaction with lorry drivers using the Logistics Centre are expected to be minimal. Effects in relation to Welsh language have been considered separately as part of a WLIA (Application Reference Number: 8.21).
Racism	No	The Logistics Centre is not expected to have any prejudicial or discriminatory effect. Horizon would expect contractors to operate appropriate policies.
Social institutions	No	The Logistics Centre is not expected to affect social norms or affect formal or informal social institutions, e.g. community groups, such as those for younger people, older people and young mothers or sporting or other cultural groups.

Determinant of health	Score	Rationale
Other social exclusion	No	The Logistics Centre is not expected to affect levels of social exclusion for minority social groups (e.g. categories of people who are differentiated, and/or who differentiate themselves, from the social majority).
Living/environmental conditions affecting health		
Built environment	No	The Logistics Centre would change the built environment (e.g. establishment of ground level, paved areas, kiosk and single-storey office/welfare building). However, as such changes are not within publicly accessible areas, they are not expected to have appreciable changes in population health outcomes. Effects of night-time lighting have been considered. Lighting would be provided within the boundary of the site and would generally be pole mounted. During night operation, lighting would be generally restricted to the welfare/security building and adjacent HGV parking area. Given the distance to residential areas, whilst lighting may increase the visibility of the Logistics Centre site in terms of views (see row on 'Local pride'), it would not be expected to have an effect on sleep disturbance. The same conclusion has been reached with regard to vehicle lighting when accessing or leaving the facility at night-time. The works in relation to publicly accessible routes around the site entrance are discussed in further detail through consideration of physical activity and road hazards (see rows for 'Physical activity' and 'Road hazards').
Neighbourhood design	No	Changes in neighbourhood design do not form part of the Logistics Centre.
Housing	No	Changes in housing are not expected as part of the Logistics Centre. Effects on social and environmental conditions, for example due to pollution or disturbance, are discussed under the topics of noise, air quality and road hazards (see rows for 'Noise including indoor environment', 'Air quality' and 'Road hazards').
Noise including indoor environment	No	As described in Environmental Statement chapter H6 (noise and vibration) (Application Reference Number: 6.8.6), there are not expected to be any significant noise or vibration effects associated with the construction, operation or decommissioning of the Logistics Centre. Although there is potential for construction and decommissioning activities to give rise to elevated levels of noise and vibration, the relatively isolated location limits the potential for significant changes to population health outcomes. This issue, including transport related noise, is considered in detail by the Environmental Statement noise assessment, the modelling

Determinant of health	Score	Rationale
		outputs of which have defined the use of mitigation to reduce the level of effect. The appointed contractor would use standard good practice mitigation in accordance with the management strategies (including an Unexpected Contamination Plan) set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Logistics Centre sub-Code of Construction Practice (Application Reference Number: 8.11). The nature of operational vehicle noise (e.g. the arrival and departure of the HGVs) is expected to be similar in profile to the existing dominant noise source of the adjacent A55. Although the Logistics Centre would operate 24 hours per day, the potential for sleep disturbance is considered unlikely due to the distance to dwellings, including on the route between Junction 2 of the A55 and the Logistics Centre site. Transport noise associated with the small Logistics Centre operational workforce is not expected to have any discernible effect on community health outcomes. Based on the findings of the Environmental Statement noise assessment, significant changes in population health outcomes due to the construction, operation or decommissioning of the Logistics Centre are considered unlikely.
Air quality	No	As described in Environmental Statement chapter H5 (air quality) (Application Reference Number: 6.8.5), there are not expected to be any significant air quality effects associated with the construction, operation or decommissioning of the Logistics Centre. Any change in air emissions from Logistics Centre vehicles and machinery is expected to be within UK AQO levels. Section H7 of the Environmental Statement (Application Reference Number: 6.8.7) on soils and geology notes that investigations have not identified significant sources of ground contamination at the site. So, whilst unexpected contamination could be encountered during construction, it is unlikely that communities would be affected (e.g. through mobilisation of contaminants as dust). The Environmental Statement notes that the appointed contractor would use standard good practice mitigation in accordance with the management strategies (including an Unexpected Contamination Plan) set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Logistics Centre sub-Code of Construction Practice (Application Reference Number: 8.11). Based on the findings of the Environmental Statement air quality assessment, significant changes in population health outcomes due to the construction, operation or decommissioning of the Logistics Centre are considered unlikely. This screening decision acknowledges that some non-threshold health effects may occur due to slight increases in concentrations of nitrogen dioxide and fine

Determinant of health	Score	Rationale
		particulate matter. However, taking into account baseline environmental and population health conditions, such a small change is not considered to constitute a significant population health effect. As good practice, and in view of the potential for non-threshold health effects, it is expected that the contractor would reduce levels of such pollutants as low as reasonably practicable.
Water quality	No	The Environmental Statement chapter H8 (surface water and groundwater) (Application Reference Number: 6.8.8) does not anticipate any significant effects to surface water or groundwater due to the Logistics Centre. Significant changes in population health outcomes as a result of changes in drinking water or bathing water quality are therefore considered unlikely.
Attractiveness of area	No	The Logistics Centre would introduce some changes in visual amenity and tranquillity. These changes are not expected to affect population health outcomes. See rows for 'Local pride' and 'Community identity' above.
Green space	No	The site is an undeveloped plot on the Parc Cybi strategic employment development within the Anglesey Enterprise Zone. Although not currently fenced, the site has no formal community use. There is therefore not expected to be a change in the green space available for community use. Cycle paths near the entrance to the site would be retained (following brief diversion to establish the new site entrance), see row for 'Physical activity' above. An ecological buffer of green space would be retained between the Logistics Centre and the A55 to the north.
Community safety	No	As the Logistics Centre construction and on-site operational workforces are expected to be small and to predominantly already reside within north Wales, no illicit market opportunities are expected. Similarly, due to the relatively remote site, and as high standards of conduct are expected to be enforced down the contractor's distribution and logistics supply chain, lorry drivers are not expected to be a source of actual or perceived concern by local communities. At the Logistics Centre site, there is very limited potential for any illicit or anti-social activity due to security measures, such as fencing, barriers, CCTV and on-site security staff. Actual levels of crime are therefore not expected to change (police services are therefore unlikely to be affected). In terms of perceptions of community safety, a potential issue may relate to community concern that the Logistics Centre lorry drivers may be targeted by criminal elements in relation to people trafficking or illicit markets (bringing such activities into the area).

Determinant of health	Score	Rationale
		However, given the heightened security associated with these drivers and their vehicles (compared to those using public truck stop facilities), it is considered unlikely that such a perception would be sufficiently widespread to affect population health outcomes.
Smell/odour	No	The Logistics Centre is not expected to introduce new odour sources that would be considered detrimental to health (e.g. nuisance odour). Any construction or decommissioning plant or vehicle emission-related odour (e.g. exhaust smells) would be temporary. Operational odours associated with vehicle exhausts are similar to the existing context of the A55 and link to the discussion of air quality (with UK AQOs met) (see rows for 'Air quality').
Waste disposal	No	The Logistics Centre construction wastes would be managed to avoid posing a significant risk to health. Any health effect in relation to construction dust is discussed under air quality (see rows for 'Air quality'). Operational wastes, including those related to vehicles and on-site toilet facilities, would be appropriately managed so as not to pose a risk to health.
Road hazards	No	The Logistics Centre site has high capacity road links with appropriate provision for separation of pedestrians and cyclists from road vehicles. Any increase in vehicle movements on public highways close to the Logistics Centre site during construction and decommissioning is expected to be minor, and standard good practice measures are expected to be used in relation to vehicle wheel washing and road cleaning around the Logistics Centre site entrance and to driver behaviour on the road network. The temporary diversion of cycle paths around the new Logistics Centre site entrance during the early stages of construction is discussed in relation to physical activity (see rows for 'Physical activity'). Such diversions are expected to maintain appropriate road safety. The operational use of the Logistics Centre would be an embedded mitigation of the Wylfa Newydd DCO Project specifically intended to control the movement of Wylfa Newydd DCO Project vehicles on the more sensitive A5025. The Logistic Centre would contribute to reducing any adverse effect on road safety due to additional vehicle movements or respite needs of drivers. Road safety effects and health trip journey time effects during the construction at the Wylfa Newydd Development Area are discussed in volume C of the HIA Report for the application for development consent (including the beneficial role of the Logistics Centre). So, whilst beneficial, such effects do not warrant further assessment here. Transport associated with the small Logistics Centre on-site operational workforce is not expected to have any discernible effect on community health outcomes.

Determinant of health	Score	Rationale
Injury hazards	No	The Logistics Centre is not expected to significantly change the risk of accidental injury (e.g. falls by older people or other requirements for emergency services). Any potentially hazardous equipment and/or materials stored at the Logistics Centre (e.g. for construction or maintenance), would not be publicly accessible and would be subject to appropriate good practice management. Consequently, as the site would not be accessible to the public during construction, operation or decommissioning, no risk from on-site hazards is expected to local communities.
Quality and safety of play areas	No	The Logistics Centre is not expected to change the speed or volume of road traffic adjacent to play areas. No play areas are located close to the site itself. Changes in health outcomes are therefore not expected.
Economic conditions affecting health		
Unemployment	No	Moving from unemployment to employment is associated with important health benefits, both for those employed and their dependants. However, there are not expected to be a large number of jobs created in response to the Logistics Centre (at its peak approximately 50 construction workers and 14 on-site operational roles). In most cases, existing jobs within north Wales are expected to be used (safeguarding those roles).
Income	No	Greater income can offer more opportunities for expenditure on health-promoting goods, services and activities. Neither direct employment from, nor indirect economic activity in, local communities by the Logistics Centre construction and on-site operational workforce is expected to result in significant changes in income levels. Lorry drivers using the Logistics Centre may also use other truck stop facilities on Parc Cybi; however such indirect spend is not expected to benefit local communities to an extent where changes in population health outcomes would be expected.
Economic inactivity	No	Other economically inactive members of society (e.g. students or retired people) are not expected to be affected by the Logistics Centre. No changes in the levels of economic inactivity are therefore expected.
Type of employment	No	Skilled roles or roles with training progression are generally more beneficial for health outcomes. The limited employment offered by the Logistics Centre is not expected to change

Determinant of health	Score	Rationale
		the availability of good-quality jobs within the local employment market. Opportunities to improve the quality of local jobs are considered limited.
Workplace conditions	No	Construction-type work, including site entrance improvements near a public highway, has inherent hazards. Horizon would expect contractors to operate under standard good practice occupational training and safety regimes. The Logistics Centre is not expected to involve working conditions that differ from industry standards. Changes in population health outcomes are therefore not expected.
Access and quality of services		
Medical services	No	The Logistics Centre is not expected to change journey times for emergency or non-emergency health care, as existing highways would be unimpeded by the works. As the construction and on-site operational workforces are expected to be small and predominantly already reside within north Wales, there are not anticipated to be implications for health service planning. Due to the high standards of occupational health and safety that would be applied during construction and decommissioning, there is not anticipated to be additional demand on ambulance services. Drivers of HGVs using the Logistics Centre are not expected to place additional demands on local healthcare services, being either already home-based on the Isle of Anglesey or returning regularly to their usual place of residence for routine healthcare.
Other caring services	No	The Logistics Centre is not expected to change journey times or service planning for other caring services. Significant changes in population health outcomes are therefore not expected.
Careers advice	No	The Logistics Centre is not expected to offer long-term employment or training opportunities. The provision of local careers advice in relation to such employment is therefore unlikely to be associated with changes in population health outcomes.
Shops and commercial services	No	The Logistics Centre is not expected to affect access to, or the viability of, shops and other commercial services within neighbouring communities. There may be some minor benefit from occasional use of the neighbouring truck stop facilities on Parc Cybi.
Public amenities	No	Public amenities (public toilets, public telephones, information signage, etc.) are not expected to change as a result of the Logistics Centre. Changes in population health outcomes are

Determinant of health	Score	Rationale
		therefore not expected. Due to restricted public access of the site, the Logistics Centre is not considered an appropriate opportunity for provision of additional public amenities.
Transport including parking	No	As existing highways would be unimpeded by the works, construction and decommissioning transport effects associated with the Logistics Centre are not expected to be significant. The operational increase in vehicle movements, including HGVs, on public highways (e.g. the B-road within Parc Cybi and the onward access to Junction 2 of the A55) as a result of the Logistics Centre is unlikely to perceptibly change road safety or the experience of road users. This reflects that these roads have been built to accommodate increased capacity related to future Parc Cybi development, and the route through Parc Cybi provides existing pedestrian and cycle paths that are separated from vehicle traffic. As parking would be provided at the Logistics Centre for on-site workers, as well as lorry drivers, community parking is not expected to be affected.
Education and training	No	Approximately 50 existing jobs are expected to be used during construction of the Logistics Centre, as well as with up to 14 operational roles. Due to the small number of roles, no change in population health outcomes is expected from associated occupational education and training. Disturbance at, or increased journey time to, local schools (e.g. Ysgol Kingsland and Ysgol Gymraeg Morswyn) is not expected. Learning outcomes are therefore not expected to be affected.
Information technology	No	The Logistics Centre is not expected to affect access to broadband or other information technology media. The contractors would work closely with utility providers to incorporate utility diversions to reduce any disruption.
Macro-economic, environmental and sustainability factors		
Government policies	No	The Project is supported by NPS EN-1 [RD7] and NPS EN-6 [RD8]. The Logistics Centre would be a step towards the delivery of the Project and would therefore facilitate the delivery of energy in accordance with NPS EN-1 [RD7] and NPS EN-6 [RD8]. However, the Logistics Centre alone is not expected to affect energy supply.
Gross domestic product	No	The scale of investment and economic activity associated with the Logistics Centre is not expected to have an effect on gross domestic product.

Determinant of health	Score	Rationale
Economic development	No	Although a component of the investment associated with the Project, the Logistics Centre element is not expected to have macro-economic effects for the wider region. Following construction of the Power Station, the Logistics Centre site would be available as a serviced site for another appropriate employment use, promoting local economic development.
Biological diversity	No	Publicly accessible areas of biodiversity interest can encourage active travel with benefits for health from increased physical activity. Although the Logistics Centre would include some ecological loss, there is not expected to be a significant change in population health outcomes as a result.
Climate	No	The Logistics Centre (through facilitating the use of HGVs and other transport vehicles) would indirectly promote the use of such vehicles and their associated climate-altering emissions. However, as a component of the Project (a low-carbon power-generating technology), the Logistics Centre would also facilitate carbon savings linked to the wider Project. Overall, the Logistics Centre is not considered to result in a significant change in population health outcomes associated with climate change.

Determinants of health from WHIASU guidance [RD1].

Conclusion

- O.5.22 This rapid HIA screening statement has been prepared for the proposed Logistics Centre.
- O.5.23 The Logistics Centre would be an important component for the delivery of the Wylfa Newydd DCO Project. The facility is a key component of the Project's Integrated Traffic and Transport Strategy. The Logistics Centre would be used during the construction stage of the Power Station to control the flow of Project related traffic along the A5025.
- O.5.24 The Logistics Centre would provide 100 parking bays for use primarily by HGVs. The facility would also include a welfare building for staff and drivers, and security features (such as fencing, barriers vehicle scanning and CCTV). The site would be fenced and operate 24/7.
- O.5.25 The design and mitigation for the Logistics Centre has been informed by iterative discussion as part of this rapid HIA screening and the wider HIA work for the Project.
- O.5.26 Those affected by the Logistics Centre are likely to include vulnerable groups (see table O-11). Potentially significant health effects to such groups (and the general public) were considered (see table O-12). The rapid HIA screening concluded that there are no health effects requiring further assessment.
- O.5.27 It was judged that changes due to the Logistics Centre would have some effects on health. Those changes that were judged to be generally beneficial for health, but not likely to be significant, were screened out of further assessment. These would be the potential for the following small operational stage improvements:
- the Logistics Centre offers an opportunity for Project driver respite and vehicle checks, which would be expected to benefit road safety; and
 - the small numbers of jobs associated with the Logistics Centre may contribute to direct and indirect economic benefits.
- O.5.28 The rapid HIA screening notes that operational use of the Logistics Centre would reduce additional vehicle movements on the A5025 associated with material transport for the Wylfa Newydd DCO Project's construction (mitigating any adverse effect on road safety and health trip journey times). However, for the purposes of rapid HIA screening, and in line with proportionate assessment, the beneficial effect was noted, but screened out as not requiring further assessment here. The Logistics Centre's role as embedded mitigation for the Project is discussed in volume C of the HIA Report for the application for development consent.
- O.5.29 Those potential changes that were judged to be generally adverse for health, but not likely to be significant, were also screened out of further assessment. These were the potential for:
- temporary early construction-stage reduction in cycle access during site entrance improvements;
 - potential for visual change, including from night-time lighting, during the 24-hour operation of the Logistics Centre;

- small localised and temporary reductions in road safety near the Logistics Centre due to peaks in vehicle movements;
- potential for actual or perceived levels of crime in relation to illicit markets (e.g. people trafficking and prostitution) targeting lorry drivers using the Logistics Centre, including drivers walking from the secure compound of the Logistics Centre to other truck stop amenities in the area.

O.5.30 As set out in the Environmental Statement, construction activities would be subject to standard good practice mitigation in accordance with the management strategies (including an Unexpected Contamination Plan) set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) and the Logistics Centre sub-Code of Construction Practice (Application Reference Number: 8.11).

O.5.31 In summary, the conclusion of the rapid HIA screening for the Logistics Centre is that there are no potentially significant health effects that warrant further assessment.

P HIA appendix – table of significant residual effects (individual and cumulative)

P.1 Introduction

P.1.1 Table P-1 sets out a summary of the HIA findings.

P.1.2 The headings in table P-1 align with those used in the Environmental Statement volume J (master table of residual effects) (Application Reference Number: 6.10.2). The following bullets clarify how some of these headings relate to the HIA terminology:

- ‘Receptor (or group of receptors)’ indicates for the relevant geographic population group (broadly indicated for each section), whether the score relates to the general population or to vulnerable groups. Specific vulnerabilities are identified within the topic chapters in volumes C to I.
- ‘Value of receptor(s)’ relates to sensitivity.

[This page is intentionally blank.]

Table P-1 Summary of residual effects

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqIA)	Post-mitigation magnitude of change	Significance of residual effect
Project-wide effects (effects generally in relation to the population of Anglesey and parts of north Wales)								
General population	Low	Air quality: Emissions from vehicles transporting materials and people on the local road network	Adverse Site-specific Temporary Medium-term	Small	Minor adverse	No further HIA mitigation. Levels to be reduced as low as reasonably practicable.	Small	Negligible
Vulnerable groups	High							Minor adverse
General population	Low	Noise: Noise from vehicles transporting materials and people on the local road network	Adverse Site-specific Temporary Medium-term	Medium	Moderate adverse	No further HIA mitigation. Levels to be reduced as low as reasonably practicable.	Medium	Negligible
Vulnerable groups	High							Minor adverse
General population	Low	Housing: Current tenants leaving due to housing competition during construction	Adverse Local and regional Temporary Medium-term	Medium	Moderate adverse	Developing a sensitive lettings policy. Plans for monitoring of housing market pressures. Register all construction workers with the Worker Accommodation Management Service.	Small	Negligible
Vulnerable groups	High							Minor adverse
General population	Low	Transport: Road safety during construction	Adverse Site-specific, local and regional Temporary Medium-term	Medium	Moderate adverse	Promoting road safety, car sharing and travel planning. Ensure safe pedestrian access at Tregele to the proposed new alignment of the Wales Coast Path. Plans for monitoring of accident hotspots.	Small	Negligible
Vulnerable groups	High							Minor adverse (The A5025 Highway Improvements are expected to result in overall improved road safety at those locations).
General population	Low	Transport: Health trip journey times (e.g. to a hospital) during construction	Adverse Local Temporary Medium-term	Medium	Moderate adverse	Plans for monitoring of access to community healthcare services. Compliance with the Code of Construction Practice with regard to congestion.	Small	Negligible
Vulnerable groups	Medium / high							Minor adverse
General population	Medium	Demand for medical and healthcare services: NHS capacity (including GP, hospital, ambulance and other	Adverse Site-specific, local and regional Temporary	Large	Major adverse	Appropriate healthcare provision or contributions.	Small for adverse effects.	Negligible
Vulnerable groups	High							Minor adverse (if some of the

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqIA)	Post-mitigation magnitude of change	Significance of residual effect
		healthcare services) during construction	Medium-term			Appropriate Occupational Health and Hygiene services. Appropriate provision of emergency services. Plans for monitoring of access to community healthcare services. Register all construction workers with on-site medical and healthcare services.	Medium for beneficial effects.	construction workforce opt to use community NHS services) & Moderate beneficial (if the Project aligns with the NHS to build local capacity)
General population	Low	Demand for medical and healthcare services:	Adverse Local and regional	Medium	Moderate adverse	See mitigation in preceding row.	Small	Negligible
Vulnerable groups	High	Communicable disease during construction	Temporary Medium-term					Negligible to minor adverse
General population	Low	Lifestyle and behaviour: Healthy and safe communities during construction	Adverse Site-specific, local and regional	Medium	Moderate adverse	Management of any worker conduct issues. Plans for monitoring of community lifestyles and behaviour. Promote occupational health and hygiene and good worker conduct. Training on community relations, language, culture, health, safety and environmental issues. All personnel and contractors would receive a copy of the Code of Conduct and would be required to comply with it. Plans for monitoring of safeguarding with regard to vulnerable adults and children. Safeguard the welfare of its employees and its supply chain and, in relation to the activities of its construction	Small	Negligible
Vulnerable groups	High		Temporary Medium-term					Minor adverse

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqIA)	Post-mitigation magnitude of change	Significance of residual effect
						workforce, the general public.		
General population	Low	Community identity, social networks and culture: Effects on social networks and culture during construction	Adverse Site-specific, local and regional Temporary Medium-term	Medium	Moderate adverse	Cultural initiatives, which support health and well-being in the local community.	Small	Negligible
Vulnerable groups	High							Minor adverse
General population	Low	Employment, income and economic development: Supporting local people to access jobs during construction	Beneficial Local and regional Temporary Medium-term	Small	Minor beneficial	Promoting local employment opportunities during construction.	Medium	Minor beneficial
Vulnerable groups	High							Major beneficial
General population	Low	Employment, income and economic development: Labour churn during construction	Adverse Local and regional Temporary Medium-term	Medium	Moderate adverse	Support IACC and BCUHB to develop their own Workforce Strategy.	Small	Negligible
Vulnerable groups	High							Minor adverse
General population	Low	Employment, income and economic development: Workers spending locally during construction	Beneficial Site-specific, local and regional Temporary Medium-term	Small	Minor beneficial	No additional HIA mitigation or enhancement measures are proposed.	Small	Negligible
Vulnerable groups	High							Minor beneficial
General population	Low	Employment, income and economic development: Supporting local people to access jobs during operation	Beneficial Local and regional Permanent Long-term	Medium	Minor beneficial	Plans for monitoring of recruitment rates from local communities. Promoting local employment opportunities during operation.	Large	Negligible
Vulnerable groups	High							Major beneficial
General population	Low	Education and training: Upskilling local people for highly skilled construction roles during construction	Beneficial Local and regional Temporary Medium and long-term	Small	Minor beneficial	Encourage education in, and recruitment into, professions that are relevant to the Project. Promoting local education, upskilling and training during construction.	Medium	Negligible
Vulnerable groups	High							Moderate beneficial
General population	Medium	Education and training: Supporting local people with their career choices, apprenticeships and progression during operation	Beneficial Local and regional Permanent Long-term	Small	Minor beneficial	Support to local young people from disadvantaged backgrounds. Support STEM subjects and related	Medium	Minor beneficial
Vulnerable groups	High							Moderate beneficial

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqIA)	Post-mitigation magnitude of change	Significance of residual effect
						improvements to secondary school infrastructure. Promoting local education, upskilling and training during operation.		
General population	Low	Public understanding of risk: The understanding of risk about, and expectations of, the Power Station during operation	Adverse Site-specific, and national Permanent Long-term	Large	Moderate adverse	Disseminating information about construction and operational safety.	Medium	Negligible
Vulnerable groups	High							Moderate adverse
General population	Medium	Energy generation: demand and affordability: The national health benefit of an uninterrupted and affordable electricity supply during operation	Beneficial National Permanent Long-term	N/A (scenario without the Power Station)	Minor adverse	Being an inherent benefit of the Project, there is no requirement for mitigation or additional enhancement.	Small	Minor beneficial
Vulnerable groups	High							Moderate beneficial
General population	Low	Energy generation: low carbon technology: The global health benefit from reducing the effect of climate change during operation	Beneficial International Permanent Long-term	N/A (scenario without the Power Station)	Minor adverse	Being an inherent benefit of the Project, there is no requirement for mitigation or additional enhancement.	Medium	Negligible
Vulnerable groups	High							Moderate beneficial
WNDA Development (effects generally in relation to the population near the Wylfa Newydd Development Area)								
General population	Low	Air quality: Vehicle and machinery emissions on the Wylfa Newydd Development Area during construction	Adverse Site-specific Temporary Medium-term (emissions peaks may occur in the very short term due to a combination of construction activities and weather conditions)	Medium	Moderate adverse	Plans for monitoring of respiratory health. Information on air quality for residents.	Medium	Minor adverse
Vulnerable groups	High							Moderate adverse
General population	Low	Air quality: Dust generated by construction activities, excavation and earth movements during construction	Adverse Site-specific Temporary Medium-term (emissions peaks may occur in the very short term due to a combination of construction activities	Medium	Moderate adverse	Information on dust concentrations for residents. Support and a communication channel for those experiencing increased emissions. Compliance with the Code of Construction	Small	Negligible
Vulnerable groups	High							Minor adverse

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqIA)	Post-mitigation magnitude of change	Significance of residual effect
			and weather conditions)			Practice with regard to dust.		
General population	Medium	Noise: Vehicle and machinery noise on the Wylfa Newydd Development Area during construction	Adverse Site-specific Temporary Medium-term (emissions peaks may occur in the short term, including night-time)	Large	Moderate adverse	Plans for monitoring sleep disturbance. Information on noise levels for residents. Support and a communication channel for those experiencing increased disturbance. Compliance with the Code of Construction Practice with regard to noise and nuisance.	Large	Minor adverse
Vulnerable groups	High							Moderate adverse
General population	Medium	Community identity, social networks and culture: Changes to local context and identity during construction	Adverse Site-specific Temporary Medium-term	Medium	Moderate adverse	Initiatives to enhance and celebrate local identity.	Medium	Minor adverse
Vulnerable groups	High							Moderate adverse
General population	Low	Community identity, social networks and culture: Night-time lighting effects during construction	Adverse Site-specific Temporary Medium-term	Medium	Moderate adverse	Provide blackout blinds or alternative mitigation in unforeseen cases of sleep disturbance.	Small	Negligible
Vulnerable groups	Medium							Minor adverse
General population	Low	Physical activity: Promoting use of active travel diversions (e.g. walking and cycling routes) during construction	Adverse Site-specific Temporary Medium-term	Medium	Moderate adverse	Community outreach on the use of bi-lingual information boards for planned Public Right of Way diversions. Plans for monitoring of physical activity levels.	Small	Negligible
Vulnerable groups	High							Minor adverse
General population	Low	Physical activity: Alternatives for the most affected communities to be physically active during construction	Beneficial Site-specific Temporary Medium-term	Negligible	Moderate adverse	Promoting local walking, cycling, public transport and leisure facilities. Support and enhance active travel access for people using the Copper Trail at Tregele.	Medium	Negligible
Vulnerable groups	High							Moderate beneficial
Off-Site Power Station Facilities								
None.								
Park and Ride								
None.								

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqIA)	Post-mitigation magnitude of change	Significance of residual effect
A5025 Off-line Highway Improvements								
None.								
Logistics Centre								
None.								
Intra-project cumulative effects								
General population near the Wylfa Newydd Development Area (Tregele and Cemaes) (site-specific)	Low	Cumulative effects relate to the combined population health influences from changes in: air quality; dust; noise; pressure on medical and healthcare services; influences on healthy and safe communities; changes in social networks and culture; visual, economic and cultural changes (including night-time lighting); physical activity; and understanding of risk.	Mostly adverse (some beneficial influences) Mostly site-specific (though also local, regional and national influences) Mostly temporary (though some permanent effects linked to operation) Mostly medium-term (though some long-term effects linked to operation)	Medium (though including a range from negligible to large)	Major to moderate adverse (as well as some beneficial influences)	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Small (including a range from negligible to large) with reducing adverse effects driving the scale of change	Minor adverse
Vulnerable groups near the Wylfa Newydd Development Area (Tregele and Cemaes) (site-specific)	High							Moderate adverse
General population near the local road network (A5025, A55, A5 and A487) (site-specific)	Low	Cumulative effects relate to the combined population health influences from changes in: road safety; air quality; noise; social networks; and journey times when accessing healthcare and other services.	Beneficial and adverse Mostly site-specific (also local, regional and national influences) Mostly temporary (some permanent effects linked to operation) Mostly medium-term (some long-term effects linked to operation)	Medium (also including small)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Small (also including medium) with reducing adverse effects driving the scale of change	Negligible
Vulnerable groups near the local road network (A5025, A55, A5 and A487) (site-specific)	High							Minor adverse
General population near Dalar Hir (site-specific)	Low	No likely significant population health effects are expected at this site-specific location. Cumulative effects are therefore not expected. The overall residual population health effect relates to distributed local and regional effects.	Beneficial and adverse Mostly local and regional (also national influences) Mostly temporary (some permanent effects linked to operation)	Small (also including medium)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (also including small) with improving beneficial effects driving the scale of change	Negligible
Vulnerable groups near Dalar Hir (site-specific)	High							Minor beneficial

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqlA)	Post-mitigation magnitude of change	Significance of residual effect
			Mostly medium-term (some long-term effects linked to operation)					
General population near or in Holyhead and near Parc Cybi (site-specific)	Low	Cumulative effects relate to the combined population health influences from changes in: pressure on medical and healthcare services; influences on healthy and safe communities; social networks and culture; and economic effects of workers spending locally.	Beneficial and adverse Mostly site-specific (also local, regional and national influences) Mostly temporary (some permanent effects linked to operation) Mostly medium-term (some long-term effects linked to operation)	Small (also including medium)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (also including small) with improving beneficial effects driving the scale of change	Negligible
Vulnerable groups near or in Holyhead and near Parc Cybi (site-specific)	High							Minor beneficial
General population of Anglesey and north Wales (local and regional)	Low	Cumulative effects relate to the combined population health influences from changes in: road safety; health related journey times; pressure on medical and healthcare services; housing competition; communicable disease; influences on healthy and safe communities; social networks and culture; upskilling and access to jobs; labour churn in health and social care community services; economic effects of workers spending locally and of an improved highway network following the A5025 Highway Improvements.	Mostly beneficial (some adverse influences) Mostly local and regional (also site-specific and national influences) Mostly permanent (some temporary effects linked to construction) Mostly long-term (some short-term effects linked to construction)	Small (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (including a range from small to large) with improving beneficial effects driving the scale of change	Minor beneficial
Vulnerable groups of Anglesey and north Wales (local and regional)	High							Moderate beneficial
General population of Wales and beyond the borders of Wales (national and international)	Low	Cumulative effects relate to the combined population health influences from changes in: how the risks and expectations of the Power Station are understood; the national health benefit of an uninterrupted and affordable electricity supply; and the global health benefit from reducing the effect of climate change.	Mostly beneficial (some adverse influences) Mostly national and international (also site-specific, local and regional influences) Mostly permanent (some temporary	Small (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (also including small) with improving beneficial effects driving the scale of change	Minor beneficial
Vulnerable groups of Wales and beyond	High							Moderate beneficial

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqlA)	Post-mitigation magnitude of change	Significance of residual effect
the borders of Wales (national and international)			effects linked to understanding of risk) Mostly long-term (some short-term effects linked to understanding of risk)					
Children and young people (overall effect taking account of differing effects across geographic levels)	High	Cumulative effects relate to the combined population health influences from changes in: air quality; dust; noise; road safety; communicable disease; influences on healthy and safe communities; social networks and culture; visual, economic and cultural changes to local context and identity (including night-time lighting); physical activity; upskilling and access to jobs; wider economic effects of an improved highway network following the A5025 Highway Improvements; and the national health benefit of an uninterrupted and affordable electricity supply.	Beneficial (e.g. construction and operational employment) and adverse (e.g. construction emissions, disturbance and social change) All geographic levels Temporary and permanent Medium and long-term	Small (including a range from negligible to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (including a range from negligible to large) with improving beneficial effects driving the scale of change	Minor beneficial
Older people (overall effect taking account of differing effects across geographic levels)	High	Cumulative effects relate to the combined population health influences from changes in: air quality; dust; noise; road safety; communicable disease; social networks and culture; labour churn in health and social care community services; visual, economic and cultural changes to local context and identity (including night-time lighting); physical activity; wider economic effects of an improved highway network following the A5025 Highway Improvements; and the national health benefit of an uninterrupted and affordable electricity supply.	Mostly adverse (some beneficial influences) All geographic levels Temporary and permanent Medium and long-term	Medium (including a range from negligible to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Small (including a range from negligible to large) with reducing adverse effects driving the scale of change	Minor adverse
People with existing poor health (physical and mental health)	High	Cumulative effects relate to the combined population health influences from changes in: air	Mostly adverse (some beneficial influences)	Medium (including a range from	Minor to moderate	N/A (additional mitigation or enhancement for cumulative effects taken	Small (including a range from negligible to	Minor adverse

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqlA)	Post-mitigation magnitude of change	Significance of residual effect
(overall effect taking account of differing effects across geographic levels)		quality; dust; noise; health related journey times; communicable disease; pressure on medical and healthcare services; labour churn in health and social care community services; physical activity; road safety; social networks; wider economic and health journey time effects of an improved highway network following the A5025 Highway Improvements; and the national health benefit of an uninterrupted and affordable electricity supply.	All geographic levels Temporary and permanent Medium and long-term	negligible to large)	beneficial and adverse	into consideration during iterative scoring and mitigation development for individual effects)	large) with reducing adverse effects driving the scale of change	
People who are deprived, including those on low incomes (overall effect taking account of differing effects across geographic levels)	High	Cumulative effects relate to the combined population health influences from changes in: housing competition; labour churn in health and social care community services; how the risks and expectations of the Power Station are understood; upskilling and access to jobs; economic effects of workers spending locally; social networks; wider economic effects of an improved highway network following the A5025 Highway Improvements; the national health benefit of an uninterrupted and affordable electricity supply; and the global health benefit from reducing the effect of climate change.	Beneficial (e.g. construction and operational employment) and adverse (e.g. construction emissions, disturbance and social change) All geographic levels Temporary and permanent Medium and long-term	range (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (including a range from small to large) with improving beneficial effects driving the scale of change	Minor beneficial
Intra-project cumulative effects								
General population near the Wylfa Newydd Development Area (Tregele and Cemaes) (site-specific)	Low	Temporary cumulative effects during construction due to temporal overlap of all projects. Permanent cumulative effect during operation of industrialised rural area.	Beneficial and adverse Mostly site-specific (also local, regional and national influences) Temporary and permanent Medium and long-term	Medium (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Small (including a range from small to large) with reducing adverse effects driving the scale of change	Minor adverse
Vulnerable groups near the Wylfa Newydd	High							Moderate adverse (where proximity

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqlA)	Post-mitigation magnitude of change	Significance of residual effect
Development Area (Tregele and Cemaes) (site-specific)								and sensitivity coincide)
General population near the local road network (A5025, A55, A5 and A487) (site-specific)	Low	Temporary cumulative traffic effects during construction due to temporal overlap of all projects. No permanent cumulative effect.	Beneficial and adverse Mostly site-specific (also local, regional and national influences) Temporary and permanent Medium and long-term	Large (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (including a range from small to large) with reducing adverse effects driving the scale of change	Minor adverse
Vulnerable groups near the local road network (A5025, A55, A5 and A487) (site-specific)	High							Moderate adverse (where proximity and sensitivity coincide)
General population near Dalar Hir (site-specific)	Low	No significant effects at the site-specific geographic level. The overall residual population health effect relates to distributed local and regional effects.	Beneficial and adverse Mostly site-specific (also local, regional and national influences) Temporary and permanent Medium and long-term	Small (also including medium)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (also including small) with improving beneficial effects driving the scale of change	Negligible
Vulnerable groups near Dalar Hir (site-specific)	High							Minor beneficial (where proximity and sensitivity coincide)
General population near or in Holyhead and near Parc Cybi (site-specific)	Low	Temporary cumulative effects during construction due to temporal overlap of all projects. No permanent cumulative effect.	Beneficial and adverse Mostly site-specific (also local, regional and national influences) Temporary and permanent Medium and long-term	Medium (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Small (including a range from small to large) with reducing adverse effects driving the scale of change	Negligible
Vulnerable groups near or in Holyhead and near Parc Cybi (site-specific)	High							Minor adverse (where proximity and sensitivity coincide)
General population of Anglesey and north Wales (local and regional)	Low	Temporary cumulative effects during construction due to temporal overlap of all projects. Permanent cumulative effect during operation due to increased employment opportunities and greater understanding of nuclear power.	Beneficial and adverse Mostly local and regional (also site-specific and national influences) Temporary and permanent	Medium (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Large (including a range from small to large) with improving beneficial effects driving the scale of change	Minor beneficial
Vulnerable groups of Anglesey and north Wales (local and regional)	High							Major beneficial

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqlA)	Post-mitigation magnitude of change	Significance of residual effect
		Potential permanent cumulative effect on health services if other projects also support local capacity building.	Medium and long-term					
General population of Wales and beyond the borders of Wales (national and international)	Low	Permanent cumulative effect during operation due to energy generation.	Beneficial and adverse Mostly national and international (also site-specific, local and regional influences) Temporary and permanent Medium and long-term	Small (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (including a range from small to large) with improving beneficial effects driving the scale of change	Minor beneficial
Vulnerable groups of Wales and beyond the borders of Wales (national and international)	High							Moderate beneficial
Children and young people (overall effect taking account of differing effects across geographic levels)	High	Temporary cumulative effects during construction due to temporal overlap of all projects. Permanent cumulative effect during operation due to increased employment opportunities.	Beneficial and adverse All geographic levels Temporary and permanent Medium and long-term	Small (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (including a range from small to large) with improving beneficial effects driving the scale of change	Minor beneficial (overall effect taking account of differing effects across geographic levels)
Older people (overall effect taking account of differing effects across geographic levels)	High	Temporary cumulative effects during construction due to temporal overlap of all projects.	Mostly adverse (some beneficial influences) All geographic levels Temporary and permanent Medium and long-term	Medium (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Small (including a range from small to large) with reducing adverse effects driving the scale of change	Minor adverse (overall effect taking account of differing effects across geographic levels)
People with existing poor health (physical and mental health) (overall effect taking account of differing effects across geographic levels)	High	Temporary cumulative effects during construction due to temporal overlap of all projects. Potential permanent cumulative effect on health services if other projects also support local capacity building.	Mostly adverse (some beneficial influences) All geographic levels Temporary and permanent Medium and long-term	Medium (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Small (including a range from small to large) with reducing adverse effects driving the scale of change	Minor adverse (overall effect taking account of differing effects across geographic levels)

Receptor (or group of receptors)	Value of receptor(s)	Description of potential effect	Nature of effect	Potential magnitude of change	Potential significance of effect	Additional mitigation (further to Environmental Statement, WLIA and EqlA)	Post-mitigation magnitude of change	Significance of residual effect
People who are deprived, including those on low incomes (overall effect taking account of differing effects across geographic levels)	High	Temporary cumulative effects during construction due to temporal overlap of all projects. Permanent cumulative effect during operation due to increased employment opportunities and low-carbon energy.	Beneficial and adverse All geographic levels Temporary and permanent Medium and long-term	Small (including a range from small to large)	Minor to moderate beneficial and adverse	N/A (additional mitigation or enhancement for cumulative effects taken into consideration during iterative scoring and mitigation development for individual effects)	Medium (including a range from small to large) with improving beneficial effects driving the scale of change	Minor beneficial (overall effect taking account of differing effects across geographic levels)

Q HIA appendix – results from the Community Survey

Q.1 Introduction

The community survey

- Q.1.1 This technical appendix presents the results of a community survey that contributes to the mix of methods used by the Wylfa Newydd DCO Project during consultation. Community surveys provide an overview of the scale of concerns/aspirations, and are one of the most objective methods of consultation.
- Q.1.2 The community survey is a telephone survey of 509 randomly selected members of the public on the Isle of Anglesey between late September and October 2016. People on Anglesey could choose to conduct the interviews in Welsh or English. The survey was undertaken by Beaufort Research, with each interview lasting approximately 10 minutes.
- Q.1.3 The questionnaire was designed based on a conceptual model informed by a review of similar surveys used in social science and in psychology knowledge. The questions explored cognitive and emotional responses to the Project (e.g. cognitive: support or lack of support for the Project; emotional: feelings such as “concern” about the Project), and also attitudes towards its potential behavioural effects (e.g. changes in the behaviour of affected people). Table Q-1 refers to the studies and the concepts that underpin each question that was asked of respondents in the survey.
- Q.1.4 The community survey provides evidence for the assessment of subjective issues within the Project impact assessments (for example: HIA, EIA, WLIA and EqIA), for which other evidence sources are limited.

Rationale

- Q.1.5 Public feedback provides insight into community concerns and aspirations, with implications for health and well-being that may be overlooked by professional observers.
- Q.1.6 Gaining an accurate understanding of community views is especially important on sensitive issues relating to the Project that may be associated with significant effects with regard to health, socio-economic effects, Welsh language and equalities (e.g. radiological risks and the influx of a large workforce). In order to present an accurate and proportionate assessment of such issues, the community survey has gathered information from a sample of the population that is not self-selecting, and is representative of the population of Anglesey.

How the results are used

- Q.1.7 The results establish a baseline for community attitudes towards the Project. The results also inform Horizon strategies and the following assessments:

- Health Impact Assessment (HIA) topics: public understanding of risk, lifestyle and behaviour, community identity, social networks and culture;
- Welsh Language Impact Assessment (WLIA) (Application Reference Number: 8.21) topics: community identity, Welsh language and culture;
- Environmental Impact Assessment (EIA) (Application Reference Number: 6.3.1) socio-economic assessment topics: social cohesion, concerns relating to crime, integration of workers and conflict resolution; and
- Equality Impact Assessment (EqIA) (Application Reference Number: 8.22) topics: effects on populations with protected characteristics.

Interpretation of the analysis

- Q.1.8 The sampling strategy for the community survey ensured that as well as obtaining an Anglesey-wide view, there is also representation from communities that may be particularly affected, including Cemaes area, Amlwch area and Holyhead.
- 'Cemaes area' includes the LSOAs Isle of Anglesey 001C (Llanbadrig) and 001E (Mechell). This includes Tregele and isolated dwellings.
 - 'Amlwch area' includes LSOAs Isle of Anglesey 001A (Amlwch Port), 001B (Amlwch Rural) and 002C (Llaneilian).
 - 'Holyhead area' includes LSOAs Isle of Anglesey: 004C (Trearddur 1); 004D (Trearddur 2); 003B (Kingsland); 003D (Maeshyfyrd); 003E (Morawelon); 003C (London Road); 003A (Holyhead Town); 003F (Porthyfelin 1); 003G (Porthyfelin 2); and 004B (Parc a'r Mynydd).
 - 'Other areas of Anglesey' includes all of the other LSOA's not already outlined for Cemaes, Amlwch and Holyhead.
- Q.1.9 The sample also ensured that different age groups are represented. Data on language (use of spoken Welsh) and demographic data were also collected (e.g. working status, social grade and whether there were children in the household).
- Q.1.10 The analysis of the results of the community survey uses weighted data. This means that the data are adjusted to match the actual population size and age profile of Anglesey. The advantage of this approach is that the conclusions of the analysis are more representative of the people of Anglesey. For example, due to weighting the data, the percentages in the reports are less influenced by areas/places of residence and age groups that were over-sampled during the survey, and more influenced by under-sampled areas/places of residence and age groups. The percentages then, are more likely to match the percentages that would have been obtained if every single person on the island was sampled. The following paragraphs discuss the two main changes that occur due to weighting.
- Q.1.11 The views of younger people (aged 18-34 years old) are increased in prominence within the sample to levels equivalent to the number of young people on Anglesey. Young people are generally harder to reach by telephone survey, so during data collection, this group was under-sampled. The adjustment approximately doubles the count within the total sample for this

group. Due to the long-term nature of the Project, young people are recognised as a key group that inform assessments.

- Q.1.12 The people in the Cemaes area were specifically targeted to ensure that their community's views were included. Due to their proximity to the Wylfa Newydd Development Area, this population may experience some of the largest changes. In view of this focus, the Cemaes area population was oversampled relative to the total population of Anglesey. However, to fit into the wider analysis of views from Anglesey as a whole, the adjustment approximately halves the count within the total sample for this group. To ensure that the views of the Cemaes population are not lost as a result of this adjustment, special consideration has been given to this group within the analysis, which recognises that although comprising a small part of the population, the data have lower error margins due to the deliberate over-sampling. By focusing on Cemaes in relation to the rest of the island combined, we were able to test more accurately whether this Area/place of residence has statistically significant differences in its opinions on the survey questions.
- Q.1.13 The questionnaire delivered in the telephone interviews employed a 5-point Likert scale, a psychometric measurement scale, on questions 2, 3, 5 and 6. This allowed respondents to select answer options from a scale of opinion. For questions 2, 5 and 6, interviewers read out the question statement and offered five possible answer options, beginning with "strongly agree", and moving through a more tentative agreement, "tend to agree", on to a neutral option: "neither agree nor disagree", then the more tentative "tend to disagree", and finally, offered "strongly disagree" at the opposite end of the scale. Two further answer options: "Don't know / not sure" and "No opinion" were read out, which gave respondents the choice to express a precise position if they did not concur with the answer options on the scale. Question 3 employed a similar scale to measure the extent of agreement with a statement measuring how well respondents thought people on Anglesey get along. These scales were utilised due to the sensitive nature of the questions, and for the comfort of respondents, for whom views on the Project may be more complex than a straightforward "Agree" or "Disagree" response. Thoughts and feelings around a sensitive topic often occur on a spectrum of "grey" rather than through clear-cut, binary "black" or "white" positions.
- Q.1.14 During the survey analysis, the range of subtle positions was carefully considered. For simplicity of statistical testing, given the relatively small size of the survey sample, and for clarity of reporting, the percentages of respondents opting for answers that indicated some degree of "agreement" ("strongly agree" or "tend to agree") or disagreement ("tend to disagree" or "strongly disagree") were combined into two single categories of "agree" and "disagree". Where the percentages of people who opted for different degrees of agreement or disagreement on the scale are of interest to the HIA, these are indicated in brackets near the percentages citing the combined categories in the body of this report. They are indicated using the following abbreviations: strongly agree = SA; tend to agree = TA; tend to disagree = TD; and strongly disagree = SD. For question 3 on people getting along on Anglesey, the actual answer options are stated.
- Q.1.15 To avoid polarising the complex opinions expressed by survey respondents whose views are not easily categorised as a straightforward "agreement" or

“disagreement”, the percentages opting for the neutral mid-point answer are also reported here to show the full range of opinions, and to demonstrate the extent of ambivalent views on some topics. Ambivalent views can indicate uncertainty, particularly where the effects of the Project are not yet known in certain impact areas. Respondents opting for “don’t know/not sure” answers may be interpreted as lacking in information to reach a judgement, as offered by the scale.

Q.2 Summary of results

- Q.2.1 Results are reported by survey question (1a, 1b, 2a, etc.). All topics report the general trend in results. Whether trends in the following factors, geographic region of Anglesey, age groups and the Welsh language-speaking status were statistically significant (or not), are also reported for each question.
- Q.2.2 Sub-group results by social grade, working status and households with or without children are included, where of potential consequence for public health, but are not included under every question summary.
- Q.2.3 This summary focuses on the main relationships. The analysis is not exhaustive.

Life on Anglesey (Question 1a)

Question posed and what it measures

- Q.2.4 People were asked: what do you like about life on Anglesey? The response measured the special qualities of the area and community. Identifying these is an important aspect of the asset-based community development approach [RD212]; [RD213]; [RD215]; [RD218].

General trend

- Q.2.5 The community survey indicates that the aspects of life on the island that people on Anglesey in the survey sample like the most are its outdoor environment, tranquillity and social networks.
- Q.2.6 The five most popular things about living on Anglesey are: beautiful scenery and landscape (54%); the peace and quiet (49%); being in the countryside (35%); being by the seaside (28%); and being near friends and family (20%).

Implication for the Project

- Q.2.7 These are assets that the Project should seek to protect (through avoidance and mitigation) and to enhance.

Life on Anglesey (Question 1b)

Question posed and what it measures

- Q.2.8 People were asked: what do you dislike about life on Anglesey?
- Q.2.9 The response measured dissatisfaction with the area and community.

General trend

- Q.2.10 The community survey indicates that the most common opinion held by respondents is that there is nothing to dislike about living on the island (39%). However, the highest scoring dislike is the lack of jobs.
- Q.2.11 The five least popular things about living on Anglesey are: the lack of jobs and the unemployment (15%); the lack of access and the difficulty in getting around (10%); poor shops or shopping (7%); not much to do or many activities to take part in (6%); and not many places to go or attractions to visit (6%).
- Q.2.12 2% of people on Anglesey dislike the negative effect of the Existing Power Station and pylons on the landscape. Of these 2%, a higher proportion of people near Cemaes (19%) than near Amlwch (3%) or in other areas of Anglesey (2%) named their dislike of this issue. No people from Holyhead stated this issue.

Implication for the Project

- Q.2.13 Local employment and access challenges are issues that the Project would contribute to addressing.

Identifying with the community (Question 2a)

Question posed and what it measures

- Q.2.14 People were asked: thinking about your home and your local area, to what extent do you agree or disagree with the following statement: I identify with the local community. The response measured the extent to which people on Anglesey identify with their community.
- Q.2.15 Also, see question 5e on how the Project may bring change.

General trend

- Q.2.16 The community survey indicates that the majority of people (85%) agree that they identify with their community (SA: 52%, TA: 33%). 7% neither agree nor disagree, and 7% disagree (TD: 6%, SD: 1%). 1% have no opinion, and none don't know or are not sure. This result supports the notion of established communities on Anglesey.

Implication for the Project

- Q.2.17 This supports the notion that communities on Anglesey are well-established and would be resilient to changes from external factors. These same communities may, at the same time, be sensitive to internal changes that affect defining features of the community.

Statistically significant sub-groups and key non-statistically significant trends

- Q.2.18 Age group and Welsh language-speaking status are statistically associated with the extent to which people on Anglesey identify with the community.

- Q.2.19 A lower proportion of younger people aged 18-34 (77%) agree that they identify with their community than people aged 35-54 (95%) and 55+ (82%).²
- Q.2.20 A higher proportion of Welsh speakers (89%) agree that they identify with their community than non-Welsh speakers (77%).³
- Q.2.21 A higher proportion of people from the higher social grade⁴ categories AB (86%) and C1 (91%) agree that they identify with their community, than people from the other social grades (C2 (78%) and DE (82%).⁵
- Q.2.22 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant.⁶
- Q.2.23 The variation in results by working status is not statistically significant.⁷
- Q.2.24 The variation in results by number of people in household is not statistically significant⁸.
- Q.2.25 The variation in results by presence of children in household is not statistically significant⁹.

Having friends, neighbours or family on Anglesey (Question 2b)

Question posed and what it measures

- Q.2.26 People were asked: thinking about your home and your local area, to what extent do you agree or disagree with the following statement: I have friends, neighbours or family on Anglesey who I often see. The response measured the strength of social networks based on face-to-face contact. This is underpinned by the concept of social capital [RD219]; [RD220].

General trend

- Q.2.27 The community survey indicates that a large majority of people (95%) agree that they have friends, neighbours or family who they often see on Anglesey

² $\chi^2 (2, N = 509) = 19.199, p < 0.001$. A follow-up test comparing agreement in those aged 18-34 (77%) to the other age categories combined (a mean of 88%) suggests that responses to the question are dependent on whether or not respondents are aged 18-34 ($\chi^2 (1, N = 509) = 7.005, p = 0.008$).

³ $\chi^2 (1, N = 509) = 12.929, p < 0.001$.

⁴ Social grade is a socio-economic classification used by market research industries to analyse spending habits and consumer attitudes. A person's approximated social grade is based primarily on their occupation. AB: Higher and intermediate managerial / administrative / professional occupations; C1: Supervisory, clerical and junior management / administrative / professional occupations; C2: Skilled manual occupations; DE: Semi-skilled and unskilled manual occupations; unemployment and lowest grade occupations.

⁵ $\chi^2 (3, N = 485) = 9.554, p = 0.022$.

⁶ $\chi^2 (3, N = 509) = 3.178, p = 0.365$.

⁷ $\chi^2 (3, N = 502) = 6.144, p = 0.010$.

⁸ $\chi^2 (3, N = 501) = 5.942, p = 0.176$.

⁹ $\chi^2 (1, N = 479) = 3.682, p = 0.055$.

(SA: 76%, TA: 18%). 1% neither agree nor disagree. Only 4% disagree (TD: 2%; SD: 7%). None have no opinion or don't know/are not sure. This result indicates strong social networks on Anglesey.

Implication for the Project

- Q.2.28 The survey results indicate the presence of strong social networks on Anglesey which in turn indicates resilience within communities, particularly for vulnerable members of society. These networks also underline the importance for local communities of maintaining both continuous access and conducive environments for spontaneous social interactions (e.g. communal lounges on housing estates) and organised ones (e.g. youth clubs and community-led groups).

Statistically significant sub-groups

- Q.2.29 Age and Welsh language-speaking status are statistically associated with the likelihood of having a local social network.
- Q.2.30 A higher proportion of people aged 18-34 (97%) and aged 35-54 (97%) agree with that they have friends, neighbours or family on Anglesey who they often see. than people aged 55+ (92%).¹⁰
- Q.2.31 A higher proportion of Welsh speakers (97%) than non-Welsh speakers (91%) agree that they have friends, neighbours or family on Anglesey who they often see.¹¹
- Q.2.32 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant.¹²

Importance of the Welsh way of life (Question 2c)

Question posed and what it measures

- Q.2.33 People were asked: thinking about your home and your local area, to what extent do you agree or disagree with the following statement: the Welsh way of life is important to me. The response measured emotional attachment to the Welsh way of life. This is underpinned by the notion of "Welsh culture" [RD221].

General trend

- Q.2.34 The community survey indicates that the majority of people (78%) agree that the Welsh way of life is important to them (SA: 54%, TA: 25%). 10% neither agree nor disagree. Only 9% disagree (TD: 7%, SD: 2%). 2% have no opinion, and 1% don't know or are not sure. The result confirms that there is a strong Welsh culture on Anglesey.

¹⁰ $\chi^2 (2, N = 509) = 6.916, p = 0.031$.

¹¹ $\chi^2 (1, N = 509) = 6.701, p = 0.010$

¹² $\chi^2 (3, N = 509) = 0.257, p = 0.969$.

Implication for the Project

- Q.2.35 The strong support for Welsh culture on Anglesey indicates that initiatives by the Project to promote and celebrate the Welsh way of life are likely to receive strong support from the people on the island.

Statistically significant sub-groups

- Q.2.36 Welsh language-speaking status is statistically associated with the extent of the importance given to the Welsh way of life. This confirms the central role of Welsh language as a key component of the Welsh way of life for many, but not all, people. It also demonstrates that the Welsh way of life is not limited to Welsh speakers, but is considered important by over half of non-Welsh speakers on Anglesey. However, non-Welsh speakers are more ambivalent about the importance of the Welsh language than Welsh speakers. This shows that for them, Welsh culture does not necessarily depend on the Welsh language.
- Q.2.37 A higher proportion of Welsh speakers (91%) agree that the Welsh way of life is important to them than non-Welsh speakers (55%).¹³ A higher proportion of non-Welsh speakers (22%) neither agree nor disagree than Welsh speakers (3%). Only 5% of Welsh speakers disagree compared to 17% of non-Welsh speakers.¹⁴
- Q.2.38 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant.¹⁵
- Q.2.39 The variation in results by age is not statistically significant.¹⁶

The importance of place of residence (Question 2d)

Question posed and what it measures

- Q.2.40 People were asked: thinking about your home and your local area, to what extent do you agree or disagree with the following statement: the place where I live means a lot to me. The response measured emotional attachment to place of residence. This is underpinned by the concept of “place attachment” [RD222].
- Q.2.41 Also, see question 6g on how the Project may bring change.

General trend

- Q.2.42 The community survey indicates that a large majority of people (92%) agree that the place where they live means a lot to them (SA: 72%, TA: 20%). Only 4% neither agree nor disagree, and 4% disagree (TD: 3%, SD: 1%). None

¹³ $\chi^2 (1, N = 509) = 43.411, p < 0.001$.

¹⁴ $\chi^2 (1, N = 509) = 27.605, p < 0.001$.

¹⁵ $\chi^2 (3, N = 509) = 0.691, p = 0.875$.

¹⁶ $\chi^2 (2, N = 509) = 0.910, p = 0.635$.

have no opinion or don't know / are not sure. This result indicates a high level of emotional attachment to places of residence.

Implication for the Project

- Q.2.43 Emotional attachment to place demonstrates the importance of subjective factors in people's reaction to change (i.e. it should not be presumed that people will respond purely on the basis of objective evidence). This suggests that change may be challenging even though communities are resilient.

Statistically significant sub-groups

- Q.2.44 Age group is statistically associated with the extent of importance given to place of residence.
- Q.2.45 A lower proportion of younger people aged 18-34 agree that the place where they live means a lot to them (87%) compared to people aged 35-54 (95%) or people aged 55+ (92%).¹⁷
- Q.2.46 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant.¹⁸
- Q.2.47 The variation in results due to being a Welsh speaker is not statistically significant.¹⁹

Community cohesion (Question 3)

Question posed and what it measures

- Q.2.48 People were asked: In your opinion, how well do people on Anglesey get along with each other? The response measured the strength of community cohesion. "Getting along" is the key premise of the Welsh Government definition of community cohesion [RD71]; [RD191] and the single most widely used indicator.

General trend

- Q.2.49 The community survey indicates that the majority of people (81%) think that people on Anglesey get along well with each other (Very well: 52%, Well: 29%). 15% think people get along "OK". Only 3% think that people do not get on well ("Not very well": 3%, "Not at all well": 0%). None have no opinion, and 1% don't know or are not sure. This result demonstrates a high level of community cohesion on the island, with some ambivalence.

Implication for the Project

- Q.2.50 The high levels of agreement between question 2b, confirming strong social networks on the island, and question 3, indicating the coherence of these

¹⁷ χ^2 (2, $N = 509$) = 6.957, $p = 0.031$. A follow-up test comparing those aged 18-34 (86%) to the other age categories (94%) suggests that responses to the question are dependent on whether or not respondents are aged 18-34 or not (χ^2 (1, $N = 509$) = 4.635, $p = 0.031$).

¹⁸ χ^2 (3, $N = 509$) = 1.150, $p = 0.765$.

¹⁹ χ^2 (1, $N = 509$) = 1.459, $p = 0.227$.

networks, demonstrates that any incoming workforce would encounter high levels of community cohesion and tight existing networks. Question 5a interrogates respondents about the integration of the construction workforce.

Statistically significant sub-groups

- Q.2.51 There are no statistically significant sub-group relationships.
- Q.2.52 The variation in results by age is not statistically significant.²⁰
- Q.2.53 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant.²¹ However, by coincidence, A higher proportion of people in Cemaes (70%) think that people get along “very well” compared to people in other areas of Anglesey (48%), with people in Amlwch (61%) and Holyhead (59%) being between these two results.
- Q.2.54 The variation in results due to being a Welsh speaker is not statistically significant.²²
- Q.2.55 The variation in results by working status is not statistically significant.²³
- Q.2.56 The variation in results by social grade is not statistically significant.²⁴

Knowledge of the proposal for the Power Station (Question 4a)

Question posed and what it measures

- Q.2.57 People were asked: have you heard about the proposal for the Power Station? The response measured general awareness of the Project.

General trend

- Q.2.58 The community survey indicates that almost all people on Anglesey have heard about the proposal for the Power Station (98%). Only 2% have not. This suggests that the awareness-raising and consultation by Horizon, IACC and other stakeholders has been effective in reaching the majority of the population.

Implication for the Project

- Q.2.59 People’s understanding of risk will benefit from this level of information exchange, albeit measured in the survey at the most basic level (i.e. awareness of the Project).

²⁰ $\chi^2 (2, N = 509) = 1.932, p = 0.381.$

²¹ $\chi^2 (3, N = 509) = 2.434, p = 0.487.$

²² $\chi^2 (1, N = 509) = 3.905, p = 0.272.$

²³ $\chi^2 (3, N = 502) = 1.584, p = 0.663.$

²⁴ $\chi^2 (3, N = 485) = 7.300, p = 0.063.$

Statistically significant sub-groups

- Q.2.60 Age group is statistically associated with general awareness of information about the Project.
- Q.2.61 A lower proportion of younger people aged 18-34 have heard of the Project (93%) compared to people aged 35-54 (100%) or people aged 55+ (98%).²⁵
- Q.2.62 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant.²⁶
- Q.2.63 The variation in results due to being a Welsh speaker is not statistically significant.²⁷

People in employment at the Existing Power Station (Question 4b)

Question posed and what it measures

- Q.2.64 People were asked: do you/did you work, or has a relative of yours worked at the Existing Power Station? The response measured whether an association with the Existing Power Station might influence responses to further questions on the Wylfa Newydd DCO Project.

General trend

- Q.2.65 The community survey indicates that almost half of respondents have an association with the Existing Power Station (49%). The association is mostly via friends or family members (44%) rather than direct employment. The other half of the respondents have no association (51%). This result demonstrates the strong links that already exist between people on the island and nuclear power.

Implication for the Project

- Q.2.66 The association between almost half of respondents and the Existing Power Station suggests a relatively high level of awareness, and potentially acceptance, of risks that are associated with nuclear power.

Statistically significant sub-groups

- Q.2.67 Welsh language-speaker status was statistically associated with respondents having an association with the Existing Power Station. A higher proportion of Welsh speakers (53%) than non-Welsh speakers (43%) have an association with the Existing Power Station.²⁸

²⁵ $X^2 (2, N = 509) = 15.751, p < 0.001$. A follow-up test revealed that younger people are less likely to agree with the statement than the older age categories combined ($X^2 (1, N = 509) = 12.184, p < 0.001$).

²⁶ $X^2 (3, N = 509) = 5.895, p = 0.117$.

²⁷ ($X^2 (1, N = 509) < .001, p = 1$).

²⁸ $X^2 (1, N = 509) = 4.061, p = 0.044$.

- Q.2.68 Respondents' association with the Existing Power Station varied in a statistically significant manner according to their Area/place of residence. A higher proportion of people near Cemaes (74%), Amlwch (70%) and Holyhead (67%) have an association with the Existing Power Station than in other areas of Anglesey (40%).²⁹
- Q.2.69 The variation in results by age is not statistically significant.³⁰
- Q.2.70 A higher proportion of people who have an association with the Existing Power Station agree that they have friends, neighbours or family on Anglesey that they often see (97%) than people who have no association with it (92%). A statistically significant association was found between these two results.³¹ (Q2b).
- Q.2.71 A higher proportion of people who have an association with the Existing Power Station agree that it would help the construction workers to fit in if they learn Welsh (61%) than people who do not have an association with it (47%). (Q5d). This difference is statistically significant.³²
- Q.2.72 A lower proportion of people who have an association with the Existing Power Station agree that nuclear power stations are a safe and reliable way of producing energy (57%) than people who have no association with it (68%). (Q6a) This difference is statistically significant.³³
- Q.2.73 A lower proportion of people who have an association with the Existing Power Station agree that the Power Station would provide opportunities for local people such as jobs and investment (62%) than people who have no association with it (80%). (Q6b). This difference is statistically significant.³⁴
- Q.2.74 A lower proportion of people who have an association with the Existing Power Station agree that they feel positive about the Power Station (61%) than people who have no association with it (74%). (Q6f). This difference is statistically significant.³⁵
- Q.2.75 For all other survey questions, the percentages do not vary significantly by whether the respondent has an association with the Existing Power Station.

Getting on with the construction workers (Question 5a)

Question posed and what it measures

- Q.2.76 People were asked: thinking about the construction workers who will be working on the new Power Station, to what extent do you agree or disagree with the following statement: local people will get along with them. The

²⁹ $(\chi^2 (3, N = 509) = 36.133, p < 0.001).$

³⁰ $(\chi^2 (2, N = 509) = 2.433, p = 0.296).$

³¹ $\chi^2 (1, N = 509) = 4.843, p = 0.028.$

³² $\chi^2 (1, N = 509) = 10.254, p = 0.001.$

³³ $\chi^2 (1, N = 509) = 5.762, p = 0.016.$

³⁴ $\chi^2 (1, N = 509) = 5.762, p = 0.016.$

³⁵ $\chi^2 (1, N = 509) = 8.651, p = 0.003.$

response measured feelings about how the current community cohesion baseline might change.

General trend

- Q.2.77 The community survey indicates that a majority of people on Anglesey (69%) agree that local people would get on with the construction workers (SA: 23%, TA: 46%). 15% neither agree nor disagree with the statement. Only 10% disagree (TD: 8%, 2%). 1% have no opinion, and 5% don't know/are not sure. This result suggests that whilst many people feel that the influx of workers would have little effect on community cohesion on the island, 20% are ambivalent or uncertain.

Implication for the Project

- Q.2.78 Protecting and enhancing community cohesion is a key area of interest for the Project and the response to this question suggests that communities on Anglesey would generally be resilient to changes in community cohesion. The ambivalence and uncertainty indicates potential anxiety.

Statistically significant sub-groups and key non-statistically significant results

- Q.2.79 Age group, working status, and having children living in a household are statistically associated with the extent of respondents' agreement that local people would get on with the construction workers.
- Q.2.80 A higher proportion of people aged 55+ (74%) and younger people aged 18-34 (72%) agree that local people would get on well with the construction workers, than people aged 35-54 (59%).³⁶
- Q.2.81 A lower proportion of households with children (61%) than households without children (72%) agree that the local people would get on well with the construction workers.³⁷ This result supports the inclusion of safeguarding as an issue within the scope of the HIA.
- Q.2.82 A lower proportion of unemployed people (46%) agree that local people would get on with the construction workers than people from other working status groups (employed (68%); retired or permanently not working (72%), other non-working (80%)).³⁸ The result may reflect concern over competition for jobs between local and non-local people.

³⁶ $\chi^2 (2, N = 509) = 10.351, p = 0.006$. A follow-up test comparing those aged 35-54 (59%) to the other age categories (73%) suggests that agreement with the question is dependent on whether or not respondents are aged 35-54, as this category is significantly less likely to agree ($\chi^2 (1, N = 509) = 4.635, p = 0.031$).

³⁷ $\chi^2 (1, N = 501) = 8.917, p = 0.003$.

³⁸ $\chi^2 (3, N = 502) = 9.440, p = 0.024$. A follow-up test revealed that a smaller percentage of unemployed respondents (46%) agree with the statement, compared to the other employment categories combined (73%), $\chi^2 (1, N = 502) = 6.715, p = 0.010$. Therefore, there is a statistically difference between unemployed respondents and the other categories of employment in their agreement that local people would get along with the construction workers.

- Q.2.83 The variation in results due to being a Welsh speaker is not statistically significant.³⁹
- Q.2.84 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant⁴⁰, however, a lower proportion of people in Cemaes (51%) agree that people would get on well with the construction workers than people in Amlwch (73%), Holyhead (71%) and other areas of Anglesey (69%).

Understanding the local way of life (Question 5b)

Question posed and what it measures

- Q.2.85 People were asked: thinking about the construction workers who will be working on the new Power Station, to what extent do you agree or disagree with the following statement: it would help construction workers to fit in if they understand our way of life. The response measured feelings about workers' integration.

General trend

- Q.2.86 The community survey indicates that the majority of people agree (78%) that that it would help the construction workers to fit in if they understand the local way of life (SA: 43%, TA: 35%). 10% neither agree nor disagree. Only 8% disagree (TD: 7%, SD: 2%). 3% have no opinion whilst 1% don't know/are not sure. This result underlines the importance of raising awareness about the Welsh way of life as part of successful worker integration.

Implication for the Project

- Q.2.87 This underlines the importance of raising awareness about the Welsh way of life in order to assist workers to integrate. This could include educational and communication components on Welsh language and culture.

Statistically significant sub-groups

- Q.2.88 Welsh language-speaker status is statistically associated with the extent of agreement about this issue.
- Q.2.89 A higher proportion of Welsh speakers (83%) than non-Welsh speakers (68%) agree that the workers would fit in better if they understand the local way of life.⁴¹

³⁹ $X^2 (1, N = 509) = 0.005, p = 0.994$ (agreement) and $X^2 (1, N = 509) < .001, p = 1$ (disagreement).

⁴⁰ $X^2 (3, N = 509) = 3.905, p = 0.272$. A follow-up test comparing overall agreement with the statement in Cemaes (51%) to agreement on the rest of the island (72%) did not yield a significant result ($X^2 (1, N = 509) = 2.064, p = 0.151$). A follow-up test comparing overall disagreement with the statement in Cemaes (19%) to disagreement on the rest of the island (11%) did not yield a significant result ($X^2 (1, N = 509) = 0.848, p = 0.357$).

⁴¹ $X^2 (1, N = 509) = 15.364, p < 0.001$.

- Q.2.90 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant.⁴²
- Q.2.91 The variation in results by age is not statistically significant.⁴³

Behaving well in the local area (Question 5c)

Question posed and what it measures

- Q.2.92 People were asked: thinking about the construction workers who will be working on the new Power Station, to what extent do you agree or disagree with the following statement: they will behave well in the local area. The response measured fear of anti-social behaviour and crime.

General trend

- Q.2.93 The community survey indicates that a majority of people (64%) agree that the construction workers would behave well in the local area (SA: 21%, TA: 43%); 14% neither agree nor disagree; only 4% disagree (TD: 17%, SD: 1%); 5% have no opinion, and 12% don't know/are not sure. There is some uncertainty evinced by around a quarter of people having a neutral opinion or being unsure. This result supports the view that there is not much fear amongst the people of Anglesey of anti-social behaviour and crime by construction workers.

Implication for the Project

- Q.2.94 Fear of crime can often have wider social and health effects than actual crime. The results indicate that generally (unless given cause to think otherwise) most people would not be fearful of crime in conjunction with the workforce. Such an outlook is indicative of more harmonious integration and social interaction. However, the ambivalence and uncertainty expressed by some, indicates the need for mitigation of any fear that does exist.

Statistically significant sub-groups

- Q.2.95 Area/place of residence and having children living in a household are statistically associated with the extent to which respondents agree that construction workers would behave well in the local area.
- Q.2.96 Respondents' association with the Existing Power Station varied in a statistically significant manner according to their Area/place of residence.
- Q.2.97 There is a statistically significant variation in results by area/place of residence for disagreement that the construction workers will behave well in the local area. A higher proportion of people near Cemaes (13%) and Amlwch (9%) disagree that construction workers would behave well in the local area, compared to people in other regions (Holyhead (4%) and other areas of Anglesey (2%)).⁴⁴ There is no statistically significant variation in results by

⁴² $\chi^2 (3, N = 509) = 0.478, p = 0.923$.

⁴³ $\chi^2 (3, N = 509) = 0.609, p = 0.737$.

⁴⁴ $\chi^2 (3, N = 509) = 8.564, p = 0.036$.

area/place of residence for agreement that construction workers would behave well in the local area.⁴⁵

Q.2.98 A lower proportion of households with children (57%) than households without children (67%) agree that the construction workers would behave well in the local area.⁴⁶

Q.2.99 The variation in results by age is not statistically significant.⁴⁷

Q.2.100 The variation in results due to being a Welsh speaker is not statistically significant.⁴⁸

The Welsh language (Question 5d)

Question posed and what it measures

Q.2.101 People were asked: thinking about the construction workers who will be working on the new Power Station, to what extent do you agree or disagree with the following statement: it would help them to fit in if they learn Welsh. The question measured thoughts and feelings about how the volume of Welsh speakers and local uses of the Welsh language could change.

General trend

Q.2.102 The community survey demonstrates a diversity of views on the idea of the construction workforce for the Project learning Welsh. A small majority of people (54%) agree that it would help the construction workers to fit in if they learned Welsh (SA: 27%, TA: 27%). 13% neither agree nor disagree. However, almost a third of people (31%) disagree (TD: 22%, SD: 9%), 1% have no opinion, and 2% don't know/are not sure. This outcome identifies use of Welsh language as one of the elements, but not the only element, that is important for workers' integration into Anglesey communities.

Implication for the Project

Q.2.103 The results give some support to the view that unless construction workers have some use of Welsh, their integration into communities may be more disruptive and the use of Welsh in those communities could diminish as a result.

Statistically significant sub-groups

Q.2.104 Area/place of residence and Welsh language-speaking status are statistically associated with the extent to which people on Anglesey agree or disagree with the proposition.

⁴⁵ $\chi^2 (3, N = 509) = 3.730, p = 0.292$. A follow-up test comparing overall agreement with the statement in Cemaes (51%) to agreement on the rest of the island (65%) did not yield a significant result ($\chi^2 (1, N = 509) = 0.820, p = 0.365$).

⁴⁶ $\chi^2 (1, N = 501) = 4.429, p = 0.035$.

⁴⁷ $\chi^2 (2, N = 509) = 3.113, p = 0.211$.

⁴⁸ $\chi^2 (1, N = 509) = 1.637, p = 0.201$.

- Q.2.105 A lower proportion of people near Cemaes (44%), Amlwch (44%) and in Holyhead (37%) agree that it would help the construction workers to fit in if they learn Welsh than people in other areas of Anglesey (61%).⁴⁹
- Q.2.106 A higher proportion of Welsh speakers (61%) than non-Welsh speakers (40%) agree that it would help the construction workers to fit it if they learn Welsh.^{50,51}
- Q.2.107 The variation in results by age is not statistically significant.⁵²

Changes to the local community (Question 5e)

Question posed and what it measures

- Q.2.108 People were asked: thinking about the construction workers who will be working on the new Power Station, to what extent do you agree or disagree with the following statement: they will change the community so that I identify with it less. The question measured feelings about workers' effect on community identity [RD223].
- Q.2.109 Also, see question 2a on the baseline view of community identity.

General trend

- Q.2.110 The community survey indicates that a majority of people (57%) disagree that the construction workers would change the community so that they would identify with it less (TD: 39%, SD: 18%). A quarter of people (25%) agree with the proposition (TD: 5%, SD: 20%); 13% neither agree nor disagree; 2% have no opinion, and 3% don't know/are not sure. Although the result demonstrates a mix of views, it suggests that a higher proportion of people on the island feel that workers would not change community identity in a detrimental way.

Implication for the Project

- Q.2.111 Inherent to an influx of workers onto Anglesey is the issue of how the new mix of people on the island affects community identity. The results support the view that whilst more people would be resilient to change, a sizable minority (a quarter of people) could feel adversely affected, and some are uncertain as to how they could be affected.

Statistically significant sub-groups

- Q.2.112 Area/place of residence and Welsh language-speaking status are statistically associated with the extent to which people feel that construction workers would change the community on Anglesey so that they would identify with it less.

⁴⁹ $\chi^2 (3, N = 509) = 20.065, p < 0.001$.

⁵⁰ $\chi^2 (1, N = 509) = 18.062, p < 0.001$.

⁵¹ $\chi^2 (1, N = 509) = 19.588, p < 0.001$.

⁵² $\chi^2 (2, N = 509) = 0.157, p = 0.923$.

- Q.2.113 A higher proportion of people near Cemaes (44%) agree that the construction workers would change the community so they identify with it less, than in the other regions of Anglesey combined (24%).⁵³
- Q.2.114 A higher proportion of Welsh speakers (28%) than non-Welsh speakers (19%) agree that the construction workers would change the community so they identify with it less.⁵⁴
- Q.2.115 The variation in results by age is not statistically significant.⁵⁵

The safety and reliability of nuclear power stations as a way of producing power (Question 6a)

Question posed and what it measures

- Q.2.116 People were asked: thinking about the proposed Power Station, to what extent do you agree or disagree with the following statement: nuclear power stations are a safe and reliable way of producing energy. The question measured thoughts and feelings about the technological risk from nuclear power.

General trend

- Q.2.117 The community survey indicates that a majority of people (62%) agree that nuclear power stations are a safe and reliable way of producing energy (SA: 24%, TA: 38%) while 16% disagree (TD: 8%, SD: 8%), 12% neither agree nor disagree, 3% have no opinion, and 6% don't know/are not sure. Although a clear minority view is apparent, this result suggests that, in general, people are accepting of nuclear power despite its risks.

Implication for the Project

- Q.2.118 This result indicates how people on Anglesey view actual risks associated with nuclear power. The assumption is that people who express a definite view (of whatever strength) have considered the pros and cons of nuclear power and reached a viewpoint. The responses to this question indicate a high level of engagement with the issue: 12% are ambivalent and 6% don't know or are unsure. Thus, 18% of respondents, may, due to a lack of information be sensitive to adverse well-being effects.

Statistically significant sub-groups

- Q.2.119 Social grade (by occupation) was statistically associated with the extent of agreement with the proposition.

⁵³ Individual region differences are not statistically significant ($X^2 (3, N = 509) = 5.045, p = 0.167$). However, a follow-up test comparing agreement among respondents in Cemaes (44%) to agreement among respondents on the rest of the island (24%) is statistically significant ($X^2 (1, N = 509) = 3.277, p = 0.070$). A follow-up test comparing disagreement among respondents in Cemaes (34%) to disagreement among respondents on the rest of the island (58%) is also statistically significant ($X^2 (1, N = 509) = 3.836, p = 0.050$).

⁵⁴ $X^2 (1, N = 509) = 4.063, p = 0.044$.

⁵⁵ $X^2 (2, N = 509) = 2.072, p = 0.356$.

- Q.2.120 A lower proportion of people on Anglesey from the highest social grade category AB (45%) agree that that nuclear power stations are a safe and reliable way of producing energy, compared to people on Anglesey from the other social grades (C1 (63%), C2 (72%) and DE (66%)).⁵⁶ This result suggests that households where the main earner is in a higher or intermediate managerial/ administrative/professional occupation, are more sceptical and less trusting of nuclear power.
- Q.2.121 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant.⁵⁷
- Q.2.122 The variation in results by age is not statistically significant.⁵⁸
- Q.2.123 The variation in results due to being a Welsh speaker is not statistically significant.⁵⁹
- Q.2.124 The variation in results by working status is not statistically significant.⁶⁰
- Q.2.125 The variation in results by presence of children in household is not statistically significant.⁶¹

The new Power Station and opportunities for local people (Question 6b)

Question posed and what it measures

- Q.2.126 People were asked: thinking about the proposed Power Station, to what extent do you agree or disagree with the following statement: the new Power Station provides opportunities for local people such as jobs and investment. The response measured expectations of the benefits of the Project [RD212]; [RD213]; [RD215]; [RD218]. This question measured respondents' cognitive response. Pidgeon et al [RD91] measured respondents' cognitive and emotional responses to having nuclear power stations in their immediate area of residence, which captures this survey's intention to provide a "hearts and minds" baseline for the Project. This issue links to the HIA sections on 'employment, income and economic development', and 'education and training'.

General trend

- Q.2.127 The community survey indicates that a large majority of people (83%) agree that the Power Station would provide opportunities for local people such as jobs and investment (SA: 49%, TA: 34%). 5% neither agree nor disagree.

⁵⁶ $\chi^2 (3, N = 485) = 17.084, p < 0.001$. A follow-up test revealed that a smaller percentage of AB respondents (45%) agree with the statement, compared to the other social grade categories (a mean of 67%), $\chi^2 (1, N = 485) = 14.18, p < 0.001$.

⁵⁷ $\chi^2 (3, N = 509) = 4.935, p = 0.177$.

⁵⁸ $\chi^2 (2, N = 509) = 3.471, p = 0.176$.

⁵⁹ $\chi^2 (1, N = 509) = 1.555, p = 0.212$.

⁶⁰ $\chi^2 (3, N = 502) = 3.276, p = 0.351$.

⁶¹ $\chi^2 (1, N = 501) = 0.640, p = 0.424$.

Only 8% disagree (TD: 4%, SD: 5%), 1% have no opinion and 2% don't know/are not sure. This result confirms the high level of expectation amongst respondents for the Project to bring economic benefits to local people.

Implication for the Project

- Q.2.128 The expectation of local jobs and investment underpins the support and good-will for the Project on Anglesey. The results demonstrate the central requirement (and appetite) for the processes of design, mitigation and enhancement across the impact assessments to deliver opportunities for local people.

Statistically significant sub-groups

- Q.2.129 There are no statistically significant sub-group relationships.
- Q.2.130 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant.⁶²
- Q.2.131 The variation in results by age is not statistically significant.⁶³
- Q.2.132 The variation in results due to being a Welsh speaker is not statistically significant.⁶⁴
- Q.2.133 The variation in results by social grade is not statistically significant.⁶⁵
- Q.2.134 The variation in results by working status is not statistically significant.⁶⁶

Attitudes towards nuclear power on Anglesey (Question 6c)

Question posed and what it measures

- Q.2.135 People were asked: thinking about the proposed Power Station, to what extent do you agree or disagree with the following statement: I support having nuclear power on Anglesey. The response measured support for the Project (a cognitive measure).
- Q.2.136 Also, see Question 6f for a corresponding 'emotional' measure.

General trend

- Q.2.137 The community survey indicates that a majority of people (71%) support having nuclear power on Anglesey (SA: 41%, TA: 30%); 11% neither agree nor disagree; only 15% disagree (TD: 4%, SD: 10%) while 1% have no opinion and 2% don't know/are not sure. This result demonstrates that whilst opinions are strong on both sides, most people support the Project.

⁶² $\chi^2 (3, N = 509) = 6.336, p = .096$. A follow-up test comparing agreement in Cemaes (68%) to agreement on the rest of the island (84%) is also not significant, ($\chi^2 (1, N = 509) = 2.725, p = 0.099$).

⁶³ $\chi^2 (2, N = 509) = 3.782, p = 0.151$.

⁶⁴ $\chi^2 (1, N = 509) < 0.001, p = 1.00$

⁶⁵ $\chi^2 (3, N = 502) = 3.604, p = 0.308$.

⁶⁶ $\chi^2 (1, N = 502) = 1.176, p = 0.278$.

Implication for the Project

- Q.2.138 The support that people express for the Project is an indicator of their understanding of risks about the Project. The level of support, found in the survey, suggests that the majority of people are accepting of nuclear power. People who do not support having nuclear power on Anglesey, particularly those with strong objections to the Project, may be more likely to experience reduced well-being. Support may also be dependent upon expectations of benefits to Anglesey communities being met, such as jobs for local people.

Statistically significant sub-groups

- Q.2.139 Area/place of residence is statistically associated with the extent of agreement to which people supported having nuclear power on the island of Anglesey.
- Q.2.140 Although a majority of people near Cemaes (59%) agree that they supported having nuclear power on Anglesey, a lower proportion of people there agree than in other Area/place of residences (Amlwch (77%), Holyhead (85%) and other areas of Anglesey (67%).⁶⁷ There is a similar trend for disagreement, with a higher proportion of people in Cemaes disagreeing with the statement (30%) than in Holyhead (4%), Amlwch (13%), and other areas of Anglesey (17%).⁶⁸
- Q.2.141 The variation in results by age is not statistically significant.⁶⁹
- Q.2.142 The variation in results due to being a Welsh speaker is not statistically significant.⁷⁰

The new Power Station and people's physical health (Question 6d)

Question posed and what it measures

- Q.2.143 People were asked: thinking about the proposed Power Station, to what extent do you agree or disagree with the following statement: the new Power Station won't affect local people's physical health. The question measured expectations (both thoughts and feelings) about changes in physical health, e.g. exposure to radiation.

General trend

- Q.2.144 The community survey indicates that twice as many respondents agree (45%) as disagree (22%) that the Power Station would not affect local people's physical health (SA: 20%, TA: 25%, TD: 14%, SD: 8%). 13% neither agree nor disagree, 6% have no opinion and 14% don't know or are not sure. Almost a third of responses are distributed across the neutral or 'don't know or not sure'

⁶⁷ $\chi^2 (3, N = 509) = 15.234, p = 0.002$.

⁶⁸ $\chi^2 (3, N = 509) = 10.671, p = 0.014$.

⁶⁹ $\chi^2 (2, N = 509) = 2.622, p = 0.270$.

⁷⁰ $\chi^2 (1, N = 509) = 3.039, p = 0.081$.

answer categories, more than those who disagree, indicating some ambivalence and uncertainty. The results demonstrate that whilst the predominant view is one of no concern, there are a range of views on the potential effects of the Project for physical health.

Implication for the Project

- Q.2.145 The mix of views is consistent with the impact assessments' scoping exercises which acknowledge the potential for physical health to be affected if unmitigated. The result supports the view that a minority of people are likely to have expectations that their physical health could be adversely affected. When this group is combined with the groups that are ambivalent or unsure, they outnumber those who agree that their physical health will not be affected. This is important as having such an expectation could, in itself, increase sensitivity to changes in health outcomes (as linked to understanding of, or uncertainty of risks).

Statistically significant sub-groups and key non-statistically significant results

- Q.2.146 Age (being 55+), Welsh language-speaker status, households with children, social grade, and working status are statistically associated with the extent to which people agree that the Power Station would not affect local people's physical health. There are also associations with other survey questions that explored aspects of community cohesion.
- Q.2.147 A higher proportion of people aged 55+ agree that the Power Station would not affect local people's physical health (50%) compared to people aged 35-54 (42%) and 18-34 (38%).⁷¹
- Q.2.148 A lower proportion of Welsh speakers (40%) than non-Welsh speakers (55%) agree that the Power Station would not affect local people's physical health.⁷²
- Q.2.149 A lower proportion of households with children (32%) than households without children (49%) agree that the Power Station would not affect local people's physical health.⁷³
- Q.2.150 A lower proportion of respondents from the highest social grade category AB (34%) agree that the Power Station would not affect local people's physical health compared to people on Anglesey from the other social grades (C1 (47%), C2 (49%) and DE (52%)).⁷⁴

⁷¹ The comparison of all age categories is nearly statistically significant (X^2 (2, N = 509) = 5.203, p = 0.074). A follow-up test comparing those aged 55+ to the other age categories suggests that responses to the question are dependent on whether or not respondents are aged 55+ (X^2 (1, N = 509) = 4.305, p = 0.038).

⁷² X^2 (1, N = 509) = 10.619, p = 0.001.

⁷³ X^2 (1, N = 501) = 5.688, p = 0.017.

⁷⁴ X^2 (3, N = 485) = 8.441, p = 0.034. A follow-up test revealed that a smaller percentage of AB respondents (34%) agree with the statement, compared to the other social grade categories (49%), X^2 (1, N = 485) = 7.011 p < 0.008.

- Q.2.151 A lower proportion of unemployed respondents (32%) agree that the Power Station would not affect local people's physical health than other working status groups (employed (46%), retired/permanently not working (47%) and other not working (43%)).⁷⁵
- Q.2.152 The more respondents identify with the community (Q2a), the more they agree that the Power Station would not affect local people's physical health.⁷⁶ This result, and the two below, indicate a subjective view that feeling part of the community– to which they can easily relate – has a protective influence on physical health.
- Q.2.153 The more respondents feel they have friends and family on Anglesey who they often see (Q2b), the more they agree that the Power Station would not affect local people's physical health.⁷⁷
- Q.2.154 The more respondents feel that people in Anglesey get along with each other (Q3), the more they agree that the Power Station would not affect local people's physical health.⁷⁸
- Q.2.155 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant.⁷⁹ However, by coincidence, a lower proportion of respondents in Cemaes (30%) agree that the Power Station would not affect local people's physical health than in Amlwch (58%), with people in Holyhead (48%) and other areas of Anglesey (43%) being between these two results.

⁷⁵ An initial test was non-significant, suggesting that answers to this question are not dependent on respondents' working status (X^2 (3, N = 502) = 2.497, p = 0.476). However, since the HIA is interested in unemployed people in particular, a test was run that compared overall agreement with the statement in unemployed people compared to the rest of the working status categories. This test revealed that agreeing less with the statement is dependent on whether or not participants are unemployed (X^2 (1, N = 502) = 5.688, p = 0.017).

⁷⁶ A regression of weighted responses to the statement '*I identify with the local community*' (Q2a) on weighted responses to the statement '*The new power station won't affect local people's physical health*' (Q6d), revealed that the higher responses are on the 5-point Likert scale for Q2a, the higher responses are on the 5-point Likert scale for Q6d (N = 509, b = 0.475, SE = 0.048, t = 9.972, p < 0.001).

⁷⁷ A regression of weighted responses to the statement '*I have friends, neighbours or family on Anglesey who I often see*' (Q2b) on weighted responses to the statement '*The new power station won't affect local people's physical health*' (Q6d), revealed that the higher responses are on the 5-point Likert scale for Q2b, the higher responses are on the 5-point Likert scale for Q6d (N = 508, b = 0.576, SE = 0.039, t = 14.891, p < 0.001).

⁷⁸ A regression of weighted responses to the question '*How well do people on Anglesey get on with each other*'? (Q3) on weighted responses to the statement '*The new power station won't affect local people's physical health*' (Q6d), revealed that the higher responses are on the 5-point Likert scale for Q3, the higher responses are on the 5-point Likert scale for Q6d (N = 503, b = 0.475, SE = 0.042, t = 11.380, p < 0.001).

⁷⁹ X^2 (3, N = 509) = 5.595, p = 0.131. A follow-up test comparing Cemaes to all the other regions combined is also not significant (X^2 (1, N = 509) = 1.291, p = 0.256).

The new Power Station and people's well-being (Question 6e)

Question posed and what it measures

- Q.2.156 People were asked: thinking about the proposed Power Station, to what extent do you agree or disagree with the following statement: the new Power Station won't affect local people's well-being. The question measured expectations (both thoughts and feelings) about changes in mental health and well-being, e.g. stress and anxiety.

General trend

- Q.2.157 Similar to results for physical health, the community survey indicates that almost twice as many respondents agree (47%) than disagree (24%) that the Power Station would not affect local people's well-being (SA: 19%, TA: 29%, TD: 17%, SD: 7%), 12% neither agree nor disagree, 4% expressed no opinion, and 11% don't know/are not sure. Thus, approximately a quarter of responses are distributed across the neutral and "don't know" or "not sure" categories, indicating some ambivalence and uncertainty. The results demonstrate that whilst the predominant view is one of no concern, there are a range of views on the potential effects of the Project for well-being.

Implication for the Project

- Q.2.158 The mix of views is consistent with the impact assessments' scoping exercises which acknowledge the potential for well-being to be affected if unmitigated. The result supports the view that whilst a minority of people are likely to have expectations that their mental health and well-being could be adversely affected, when combined with the numbers who are ambivalent or unsure, they equal the people who agree that their well-being would be unaffected. This is important as having such an expectation could in itself increase sensitivity to changes in health outcomes (as linked to understanding of, or uncertainty about risks).

Statistically significant sub-groups and key non-statistically significant results

- Q.2.159 Age group, Welsh language-speaker status and households with children are statistically associated with the extent to which people agree that the Power Station would not affect local people's well-being.
- Q.2.160 A lower proportion of people aged 18-34 (43%) and 35-54 (40%) than older people aged 55+ (55%) agree that the Power Station would not affect local people's well-being.⁸⁰

⁸⁰ $\chi^2 (2, N = 509) = 9.812, p = 0.007$. A follow-up test revealed that more respondents aged 55+ (55%) agree with the statement, compared to the other age categories combined (41%) ($\chi^2 (1, N = 509) = 10.243, p = 0.001$).

- Q.2.161 A lower proportion of Welsh speakers (43%) than non-Welsh speakers (57%) agree that the Power Station would not affect local people's well-being.⁸¹
- Q.2.162 A lower proportion of households with children (38%) than households without children (51%) agree that the Power Station would not affect local people's well-being.⁸²
- Q.2.163 The more respondents identify with the community (Q2a), the more they agree that the Power Station would not affect local people's well-being.⁸³ This result (and the two below) supports the view of subjective influences on well-being – from feeling part of a community to which they can easily relate – as having a protective effect. This is a statistically significant association.
- Q.2.164 The more respondents feel they have friends and family on Anglesey who they often see (Q2b), the more they agree that the Power Station would not affect local people's well-being.⁸⁴ This is a statistically significant association.
- Q.2.165 The more respondents feel that people on Anglesey get on with each other (Q3), the more they agree that the Power Station would not affect local people's well-being.⁸⁵ This is a statistically significant association.
- Q.2.166 The variation in results by area/place of residence within the Isle of Anglesey is not statistically significant. A lower proportion of respondents in Cemaes (30%) agree that the Power Station would not affect local people's health and well-being than in Amlwch (58%), with people in Holyhead (51%) and other areas of Anglesey (46%) being between these two results. These differences were not statistically significant due to the relatively small amount of weighted responses from Cemaes.⁸⁶
- Q.2.167 The variation in results by working status is not statistically significant.⁸⁷

⁸¹ $\chi^2 (1, N = 509) = 8.850, p = 0.003$.

⁸² $\chi^2 (1, N = 501) = 7.075, p = 0.008$.

⁸³ A regression of weighted responses to the statement, '*I identify with the local community*' (Q2a) on weighted responses to the statement '*The new power station won't affect local people's well-being*' (Q6e), revealed that the higher responses are on the 5-point Likert scale for Q2a, the higher responses are on the 5-point Likert scale for Q6e ($N = 430, b = 0.475, SE = 0.045, t = 12.130, p < 0.001$).

⁸⁴ A regression of weighted responses to the statement '*I have friends, neighbours or family on Anglesey who I often see*' (Q2b) on weighted responses to the statement '*The new power station won't affect local people's well-being*' (Q6e), revealed that the higher responses are on the 5-point Likert scale for Q2b, the higher responses are on the 5-point Likert scale for Q6e ($N = 430, b = 0.612, SE = 0.037, t = 16.507, p < 0.001$).

⁸⁵ A regression of weighted responses to respondents' opinions on '*How well do people on Anglesey get along with each other?*' (Q3) on weighted responses to the statement, '*the new power station won't affect local people's well-being*' (Q6e), revealed that the higher responses are on the 5-point Likert scale for Q3, the higher responses are on the 5-point Likert scale for Q6e ($N = 430, b = 0.513, SE = 0.039, t = 12.980, p < 0.001$).

⁸⁶ $\chi^2 (3, N = 509) = 5.210, p = 0.150$. A follow-up test comparing Cemaes (30%) to the rest of the island (48%), is also not significant ($\chi^2 (1, N = 509) = 1.981, p = 0.159$).

⁸⁷ $\chi^2 (3, N = 502) = 1.653, p = 0.648$.

Q.2.168 The variation in results by social grade is not statistically significant.⁸⁸

Attitudes towards the new Power Station (Question 6f)

Question posed and what it measures

Q.2.169 People were asked: thinking about the proposed Power Station, to what extent do you agree or disagree with the following statement: I feel positive about the new Power Station. The question measured people on Anglesey's emotional response to the Project.

Q.2.170 Also, see Question 6c for a corresponding 'cognitive' measure.

General trend

Q.2.171 The community survey indicates that a majority of people (68%) agree that they feel positive about the Power Station (SA: 37%, TA: 30%). 14% neither agree nor disagree. Only 15% disagree (TD: 5%, SD: 10%). 2% have no opinion, and 1% don't know/are not sure. This result demonstrates strong feelings about the Project, mostly positive.

Implication for the Project

Q.2.172 The strong positive feelings demonstrate the importance of subjective factors in shaping people's reaction (i.e. it should not be presumed that people on Anglesey will respond to the Power Station purely on the basis of objective evidence). For those with strong positive feelings, this may have a protective effect on health outcomes associated with understanding of risks (e.g. less concerned about actual risks). For those with strong objections, the reverse may be true, with greater sensitivity to changes in health outcomes from risks that are not objectively supported.

Statistically significant sub-groups

Q.2.173 Area/place of residence, social grade and working status are statistically associated with the extent to which people agree that they feel positive about the Power Station.

Q.2.174 A lower proportion of people near Cemaes (59%) and in other areas of Anglesey (64%) agree that they feel positive about the Power Station than people near Amlwch (72%) and in Holyhead (80%).^{89,90}

Q.2.175 A lower proportion of people in social grade categories AB (57%) and C1 (65%) agree that they feel positive about the Wylfa Newydd Power Generating Station than people from social categories C2 (77%) and DE (74%).⁹¹

⁸⁸ $\chi^2 (3, N = 485) = 6.836, p = 0.077$.

⁸⁹ $\chi^2 (3, N = 509) = 10.657, p = 0.014$.

⁹⁰ $\chi^2 (3, N = 509) = 9.929, p = 0.019$.

⁹¹ The differences in agreement between social categories AB and C1 combined (62%) compared to C2 and DE combined (76%) are statistically significant ($\chi^2 (1, N = 485) = 9.796, p = 0.002$).

Q.2.176 A lower proportion of unemployed people (53%) agree that they feel positive about the Power Station than people from the other working status categories.⁹²

Q.2.177 The variation in results by age is not statistically significant.⁹³

Q.2.178 The variation in results due to being a Welsh speaker is not statistically significant.⁹⁴

Place of residence and the new Power Station (Question 6g)

Question posed and what it measures

Q.2.179 People were asked: thinking about the proposed Power Station, to what extent do you agree or disagree with the following statement: the place where I live will mean less to me if the new Power Station is built. The question measured the potential effect of the Project on emotional attachment to place of residence (“place attachment”).

Q.2.180 Also, see question 2d) on the baseline view of emotional attachment to place of residence.

General trend

Q.2.181 The community survey indicates that a large majority of people (81%) disagree that the place where they lived would mean less to them if the Power Station is built (TD: 38%, SD: 43%). 6% neither agree nor disagree. Only 9% agree with the proposition (SA: 3%, TA: 5%). 2% have no opinion, and 2% don't know/are not sure. This result indicates that most respondents' emotional attachments to the areas where they live are unlikely to be affected by the Power Station.

Implication for the Project

Q.2.182 The results suggest that building the Power Station would not change the emotional attachments that Anglesey residents have to the places where they live, and that levels of attachment would be resilient even to large material changes.

Statistically significant sub-groups

Q.2.183 Area/place of residence, age and working status are statistically associated with the extent of people's agreement that the place where they live would mean less to them if the Power Station is built.

Q.2.184 A higher proportion of people near Cemaes (23%) agree that the place where they live would mean less to them if the Power Station is built than

⁹² Comparing agreement amongst unemployed people (53%) to the rest of the employment categories combined (65%) is statistically significant ($X^2(1, N = 485) = 7.005, p = 0.008$). The differences are not significant when comparing individual categories.

⁹³ $X^2(2, N = 509) = 4.914, p = 0.086$.

⁹⁴ $X^2(1, N = 509) = 3.564, p = 0.059$.

people near Amlwch (11%), in Holyhead (5%) and in other areas of Anglesey (8%).⁹⁵

Q.2.185 A higher proportion of people aged 35-54 (13%) than younger people aged 18-34 (8%) and older people aged 55+ (6%) agree that the place where they live would mean less to them if the Power Station is built.⁹⁶

Q.2.186 A lower proportion of people who are employed (9%) or retired/permanently not working (6%) agree that the place where they live would mean less to them if the Power Station is built, compared to people who are unemployed (20%) or permanently not working (16%).⁹⁷

Q.2.187 The variation in results due to being a Welsh speaker is not statistically significant.⁹⁸

Q.2.188 The variation in results due to social grade is not statistically significant.⁹⁹

Q.3 Methods

Conceptual model underpinning questions

Q.3.1 A survey questionnaire was compiled that adapted existing interview schedules that had been subjected to academic peer-review (see references). The questions utilised proxy indicators, or simple statements to explore with people on Anglesey an idea that represented a more complex concept. For example, “getting along well” is a commonly used indicator of community or social cohesion, a more multi-faceted construct with other dimensions such as socio-economic equality and inclusion [RD224].

Q.3.2 Questions were phrased to be intentionally gentle and respectful to mitigate any adverse emotional or psychological effects of being asked about a sensitive topic on the phone, and to reduce the potential for the questionnaire itself to influence people’s views about the Project.

Q.3.3 Before interviews proceeded, sample quotas were set using Census data, so that the sample reflected the population in terms of age and geographic Area/place of residence in the selected survey areas. The survey used the following four areas based on Lower Layer Super Output Areas: Cemaes, Amlwch, Holyhead and other areas of Anglesey. These areas were selected to support discussion of differences in viewpoints of the communities that may

⁹⁵ The individual regional differences are not statistically significant ($X^2 (3, N = 509) = 3.923, p = 0.067$). However, a follow-up test comparing the percentage of respondents who agree with the statement in Cemaes (23%) to the percentage who agree for the rest of the island (8%) was statistically significant ($X^2 (1, N = 509) = 3.923, p = 0.048$).

⁹⁶ $X^2 (2, N = 509) = 6.806, p = 0.033$. A follow-up test comparing agreement in those aged 35-54 (13%) to the other age categories combined (7%) suggests agreement with the question is dependent on whether or not respondents are aged 18-34 ($X^2 (1, N = 509) = 7.005, p = 0.008$).

⁹⁷ $X^2 (3, N = 502) = 8.807, p = 0.032$.

⁹⁸ $X^2 (1, N = 509) < .001, p = 1.00$

⁹⁹ $X^2 (3, N = 485) = 8.807, p = 0.992$.

be most affected by different aspects of the Project, compared to Anglesey as a whole.

- Q.3.4 Beaufort Market Research Agency conducted 509 interviews. Of these, 468 interviews were conducted in English and 41 were conducted in Welsh. The interviews lasted approximately 10 minutes each.
- Q.3.5 Respondents were first asked if they spoke Welsh or not, and if so, their speaking level and preferred interview language, then their geographic region (location) and age to fulfil sample quotas. Interviews were offered in either English or Welsh.
- Q.3.6 Six questions were then asked. The theoretical rationale for their inclusion and conceptual underpinnings (taken from current social science and psychology knowledge) are shown in table Q-1.
- Q.3.7 Questions 2, 3, 5 and 6 employed a 5-point Likert scale. For questions 2, 5 and 6, the scale measured the extent to which people on Anglesey agree or disagree with a statement, or have no particular feeling or opinion. Question 3 used a scale to measure the extent to which respondents feel that people on Anglesey get along well.
- Q.3.8 Demographic questions were asked about working status and the number of adults and children living in the household before the interview closed.

Table Q-1 Survey questions and their theoretical rationale

Question	Rationale
1a) What do you like about life on Anglesey? 1b) What do you dislike about life on Anglesey?	Question derived from asset-based community development, where participants identify the special qualities of their area and community [RD212]; [RD213]; [RD215]; [RD218]. Respondents answered in their own words. Started interviews with an appreciation of local attributes to set a positive tone and minimise any anxiety around discussing the proposal. Information about community assets is also helpful in the mitigation stage of an HIA where adverse effects can be mitigated in ways that enhance existing assets. Responses were grouped into pre-existing categories created by HIA team and Beaufort.
2) Included four sub-questions	Took a baseline on feelings about community life now. To minimise respondents' anxiety at being asked about personal feelings, all sub-questions were worded positively so that those who disagreed could use the scale to indicate that.

Question	Rationale
2a) I identify with the local community	Underpinned by the concept of “community identity” [RD223]. Measured the extent to which respondents identify with the social community on Anglesey.
2b) I have friends, neighbours or family on Anglesey who I often see	Measured the strength of social networks based on face-to-face contact, in the instance of construction resulting in community severance and decreasing people’s physical contact through, for example, road closures. Underpinned by the concept of “social capital” [RD219]; [RD220].
2c) The Welsh way of life is important to me	Measured emotional attachment to the Welsh way of life, as underpinned by the notion of “Welsh culture” [RD221].
2d) The place where I live means a lot to me	Measured emotional attachment to place of residence, underlain by the concept of “place attachment” [RD222]
3) In your opinion, how well do people on Anglesey get along with each other?	Measured the strength of community cohesion. “Getting along” is key premise of the Welsh government definition of community cohesion [RD71]; [RD191], and the single most widely used indicator.
4a) Have you heard about the proposal for the Power Station? 4b) Do you/did you work, or has a relative of yours worked at the Existing Power Station [RD91]?	A short statement was read out first that explained the proposal, the time duration of construction, and the location of the proposed Power Station. Asked to ascertain whether an association with the Existing Power Station might influence responses to further questions on the proposed Power Station.
5) Included five sub-questions A short statement was read out first about the Power Station describing the incoming workers and some employment prospects for local people. The first four questions were worded positively, whilst the fifth is inherently negative, and	Asked respondents how the presence of the construction workforce might affect them.

Question	Rationale
was placed at the end of the list.	
5a) Local people will get along with them	Measured feelings about how the current baseline on community cohesion might change.
5b) It would help construction workers to fit in if they understand our way of life	Measured feelings about workers' integration.
5c) They will behave well in the local area	Underpinned by an inquiry about fear of anti-social behaviour and crime.
5d) It would help them to fit in if they learn Welsh	Inquired about workers' effect on the Welsh language.
5e) They will change the community so that I identify with it less	Measured feelings about workers' effect on community identity.
6) Included seven sub-questions First six questions were phrased positively whilst the seventh is inherently negative, and was placed at the end of the list	Measured respondents' perceptions of, and feelings about nuclear power.
6a) Nuclear power stations are a safe and reliable way of producing energy	Measured 'public understanding of risk' related to technological risk from nuclear power.
6b) The new Power Station provides opportunities for local people such as jobs and investment	Measured respondents' expectations of the benefits of the Project. This question measured respondents' cognitive response. Pidgeon et al [RD91] measured respondents' cognitive and emotional responses to having nuclear power stations in their immediate area of residence, which captures this survey's intention to provide a "hearts and minds" baseline for the Project.
6c) I support having nuclear power on Anglesey	Measured support for the Project.
6d) The new Power Station won't affect local people's physical health	Measured 'public understanding of risk' related to physical health. For example, exposure to radiation.

Question	Rationale
6e) The new Power Station won't affect local people's well-being	Measured 'public understanding of risk' related to mental health. For example, stress and anxiety.
6f) I feel positive about the new Power Station	Measured respondents' emotional response to the Project.
6g) The place where I live will mean less to me if the new Power Station is built	Measured the Project's potential effect on respondents' emotional attachment to place of residence ('place attachment').
7) Is there anything else you'd like to tell us in response to the questions asked today?	Asked if respondents had any further comments in their own words, which were recorded verbatim. As they did not match the pre-coded categories, these responses do not form part of the analysis in this report. These responses were passed to Horizon for inclusion within the wider consultation feedback.

Q.3.9 The survey results were reviewed to identify potential trends of interest to the Project impact assessments, for example:

- the Environmental Statement (Application Reference Numbers: 6.1 to 6.10) (which includes specific environmental and socio-economic assessments);
- the Welsh Language Impact Assessment (WLIA) (Application Reference Number: 8.21); and
- the Equality Impact Assessment (EqIA) (Application Reference Number: 8.22).

Q.3.10 Data obtained from survey questions 2, 3, 5 and 6, where respondents were asked to select pre-defined answer options from the Likert scale, were then subject to statistical analysis to determine the likelihood of a difference in opinion between demographic groups (e.g. by area/place of residence, age, Welsh language variations etc.) that was naturally linked to these demographic differences. Question 1 on the topic of likes and dislikes of living on Anglesey was excluded from this analysis. For this question, respondents provided a wide range of answers in their words, which were then, at analysis stage, grouped into broader categories for the purpose of simplification.

Q.3.11 All questions were analysed for regional, age and Welsh language-speaking variations. A subset of the questions was also analysed in relation to socially graded occupations ("social grade"), employment ("working") status, and households with and without children. These latter analyses were only undertaken on questions where specific demographic factors were of interest to the impact assessments. Whilst not exhaustive, the analysis is considered proportionate.

Data weighting

- Q.3.12 Data were weighted due to overrepresentation of the less populated areas/places of residence (e.g. Cemaes) and underrepresentation of young people aged 18-34. This means that respondents' answers are multiplied by a weighting factor based on their Area/place of residence and age category, so that having a disproportionate amount of responses from oversampled areas/places of residence and age categories does not bias the overall dataset.
- Q.3.13 To understand weighting in the contexts of the statistical tests run in this report, take as an example the percentage of people on Anglesey who agree that nuclear power stations are a safe and reliable way of producing energy (Q6a). Percentages such as this one were calculated by giving participants either a '1' or a '0', depending on their response category on the 5-point Likert scale. In this case, participants were given a '1' if they answered "strongly agree" or "tend to agree" and a '0' if they answered "neither agree nor disagree", "tend to disagree", or "strongly disagree". Participants who answered "no opinion" or "don't know/not sure" were not included in the analysis.
- Q.3.14 Every participants' response was then multiplied by their weighting factor – a number smaller or larger than 1, determined by their age and Area/place of residence. Participants from overrepresented areas/places of residence and age categories have numbers smaller than 1, and those from underrepresented areas/places of residence and age categories have numbers larger than 1 (see table Q-2). Percentages were calculated by dividing the sum of the weighted "agree" column (those that answered "strongly agree" or "tend to agree") by the sum of the 'weighted factor' column (the total 'weighted' number of participants who answered the question).
- Q.3.15 This same process was carried out for statistical analyses involving Likert scale responses. Responses were multiplied by participants' weighting factor, and analyses were carried out on these weighted scores.

Table Q-2 Participant response and weighting factor

Participant	Score on 5-point Likert scale*	Agree ('strongly agree' or 'tend to agree')?	Weighted factor	Weighted 5-point Likert scale score	Weighted 'agree overall' score
7	2	0 (no)	0.72253	1.44606	0
8	4	1 (yes)	0.95025	3.80100	0.95025
9	4	1 (yes)	1.07298	4.29192	1.07298
10	1	0 (no)	1.07775	1.07775	0

Statistical analysis of results

- Q.3.16 To identify the survey results most likely to indicate important differences in viewpoints between different groups, statistical tests were run. For questions 2, 5, and 6, tests explored whether or not there was a statistically significant association between people on Anglesey's overall agreement (combining the Likert Scale categories: "strongly agree" and "tend to agree") with a question

statement, and their overall disagreement (combining the Likert Scale categories: “tend to disagree” and “strongly disagree”) with it. For question 3 (whether people get along well on Anglesey), the categories “very well” and “well” (positive answer) were combined, and the categories “not very well” and “not at all well” (negative answer). Testing these combined categories and their associations with different demographic factors (variables) (e.g. age group) showed any relationship between the factor and the extent of agreement or disagreement with the question being asked. Since, for any given question, the agreement and disagreement are inversely related, agreement was analysed when a higher proportion of people agreed overall, and disagreement when a higher proportion of people disagree overall. This reduced redundancy in the analyses. These tests are reported on in footnotes.

Chi-squared tests

- Q.3.17 Most of the analyses ran in this report are chi-square tests. This method tests whether two variables are independent. That is to say, whether or not values for one of the variables depend on values of the other variable. In the context of the data presented here, this could mean, for example, whether or not the fraction of people who “agree overall” (“strongly agree” or “tend to agree”) with a statement is independent of (doesn’t depend on) which region of Anglesey they live in.
- Q.3.18 Results of the chi-squared (X^2) test are presented as: (X^2 (1, $N = 430$) = 10.243, $p = 0.001$).
- Q.3.19 The number 1, in this case, is the degrees of freedom of the test. For the chi-squared tests ran in this report, this number will always be one less than the number of categories being compared (in the example above, two categories, such as Welsh-speaker v. non-Welsh-speaker, were being compared).¹⁰⁰
- Q.3.20 The number of survey responses used to analyse a particular question or statement is n . This number will vary because some either declined to answer a question, were “unsure/didn’t know”, or had “no opinion”. The total number of possible people on Anglesey for the questions in this report is 509. This number is lower for some analyses, such as those looking at employment status, for example, because some people declined to answer this question.
- Q.3.21 The next number, 10.243, is the X^2 test statistic. This number summarises how close the data are to being independent. For perfectly independent data the percentages of overall agreement, for example, would be exactly the same for each category being compared.¹⁰¹ For a given test, the larger this number is, the less likely the data are to be independent.

¹⁰⁰ Since the sum of all the categories must equal the total number of respondents for a given question, once the sum of all categories but one is known, this last category must equal the total number of respondents minus the sum of all the other categories. Thus, this last category has no ‘freedom’ to vary – it depends entirely on the sum of the other categories and the total number of respondents. This is why the degrees of freedom for the chi-squared tests presented is the total number of categories being compared minus one.

¹⁰¹ This number is drawn from the chi-squared probability distribution of numbers, which is dependent on the degrees of freedom of the test.

- Q.3.22 The X^2 test statistic can be converted into a p -value. The p -value is the probability, if the variables were truly independent, that the X^2 test statistic would be as big as it is. In this case, the p -value is 0.001. This means that in only 1% of random samples would the X^2 test statistic be as big as 10.243, if the variables were truly independent¹⁰².
- Q.3.23 Most statistical tests take, as convention, $p = 0.05$ as the cut-off point for statistical significance. This convention was followed for all statistical tests in this report. This means that if a p -value is less than 0.05, the test statistic would be as large or larger in less than 5% of random samples. When p is less than 0.05, it is concluded that the variables are not independent, and that the percentages are dependent on the categories being compared (e.g. overall agreement with a statement is dependent on which region people on Anglesey are from). When this is the case, the differences in percentages between the categories are 'statistically significant'. When p is greater than 0.05, the variables are not dependent on one another: the differences in percentages observed between the categories might be due to random chance in who happened to be chosen to answer the survey.

Linear regression

- Q.3.24 The remaining analyses ran for this report are linear regression analyses. A regression analysis tests whether the average of one variable (the outcome variable), is the same at each value of another variable (the predictor variable). If it is, the variables are independent. If the average of the outcome variable changes (in a linear manner) as the predictor variable increases, there is a relationship between the two variables.
- Q.3.25 The results of linear regression analyses are reported as: ($N = 508$, $b = 0.576$, $SE = 0.039$, $t = 1.891$, $p = 0.170$).
- Q.3.26 N is the number of survey responses used to analyse a particular question or statement.
- Q.3.27 The second statistic, b , indicates either the increase or decrease in the outcome variable for a 1 point increase in the predictor variable – it is the slope of the prediction line. In this example, the outcome variable (participants' answers on a 5-point Likert Scale; 1 = "strongly disagree", 2 = "tend to disagree", "neither agree nor disagree" = 3, "tend to agree" = 4, "strongly agree" = 5) increase 0.576 points on the scale for a 1 point increase in the same Likert Scale for the predictor variable.
- Q.3.28 The third statistic, SE (standard error), presents the variability in b that would result from repeatedly selecting random samples of N (508 in this case) people on Anglesey, and running linear regression analyses to estimate b .
- Q.3.29 The next number, the t statistic, 1.375, summarises how close the data are to being independent. For perfectly independent data, the slope of the relationship between the predictor variable and the outcome variable, b , would

¹⁰² If $p = 0.856$, then in 85.6% of random samples, differences in percentages would be obtained between categories (and test statistics) as big as those observed when the variables were *independent*. In other words, there is an 85.6% chance that the differences between the categories was due to random chance as to which people ended up taking part in the survey.

equal 0. The larger this number is, the less likely the data are to be independent (i.e. the more likely it is that the slope of the relationship between the predictor and the outcome is not 0, and that there is a real relationship between the two variables).¹⁰³

- Q.3.30 The t statistic can also be converted into a p -value. The p -value is the probability, if the variables were truly independent, that the t test statistic would be as big as it is. In this case, the p -value is 0.170. This means that in 17% of all random possible samples of 508 people on Anglesey, the t statistic would be as large as the one observed simply due to random chance. When the p -value is less than 0.05, the slope of the relationship between the predictor and outcome variable, b , is significantly different from 0. That is, there is a relationship between the two variables: as the predictor variable increases, the outcome either increases or decreases in a statistically significant way.

Q.4 Data

Questionnaire script

- Q.4.1 Headline results are provided in table Q-3 and in Figure Q-1 to Figure Q-4.
- Q.4.2 The interview scripts were provided in Welsh and in English [RD225] and the results were provided as a series of tables [RD226].

¹⁰³ The t statistic is drawn from a distribution that is very similar to the normal distribution when the sample size is large.

Table Q-3 Headline results from the community survey

Question	Strongly agree	Tend to agree	Neither agree nor disagree	Tend to disagree	Strongly disagree	No opinion	Don't know/ Not sure
	%						
2a I identify with the local community	52	33	7	6	1	1	0
2b I have friends, neighbours or family on the Isle of Anglesey who I often see	76	18	1	2	1	0	0
2c The Welsh way of life is important to me	54	25	1	7	2	2	1
2d The place where I live means a lot to me	72	20	4	3	1	0	0
5a Local people will get along with construction workers	23	46	15	8	2	1	5
5b It would help construction workers to fit in if they understand our way of life	43	35	10	7	2	3	1
5c They will behave well in the local area	21	43	14	3	1	5	12
5d It would help them to fit in if they learn Welsh	27	27	13	22	9	1	2
5e They will change the community so that I identify with it less	5	20	13	39	18	2	3
6a Nuclear power stations are a safe and reliable way of producing energy	24	38	12	8	8	3	6
6b The new Power Station provides opportunities for local people such as jobs and investment	49	34	5	4	5	1	2
6c I support having nuclear power on the Isle of Anglesey	41	30	11	4	10	1	2

Question		Strongly agree	Tend to agree	Neither agree nor disagree	Tend to disagree	Strongly disagree	No opinion	Don't know/ Not sure
		%						
6d	The new Power Station won't affect local people's physical health	20	25	13	14	8	6	14
6e	The new Power Station won't affect local people's well-being	19	29	12	17	7	4	11
6f	I feel positive about the new Power Station	37	30	14	5	10	2	1
6g	The place where I live will mean less to me if the new Power Station is built	3	5	6	38	43	2	2

NB: the figures in the table have been rounded, and so the rows do not always add up to 100%.

Figure Q-1 Results from Question 2 of the community survey

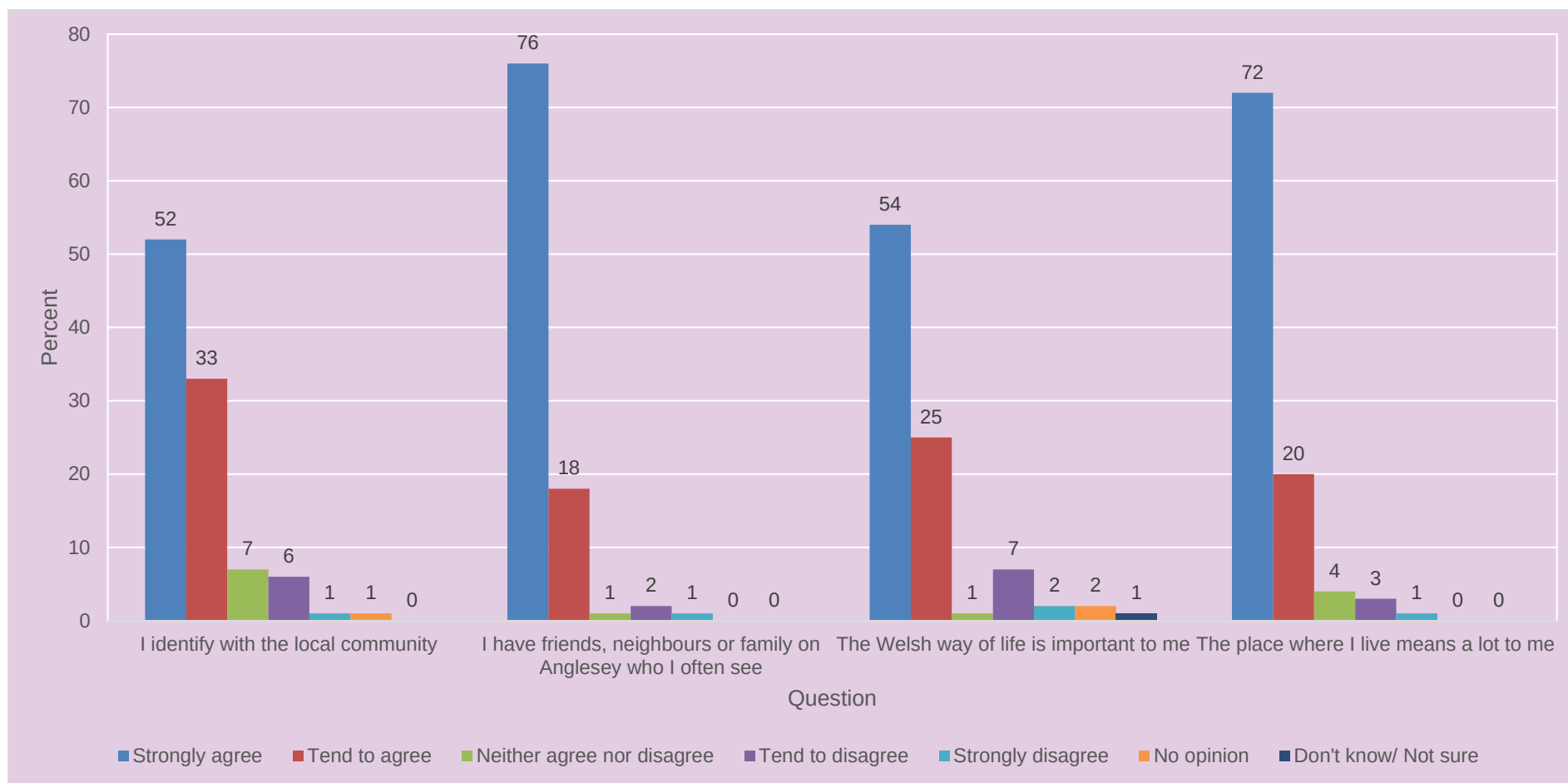


Figure Q-2 **Results from Question 3 of the community survey**

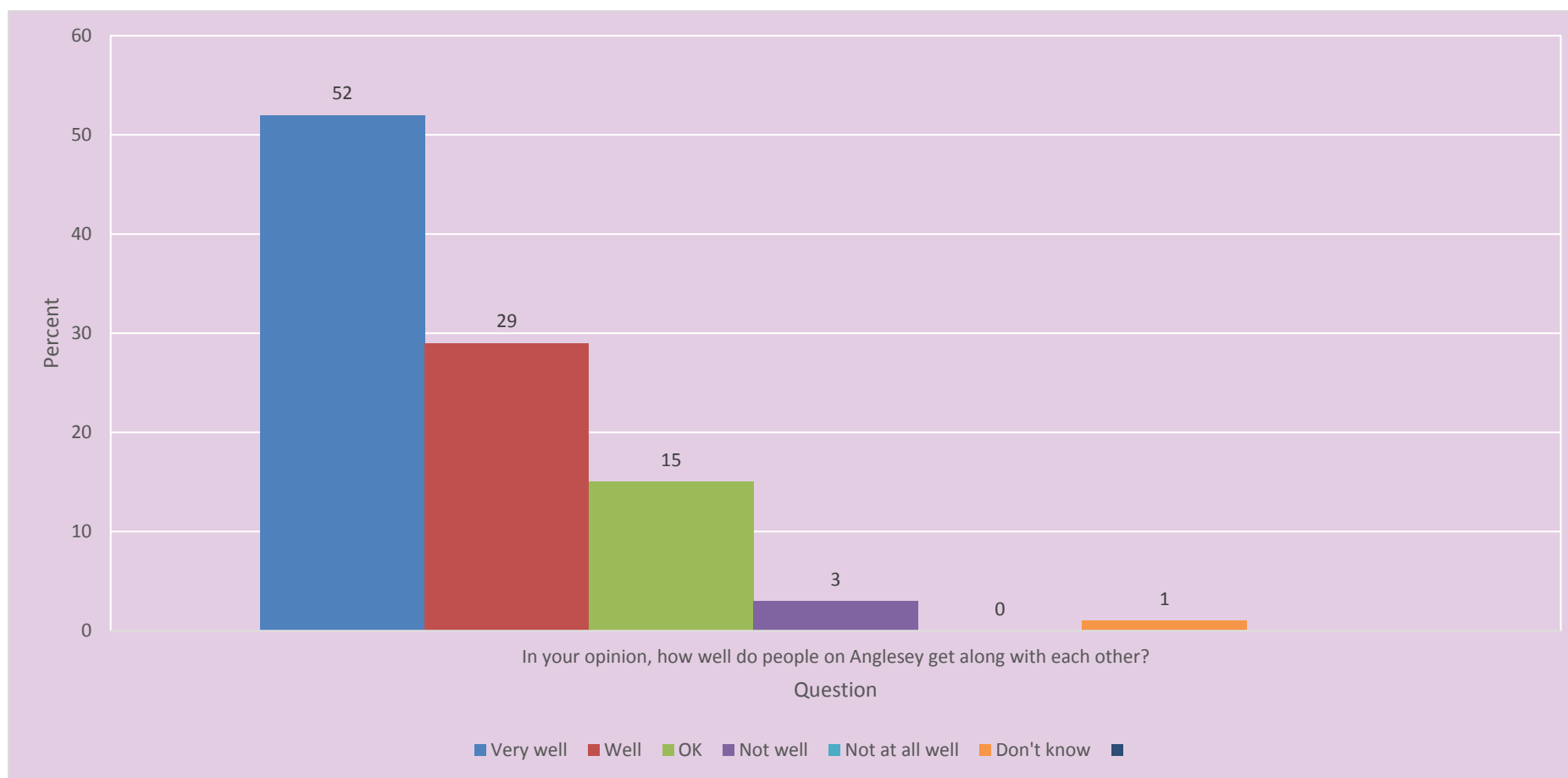


Figure Q-3 Results from Question 5 of the community survey

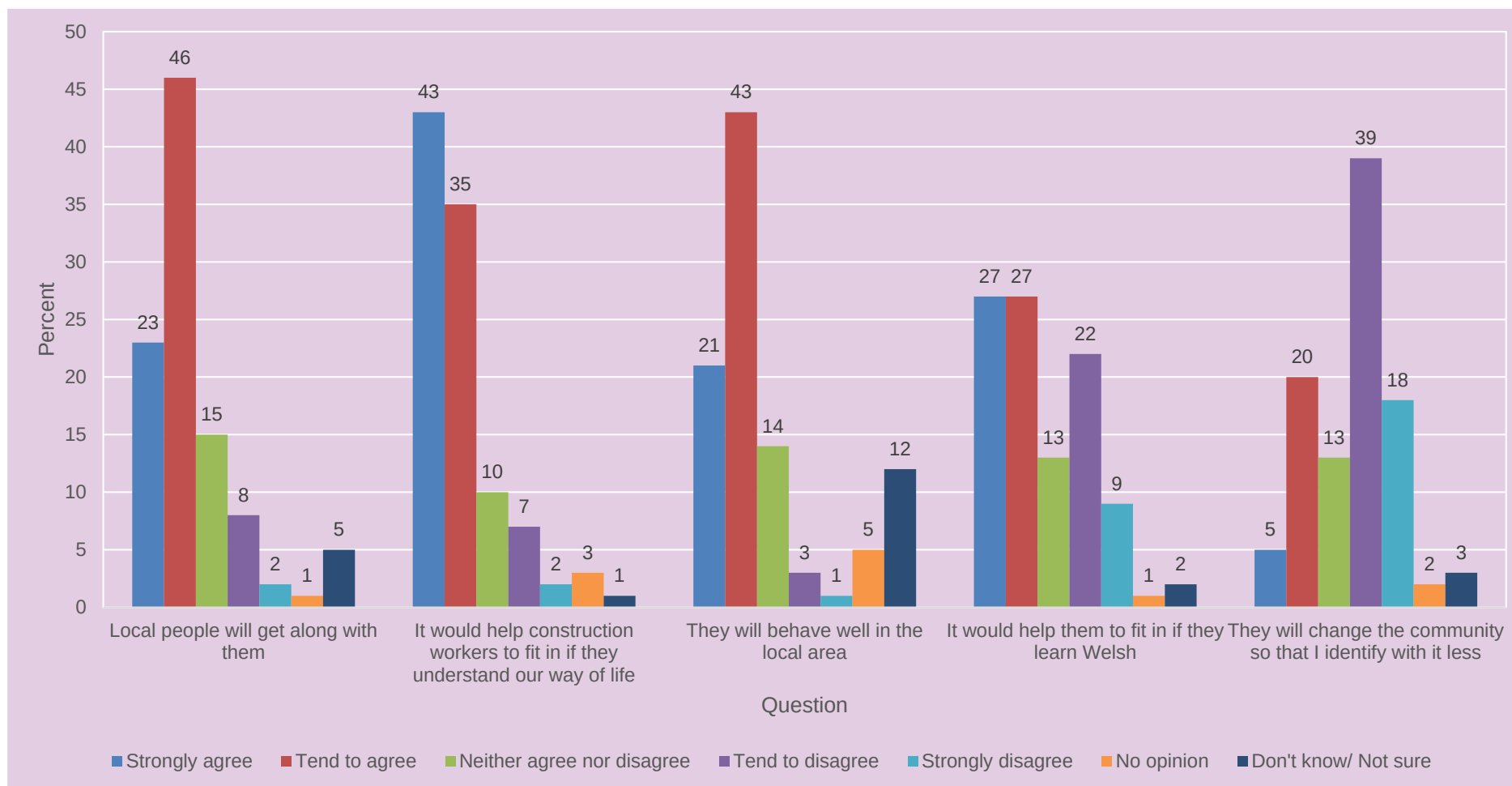


Figure Q-4 Results from Question 6 of the community survey

