HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

6.3.20 ES Volume C - Road traffic-related effects (project-wide) App C2-4 - DCO TA Appendix F - Integrated Traffic and Transport Strategy

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1 Executive Summary

1.1.1 An Integrated Traffic and Transport Strategy (ITTS) has been developed to inform the management of travel during the construction and operation of the Wylfa Newydd Project.

1.1.2 During construction, up to 9,000 workers will be required. Travel impacts will be reduced by:

- enabling up to 4,000 workers to live in a Site Campus at the Wylfa Newydd Development Area meaning they would be able to walk to and from work each day;
- providing demand-related shuttle bus services for workers living on Anglesey, in Holyhead, and to/from the mainland towns of Bangor and Caernarfon;
- providing a Park and Ride facility at Dalar Hir and a shuttle bus service between Dalar Hir and the Site to reduce car travel by workers on the A5025; and
- encouraging car sharing through a programme of incentivisation and management.

1.1.3 Up to 7,000 workers are expected to move to the area temporarily. This means that they will not have established travel patterns and hence will be open to the travel management proposals described in the ITTS.

1.1.4 The ITTS considers both daily travel and the travel undertaken by workers at the end of an 11-day shift cycle when some workers will likely travel long distances to return to their permanent home.

1.1.5 The ITTS also covers construction traffic and the following measures are proposed to reduce construction traffic impacts:

- Construction of a Marine Off-Loading Facility adjacent to the Wylfa Newydd Site. This will take a minimum of 60% and will target to take 80% of all construction materials required for the Power Station.
- Implementation of A5025 Off-line Highway Improvements including three village bypasses.
- Implementation of a Logistics Centre adjacent to Junction 2 of the A55. This will regulate and manage construction vehicle movements along the A5025 to the Power Station Site to minimise impacts.

1.1.6 In addition, construction of A5025 On-line Highway Improvements is proposed as part of a separate Town and Country Planning Act application.

1.1.7 This report outlines the full details of the ITTS for the Wylfa Newydd Project. The transport impact of the Wylfa Newydd Project is considered in the Transport Assessment (Application Reference Number: 6.3.14) and the ES Volume C – Project-wide effects C2 – Traffic and transport (Application Reference Number: 6.3.2).

2 Introduction

2.1.1 Horizon Nuclear Power Wylfa Limited (Horizon) has prepared an Integrated Traffic and Transport Strategy (ITTS) to support the proposals for a new nuclear power station in the north-west corner of Anglesey. The new Power Station will be on land to the west of Cemaes, immediately south of the existing Magnox power station.

2.1.2 The proposals will create significant long-term employment opportunities and economic benefits for Anglesey and North Wales. In addition they will provide a number of tangible legacy benefits as part of the off-site works associated with the construction and operation of the Power Station. Further details on the Wylfa Newydd Project are provided in the following paragraphs.

2.1 Wylfa Newydd DCO Project proposals

2.1.1 The Wylfa Newydd DCO Project is defined as those parts of the project which are to be consented by the DCO, comprising the following parts:

- 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 and spent fuel storage buildings.
- 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 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 a Cooling Water System (CWS), Marine Off Loading Facility (MOLF) and breakwater structures.
- Off-site Power Station Facilities comprising the Alternative Emergency Control Centre (AECC), Environmental Survey Laboratory (ESL) and a Mobile Emergency Equipment Garage (MEEG).

- Associated Developments comprising works included in the DCO which facilitate the delivery of the nationally significant infrastructure project, and which principally include: a Site Campus providing accommodation for construction workers; a Park and Ride facility at Dalar Hir for construction workers; a Logistics Centre at Parc Cybi and A5025 Off-line Highway Improvements. Other than the A5025 Off-line Highway Improvements these works are all temporary, relating to the construction of the Power Station.

2.1.2 It is anticipated that the main construction activities will last for a period of around nine years, which will overlap with the period of enabling works. During the peak construction period (duration of around one year) the overall number of workers on Anglesey and the mainland will rise to around 9,000 (and a proportion of which will be accommodated in the Site Campus located adjacent to the Wylfa Newydd Development Area). However, not all workers will be at the Power Station Site at any one time with the working day split in to a number of shifts. This ensures the efficient operation of the Power Station Construction Site and also allows for worker and construction traffic movements to be made outside of the typical school traffic periods. Furthermore, some workers will be associated with facilities management and construction of off-site developments.

2.1.3 Following construction, up to around 850 workers will be required to operate and manage the Power Station for the duration of its operational life, with an additional workforce of up to 1,000 required for short periods of outage for maintenance.

2.1.4 Further details of these proposals, including how both materials and workers/staff will be transported, are described in the following chapters of this document.

2.2 Purpose of report

2.2.1 This ITTS has been prepared to describe the transport proposals associated with the Wylfa Newydd Project. It describes how they integrate with each other to provide a comprehensive strategy and how they align with local, regional and national planning policy, as well as reflecting feedback received on the Wylfa Newydd Project through formal consultation and ongoing stakeholder engagement.

2.2.2 The structure of this ITTS consists of the following chapters:

- a summary of the current transport planning policy and how the Wylfa Newydd Project is compliant;
- a summary of the transport-related feedback received on the Wylfa Newydd Project;
- ITTS outcomes and objectives;
- an overview of the transport requirements of the Wylfa Newydd Project;

- details of the transport strategy for construction workers, combining those who will be drawn from the local area and those drawn from further afield and will live temporarily in the area;
- details of the transport strategy for freight and logistics, including bulk materials, equipment and components, and abnormal indivisible loads (AILs); and
- details of the transport strategy during operation of the Wylfa Newydd Project.

2.2.3 The ITTS draws together the transport-related mitigation that emerges from the various aspects of the environmental impact assessment (EIA) process as it goes through iterative stages of development, highlighting how the combined proposals represent an integrated strategy. It forms a central evidence base to the Transport Assessment (Application Reference Number: 6.3.14), Code of Construction Practice and Code of Operational Practice (Application Reference Number: 8.6 and 8.13) that support the DCO application.

2.2.4 The ITTS is not a securing document in the DCO itself, but the measures described in the ITTS are secured in the DCO as embedded mitigation or through the Code of Construction Practice and Code of Operational Practice (Application Reference Number: 8.6 and 8.13). A schedule of commitments is included within the ES Volume J – Environmental commitments and summary of residual effects J1 (Application Reference Number: 6.10.1).

3 Policy Review

3.1 Overview

3.1.1 This chapter presents the relevant policy and guidance associated with the development of the ITTS for the Wylfa Newydd Project.

3.1.2 As the Power Station is anticipated to be operational after 2025, the Government considers that the DCO application should be considered under section 105 of the Planning Act 2008. The decision of the Secretary of State (SoS) under Section 105 of the Planning Act 2008 needs to be made having regard to any Local Impact Report and matters that the SoS thinks are both important and relevant. These would include the policies contained in EN-1 and EN-6, which is confirmed in the recent Ministerial Statement on Energy Infrastructure [RD29]. This further clarifies continued Government support for nuclear power, and specifically at Wylfa. NPS EN-1 and EN-6 therefore remain the primary basis for decision making.

3.1.3 Section 104(2) of the Planning Act 2008 lists the matters the Secretary of State (on the Planning Inspectorate's recommendation and hereafter referred to as the decision maker) must consider in deciding an application for a DCO affected by a National Policy Statement (NPS). These matters are:

- any NPS which affects the proposed development;
- the appropriate marine policy documents (if any) determined in accordance with section 59 of the Marine and Coastal Access Act 2009 (MCA Act);
- any local impact report submitted to the Secretary of State;
- any relevant matters prescribed in regulations; and
- any other matters which the Secretary of State thinks are both important and relevant to his or her decision.

3.1.4 The Planning Statement submitted as part of the DCO application sets out the planning policy requirements for the Wylfa Newydd Project in detail and the following section presents relevant information on the key national transport policies. Further detail on transport policies is contained within Section 3 of the Transport Assessment (Application Reference Number: 6.3.14).

3.2 National (UK) Policy

National Policy Statements

3.2.1 The National Policy Statements (NPSs) applicable to the Project are:

- *NPS for Energy (EN-1)* [RD1]*; and*
- *NPS for Nuclear Power Generation (EN-6)* [RD2]*.*

3.2.2 The following extracts from these NPSs are relevant to the development of the Integrated Traffic and Transport Strategy and Transport Assessment for the Wylfa Newydd Project.

3.2.3 Section 5.13 of *NPS EN-1* sets out the traffic and transport policies that should be considered when developing a DCO application:

3.2.4 Paragraph 5.13.3 states that "If a project is likely to have significant transport implications, the applicant's ES should include a transport assessment, using the *New Approaches to Appraisal (NATA)/WebTAG* [RD3] methodology stipulated in Department for Transport guidance, or any successor to such methodology. Applicants should consult the Highways Agency and Highways Authorities as appropriate on the assessment and mitigation".

3.2.5 Paragraph 5.13.7 states that: "Provided that the applicant is willing to enter into planning obligations or [that] requirements can be imposed to mitigate transport impacts identified in the *NATA/WebTAG* [RD3] transport assessment, with attribution of costs calculated in accordance with the Department for Transport's guidance, then development consent should not be withheld, and appropriately limited weight should be applied to residual effects on the surrounding transport infrastructure".

3.2.6 Paragraph 5.13.8 states that: "Where mitigation is needed, possible demand management measures must be considered and if feasible and operationally reasonable, required, before considering requirements for the provision of new inland transport infrastructure to deal with remaining transport impacts".

3.2.7 Paragraph 5.13.9 states that: "The IPC [Infrastructure Planning Commission] should have regard to the cost-effectiveness of demand management measures compared to new transport infrastructure, as well as the aim to secure more sustainable patterns of transport development when considering mitigation measures".

3.2.8 Note that the IPC is now defunct and the role is undertaken by the Infrastructure Planning Unit within the Planning Inspectorate.

3.2.9 Paragraph 5.13.10 states that: "Water-borne or rail transport is preferred over road transport at all stages of the project, where cost-effective".

3.2.10 The following extracts are from Section 3.15 of *NPS EN-6* [RD2] which sets out the policies relating to impacts on significant infrastructure that should be considered when developing a DCO application.

3.2.11 Paragraph 3.15.2 states that: "Applications should demonstrate that the proposed development would not have an unacceptable adverse impact on significant infrastructure. The IPC should take into account any local authority impact report, advice from the relevant Nuclear Regulators and relevant policy in NPSs in assessing impacts on significant infrastructure and resources".

3.2.12 Paragraph 3.15.3 states that: "In particular, the Nuclear AoS [Appraisal of Sustainability] identified that there may be adverse effects during the construction and decommissioning phases on regional transport networks that may already be under stress, particularly where there are clusters of

potentially suitable sites for new nuclear power stations. In considering this issue the policy set out in Section 5.13 of *NPS EN-1* (Transport and Traffic impacts) [RD1] applies".

3.2.13 Therefore, the interpretation of the above policy is that developers should seek to address transport impacts arising from the development of new nuclear power stations during the construction and operational phases of development, but not to a nil-detrimental level. In addition, demand management measures should be considered before proposing new-build inland based infrastructure, and that water or rail based transport is favoured over road based transport at all stages of the Project, where cost-effective and feasible.

3.2.14 While *NPS EN-1* [RD1] and *NPS EN-6* [RD2] together form the primary basis for deciding DCO applications for nuclear NSIPs, paragraph 4.1.5 of *NPS EN-1* states that other matters which the decision maker may consider both important and relevant to its decision making include Development Plan Documents or other documents in the Local Development Framework. The same paragraph also states that in the event of a conflict between these or any other documents and an NPS, the NPS prevails for the purposes of decision making given the national significance of the infrastructure.

3.3 National (Wales) Policy and Guidance

Introduction

3.3.1 *NPS EN-1* [RD1] states at paragraph 4.1.5 that the relevant NPSs have taken account of relevant Planning Policy Statements (PPSs) and Technical Advice Notes (TANs) where appropriate. As such, these policies are of limited relevance where they pre-date the NPSs. This includes the *Wales Spatial Plan* [RD5] and *TAN 18 – Transport* [RD6]. Newer Welsh national policies will be more relevant but still not determinative in decision-making and *NPS EN-1* [RD1] and *EN-6* [RD2] will always take precedence over them and are intended to provide self-contained policy for NSIPs.

3.3.2 Taking account of the above, it can be concluded that Welsh national and local planning policies have a role to play in informing the decision-making on the DCO application, but they are not determinative.

3.3.3 For development in Wales, the principal strategic policy documents are *Planning Policy Wales Edition 9* [RD7], TANs and the *Wales Spatial Plan* [RD5]. Together these comprise the national planning policy framework informing the preparation of local development plans.

Planning Policy Wales

3.3.4 *Planning Policy Wales (PPW) (Edition 9)* [RD7] provides the main policy objectives and principles of planning in Wales, and Chapter 8 is relevant to transport.

3.3.5 Paragraph 8.1.5 of *PPW* states that land use planning can help to achieve the Welsh Government's objectives for transport through, for example:

- *"supporting traffic management measures"*;
- *"promoting sustainable transport options for freight"*;
- *"supporting sustainable transport options in rural areas"*; and
- *"supporting necessary infrastructure improvements"*.

3.3.6 Paragraph 8.3.3 of *PPW* states that park and ride should normally be considered as one element of a comprehensive planning and transport strategy designed to improve the relative attractiveness of public transport and reduce the overall dependence on cars.

3.3.7 Paragraph 8.5.3 of *PPW* goes on to state that the strategic significance of freight access to industry and commerce should be taken into consideration by planning authorities. Wherever possible these authorities should promote the carriage of freight by rail, water or pipeline rather than by road.

3.3.8 Paragraph 8.7.1 of *PPW* also states that local planning authorities should take in to account the following when considering a planning application:

- *"the willingness of a developer to promote travel by walking, cycling, public transport, or to provide infrastructure or measures to manage traffic, to overcome transport objections to the proposed development"*;
- *"…the environmental impact of both transport infrastructure and the traffic generated (with a particular emphasis on minimising the causes of climate change associated with transport)"*; and
- *"the effects on the safety and convenience of other users of the transport network"*.

Wales Transport Strategy

3.3.9 *The Wales Transport Strategy (WTS)* [RD8] promotes sustainable transport networks that safeguard the environment while strengthening economic and social life. Key identified priorities include:

- reducing greenhouse gas emissions and other impacts;
- integrating public transport;
- improving access between key settlements and sites;
- enhancing international connectivity; and
- increasing safety and security.

National Transport Finance Plan for Wales

3.3.10 The *National Transport Finance Plan for Wales (NTP)* [RD9] will help deliver the Welsh Government's objectives for transport, as set out in the *WTS*. It reflects the Government's ongoing programme of investment in transport improvements. It also sets out how future schemes will be identified and developed. The emerging *NTFP* identifies national and regional transport improvements to be taken forward, whilst Local Planning Authorities (LPAs) are expected to identify priorities at the local level within the Local Transport Plans (which is still currently under development for North Wales). The

Welsh Government is expected to engage with LPAs throughout this planning process to ensure an integrated approach between national, regional and local priorities. The following priorities have been set:

- support economic growth and safeguard jobs with a particular focus on the City Regions, Enterprise Zones and local growth zones;
- reduce economic inactivity by delivering safe and affordable access to employment;
- maximise the contribution that effective transport services can make to tackling poverty and target investment to support accessibility improvements for the most disadvantaged;
- encourage safer, healthier, safer and sustainable travel; and
- connect communities and enable access to key services.

Building a more Prosperous Wales: Infrastructure for a Modern Economy

3.3.11 *Building a more Prosperous Wales: Infrastructure for a Modern Economy* [RD10] identifies the following key challenges in relation to transport:

- ensuring that provision is made for future public transport capacity needs to ensure that growth does not stagnate as demand increases;
- ensuring that devolution does not affect citizens' ability to travel or affect the quality of their experience; and
- ensuring that transport infrastructure along strategic routes is enhanced to drive economic growth.

3.3.12 Future needs are also identified for transport which are:

- improving local connectivity;
- linking transport improvements in England to improve connections from Wales to the rest of the UK; and
- improving Wales's key transport corridors and infrastructure (e.g. creating a regional airport, developing seaports) for access to global markets.

Technical Advice Note 18

3.3.13 *Technical Advice Note 18 Transport (TAN18)* [RD6] sets out how the Welsh Government aims to integrate land-use and transport planning to provide an efficient and sustainable transport system to facilitate ongoing economic development.

3.3.14 Paragraph 7.4 of *TAN18* states that more sustainable travel is to be promoted as part of a combined journey. It clarifies that "the development of safe and efficient public transport facilities where different modes of transport intersect, including cycling, is essential for the integration of transport provision*."*

3.3.15 Paragraph 7.5 of *TAN18* states that the use of park and ride facilities is promoted to reduce the number of longer commuting journeys in a single occupancy vehicle.

3.3.16 Paragraph 8.11 of *TAN18* states that the movement of freight by rail or water rather than by road is encouraged.

3.4 Regional and Local Policy

3.4.1 Regional and local transport policy also directly relates to the delivery of the Wylfa Newydd Project.

North Wales Regional Transport Plan

3.4.2 *The North Wales Regional Transport Plan* [RD11] outlines the regional transport priorities for North Wales, including:

- providing a transport network for North Wales that makes the best use of available resources to give efficient movement of both people and freight;
- enhancing performance of public transport through the integration of different public transport services including: trains, fast inter-urban bus and coach services, improving the local bus network and an appropriate mix of services involving smaller vehicles for rural areas;
- resolving congestion and highway access issues;
- maintaining safe, efficient and more sustainable transport networks;
- implementing road, rail and terminal improvements in conjunction with national and regional agencies and companies; and
- increasing current levels of cycling and walking by residents and visitors.

North Wales Joint Local Transport Plan

3.4.3 The *North Wales Joint Local Transport Plan (LTP)* [RD12] has been jointly produced by the six north Wales local authorities of Conwy, Denbighshire, Flintshire, Gwynedd (partially), Isle of Anglesey and Wrexham. The key outcomes that the Local Transport Plan aims to achieve include:

- providing affordable and accessible transport to jobs and services with a focus on the most deprived communities;
- improved safety/security benefits of both actual and perceived safety of travel by all modes; and
- minimising impacts on the natural environment with infrastructure to support public and community transport.

Anglesey and Gwynedd Joint Local Development Plan

3.4.4 The *Anglesey and Gwynedd Joint Local Development Plan* (JLDP) [RD13] was formally adopted on 31 July 2017. This now supersedes all of the policies and interim policies contained within the Gwynedd Structure Plan (1993), Anglesey Local Plan (1996), Anglesey Unitary Development Plan (stropped) (2005), Interim Planning Policy: Large Sites (2011), Interim Planning Policy: Rural Clusters (2011) and the Gwynedd Unitary Development Plan (2009). Further details are contained within the Transport Assessment (Application Reference Number: 6.3.14).

The New Nuclear Build at Wylfa Supplementary Planning Guidance

3.4.5 Whilst the Wylfa Newydd SPG remains adopted guidance it is now out of date, as it pre-dates the adopted JLDP. A draft Wylfa Newydd Supplementary Planning Guidance 2018 Consultation Draft was published for consultation in January 2018. The draft SPG is, at the time of submission, subject to consultation, including representations submitted by Horizon. It can therefore be given very limited weight.

3.4.6 *The New Nuclear Build at Wylfa: Supplementary Planning Guidance* [RD14] sets out the guidance IACC wishes developers to consider when developing proposals at Wylfa. Section 4.6 of the document deals specifically with transport for which further details are contained within the Transport Assessment (Application Reference Number: 6.3.14).

Parking Standards Supplementary Planning Guidance

3.4.7 *The Parking Standards: Supplementary Planning Guidance* [RD15] sets out the guidance IACC wishes developers to consider when proposing car parking at developments. Further details are contained within the Transport Assessment (Application Reference Number: 6.3.14).

3.5 Policy compliance

National planning policy

3.5.1 The Wylfa Newydd Project proposals align well with the transport aspects of national planning policy. In particular, the following points demonstrate the key areas of compliance:

- the Power Station Site is considered a suitable location for a new nuclear power station as set out in *NPS EN-6* [RD2];
- the DCO application is supported by a Transport Assessment (Application Reference Number: 6.3.14), ITTS and ES, covering construction and operational stages of the Wylfa Newydd Project as well as a Cumulative Impact Assessment, in line with policy set out in *NPS EN-1* [RD1] and *TAN 18* [RD6];

- the Wylfa Newydd Project aims to reduce the amount of vehicular traffic, particularly Heavy Goods Vehicles (HGVs) and single occupancy cars, associated with both construction and operation through the promotion of a MOLF, Park and Ride facilities, a Logistics Centre, Site Campus, shuttle bus services, and car share incentivisation. The need to travel will also be reduced by locating these facilities in sustainable locations and where overall efficiency in transport movements can be achieved. This is consistent with policy set out in *NPS EN-1* [RD1], *The Wales Transport Strategy* [RD8], *Planning Policy Wales* [RD7] and *TAN 18* [RD6];
- the Wylfa Newydd Project will explore the potential for procuring buses that utilise 'low emission' technology for transferring workers from Park and Ride facilities and local accommodation across Anglesey and Gwynedd to the Power Station Site, which is in line with policies aimed at reducing greenhouse gases set out in the *Wales Transport Strategy* [RD8]; and
- the Wylfa Newydd Project, during operation, will encourage journeys up to one and a half kilometres to be made on foot and up to eight kilometres to be made by bicycle rather than the private car. This is consistent with sustainable development policies set out in *NPS EN-1* [RD1], *The Wales Transport Strategy* [RD8], *Planning Policy Wales* [RD7], TAN 18 [RD6] and the Active Travel (Wales) Act 2013.

Regional, local and site-specific planning policy

3.5.2 The Wylfa Newydd Project proposals align well with the transport aspects of regional, local and site-specific planning policy. In particular, the following points demonstrate the key areas of compliance:

- The Wylfa Newydd Project aims to support existing and provide new sustainable travel options and infrastructure. This is in line with the overarching sustainable travel ethos underlying all regional, local and site specific policy and guidance;
- Informed by the Integrated Traffic and Transport Strategy, the Wylfa Newydd Project will include proposals to reduce the volume of road based traffic, particularly HGVs and private cars, associated with both construction and operation of the Power Station through the promotion of a MOLF, Park and Ride sites, Site Campus, shuttle bus services and car share incentivisation. This is consistent with policy set out in the LTP, the JLDP and Wylfa SPG;
- The Wylfa Newydd Project includes a Logistics Centre which will enable the management of construction vehicles travelling along the A5025 and the potential consolidation of construction materials which will lead to fewer trips by construction vehicles.
- In line with guidance set out in the JLDP and Wylfa SPG, the Wylfa Newydd Project will provide a Site Campus adjacent to the Power Station Site and preferential car parking for high occupancy vehicles will be provided at construction area car parks. This will combine with a robust worker travel strategy incentivising bus use and car sharing to ensure that trips by private car, particularly those at single occupancy, are kept to a minimum;
- The A5025 Off-line Highway Improvements proposed are in line with those set out in the JLDP. In addition, the highway improvement proposals and sustainable travel measures that will be implemented will ensure that the development will not cause unacceptable harm to the safe and efficient operation of the highway.
- The Wylfa Newydd Project will include proposals to improve walking and cycling routes in the immediate vicinity of the Power Station Site for existing users. This will be achieved via the provision of new and improved infrastructure, and during operation of the Power Station journeys up to eight kilometres will be encouraged to be made by bicycle rather than the private car. This is consistent with overarching sustainable development policy and more specifically with policies to encourage cycling, walking and route improvements in the adopted JDLP.

4 Wylfa Newydd Project Outcomes & Objectives

4.1.1 This ITTS has the following goals and approach, which has been developed through the planning and consultation process:

"Through our integrated approach to traffic and transport, we are committed to improving the transport system while reducing adverse effects on communities and the environment.

Our approach sets out how we intend to transport construction workers and materials to the Power Station Site by road, rail and sea. It shows our commitment to road safety; promoting sustainable travel by making fewer journeys; and leaving a lasting transport legacy after the construction phase of the Project."

4.1.2 In line with the above, the ITTS has developed objective themes, that can be applied to all areas of the Wylfa Newydd Project where transportation and movement are required, encompassing key principles which were developed at an early consultation stage. These themes also align with policy objectives at a national, regional and local level and provide a set of definitive outcomes, against which the performance of the Wylfa Newydd Project can be measured.

4.1 Outcomes

4.1.1 The Wylfa Newydd Project aims to meet a number of outcomes, which align with current transport policy. Each aspect of the Wylfa Newydd Project aims to meet the following two outcomes:

- improve the transport network to positively affect the local and global natural and built environment while minimising negative impacts; and
- provide an effective and efficient transport system with greater use of more sustainable forms of travel and which minimises the need to travel.

4.2 Objectives

4.2.1 These listed outcomes will be achieved through f five objectives that inform the Wylfa Newydd Project's transport proposals. This ensures that transport is considered as an integrated component of each aspect of the development, from the location of the Site Campus to the method of transporting specific loads.

1. **Enhanced highway capacity and safety** – to include schemes to increase network capacity or remove pinch points/constraints and/or address particular road safety issues ensuring that the safety of roads for all types of users, including pedestrians and cyclists is not adversely affected by the Wylfa Newydd Project and including schemes that manage disruption to existing communities from additional road traffic, introduce measures to enable control of traffic to avoid exacerbating peak hour congestion on the existing highway network, and be designed to minimise land take.

2. **Integration with strategic public transport services** – to include schemes to improve access to railway stations, bus services and multi-modal interchange facilities, and provision of a Park and Ride facility at a strategic location, ensuring that workers have the opportunity to travel via efficient, flexible, reliable and sustainable modes of transport.
3. **Improved transport links to the Wylfa Newydd Power Station** – to include schemes to provide improved access to the Power Station Site and Off-Site developments, such as a car share website, bus services and active travel measures.
4. **Encouraging sustainable travel** – to include infrastructure improvements and promotional initiatives to increase levels of public transport, walking and cycling, including schemes offering efficient, flexible, reliable and sustainable modes of transport to the workforce with permanent off-site facilities located to maximise use of existing sustainable travel modes and temporary facilities served by sustainable transport improvements that maximise their efficiency to the Project. These measures will help to minimise the carbon footprint of the Project.
5. **Reduced need to travel** – to include infrastructure and efficiency improvements in the supply chain to reduce and control the movement of freight by road, locate temporary workers' accommodation adjacent to the Power Station Site with integrated leisure facilities, and maximise the use of technology to improve the efficiency and reduce the carbon footprint of transport provision.

4.2.2 The delivery of these objectives through the Wylfa Newydd Project have led to a number of mitigation measures, which align with the objectives and key principles, as summarised in table 5-1.

Table 4-1 ITTS objectives, key principles and projects

Objectives	Key Principles	Key Projects
Enhanced highway capacity and safety	Ensure the safety of highways for all users Control private vehicle and freight movements along the A5025 corridor Reduce land take in delivery of transport infrastructure	A5025 On-line and Off-line Highway Improvements Logistics Centre to control traffic movements along A5025
Integration with strategic public transport services	Offer efficient, flexible, reliable and sustainable modes of transport to the workforce Reduce the number of trips by all modes through transport efficiency	Dalar Hir Park & Ride Connect to key transport interchanges (rail, air and sea) with shuttle buses
Improved future transport links to the Wylfa Newydd Power Station	Reduce the number of trips by all modes through transport efficiency Provide, where possible, a legacy benefit for Anglesey	A5025 On-line and Off-line Highway Improvements Potential to enhance future local bus services
Encouraging sustainable travel	Promote the use of non-road modes for the movement of freight Offer efficient, flexible, reliable and sustainable modes of transport to the workforce	Marine Off-Loading Facility (MOLF) for transport of at least 60% of freight Shuttle bus services to accommodation from key transport interchanges Shuttle bus services from key centres to the Power Station Site Travel Plan for operational workers Construction Worker Accommodation Portal, car share website and travel information packs
Reduced need to travel	Reduce the need to travel, including through demand restraint to limit traffic growth Avoid where possible and mitigate any adverse environmental effects arising from transport	Delivery Management System to ensure that suppliers consolidate deliveries at source, maximising use of vehicles to and from Anglesey Logistics Centre to control journey times along the A5025 Car parking at the Power Station Site to be accessed by high occupancy vehicles only Project wide car sharing target of 2.0 per car during peak construction to reduce worker traffic on road network

5 Transport Requirements

5.1.1 A significant amount of resources will be required to construct and operate the Power Station in terms of people and materials. Horizon will be investing in local skills and education with around 2,000 workers expected to be drawn from North Wales, as described in ES Volume C – Project-wide effects C1 – Socio-economics (Application Reference Number: 6.3.1) . The remainder of the large workforce will need to be transported to Anglesey from the UK and abroad, along with the majority of raw materials and assembled components.

5.1.2 This chapter describes the transport requirements of the Wylfa Newydd Project, the anticipated programme of each aspect and highlights any constraints that may affect mode choice.

5.1 Construction phasing

5.1.1 The Wylfa Newydd Project requires a number of phases that will generate differing demands in terms of workforce numbers and materials. A summary of the construction programme is shown in figure 5.1 below.

Figure 5-1 Wylfa Newydd Project Phasing

5.1.2 The programme is based on experience of constructing Advanced Boiling Water Reactors in Japan, taking into account local circumstances and the required works in the early stages.

5.1.3 Enabling works will be carried out before grant of DCO, comprising activities such as demolition, vegetation clearance and topsoil stripping. Major earthworks are significant for this Wylfa Newydd Project and are expected to be carried out for Unit 1 within the first 24 months following grant of the DCO. These works comprise site levelling/grading and excavation works. The MOLF and A5025 Off-line Highway Improvements will also be constructed within this period.

5.1.4 The First Nuclear Construction (FNC) for Unit 1 is expected to commence in 2020 with Unit 2 following 12 months later. It is expected to take 47 months to complete the construction of each of the units. Unit 1 is expected to be operational by 2026 and Unit 2 in 2027.

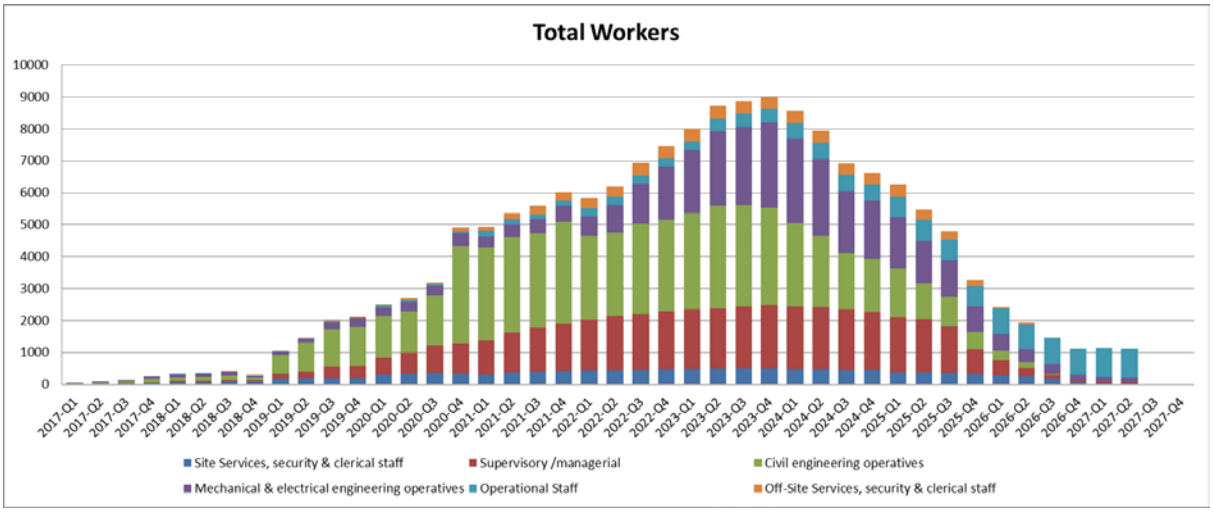
5.1.5 A variety of Off-Site developments (Associated Development and Off-Site Power Station Facilities) will be constructed as part of the Wylfa Newydd Project and will be phased depending on the relevant demands, such as the increased workforce. Once the operational use of the Associated Developments needed for construction has ceased, these facilities will either be retained as a legacy use or returned to agricultural use.

5.2 Construction workers

5.2.1 The construction activities for the Wylfa Newydd Project will require a total labour workforce of up to 9,000 workers at peak. This covers construction workers at the Power Station Site at different phases and workers to construct and operate Associated Development and Off-Site Power Station Facilities. Throughout the construction programme there will be an increasing number of operational workers at the Power Station Site for training and once Unit 1 becomes operational.

5.2.2 The number of workers required at any one time will vary throughout the construction period with a peak demand (above 5,000 workers) of around four years. An estimated profile of construction worker numbers over the construction programme is illustrated in figure 5.2 below, which indicates a peak of workers in Q4 2023 with totals around this level for much of 2023.

Figure 5-2 Construction Worker Profile



Construction working hours

5.2.3 Construction activities are expected to take place 24/7 with the majority of workers spread across shifts during the day and night. The duration of the day shift will be 10.0 hours and the night shift 10.5 hours. The ratio of workers on the day and night shifts is likely to vary through the construction phase with peak construction requiring a split of 70% day / 30% night.

5.2.4 The shift start times will be staggered to spread the impact of arriving workers and provide flexibility for the available transport solutions. The day shifts are therefore proposed to start at 07:00, 07:30 and 08:00, with night shifts starting at 16:30, 17:00 and 17:30. A limited number of workers may work alternative night shift times when 24/7 activities are necessary, such as delivering continuous concrete pours, although these instances are likely to be rare.

5.2.5 Construction workers are expected to work on a fortnightly cycle, working shifts for 11 days followed by 3 days leave, expected to occur from Thursday to Sunday, with staggered shift rotations to ensure that work would continue each weekend.

5.3 Construction worker accommodation

5.3.1 During the early stages of construction post-DCO, up to 1,700 workers are estimated to be required and will predominantly comprise civil operatives. It is expected that a large proportion of such workers can be drawn from the local area or, where migrant workers are required, live in existing accommodation on Anglesey. However, as worker numbers increase significantly, additional accommodation will be required.

Home-based Workers

5.3.2 Socio-economic studies have been carried out that examine the existing skilled workforce within commuting distance of the Wylfa Newydd Development Area and consider the accommodation needs for the remaining workforce.

5.3.3 The Daily Construction Commuter Zone (DCCZ) defines the limits of regular commuting patterns, equivalent to a typical 90-minute journey time from the Power Station Site. This represents the normal maximum journey time for the majority of home-based workers, with a smaller proportion living further afield, potentially due to limited attendance on site. Latest estimates show that around 2,000 workers could be sourced from Anglesey and North Wales as 'home-based' workers and hence will travel to the Power Station Site on a daily basis. These workers will benefit from living in established settlements with local facilities. Based on the analysis undertaken, around two thirds of home-based workers are anticipated to live on Anglesey with the remainder living on the mainland.

5.3.4 The analysis, which is based on journey times, indicates that that the majority of home-based workers will be drawn from the larger settlements in Anglesey and North Wales. These include, though not exclusively, Holyhead, Amlwch, Benllech, Llangefni, Bangor and Caernarfon.

Non-home-based workers: existing accommodation

5.3.5 The remaining 7,000 workers represent 'non-home-based' workers, who would come from the rest of the UK, Europe and further afield and travel to Anglesey and North Wales to live in temporary accommodation, with a daily commute to the Power Station Site up to a typical maximum of 60 minutes. A proportion of these non-home-based workers will live in existing accommodation, such as, but not limited to, tourist accommodation, private rental, and property purchase. The socio-economic study has indicated that around 3,000 beds are available during the peak holiday season within the local area.

5.3.6 The majority of these workers are likely to commute to North Wales on a fortnightly basis from their permanent home. The socio-economic analysis indicates that the majority will reside in accommodation predominantly located on the north and west of Anglesey. These include, though not exclusively, Holyhead, Cemaes, Amlwch and Benllech. Less than a sixth of non-home-based workers are anticipated to reside off Anglesey, predominantly in Bangor.

Non-home-based workers: Site Campus

5.3.7 The socio-economic analysis indicates that up to 4,000 non-home-based workers will reside in purpose built Site Campus adjacent to the Wylfa Newydd Development Area, provided by Horizon. Therefore a large proportion of these workers are likely to commute to North Wales on a fortnightly basis from their permanent home. However, those workers who are based outside the UK are more likely to reside in the Site Campus and may commute less frequently.

5.3.8 The Site Campus will be constructed in phases to meet the expected demand of workers throughout the construction phase of the Wylfa Newydd Project. Therefore, the provision of accommodation will fluctuate over time and may result in less than 4,000 bed spaces at the peak of construction should the worker numbers be lower than expected or the existing accommodation cater for more workers.

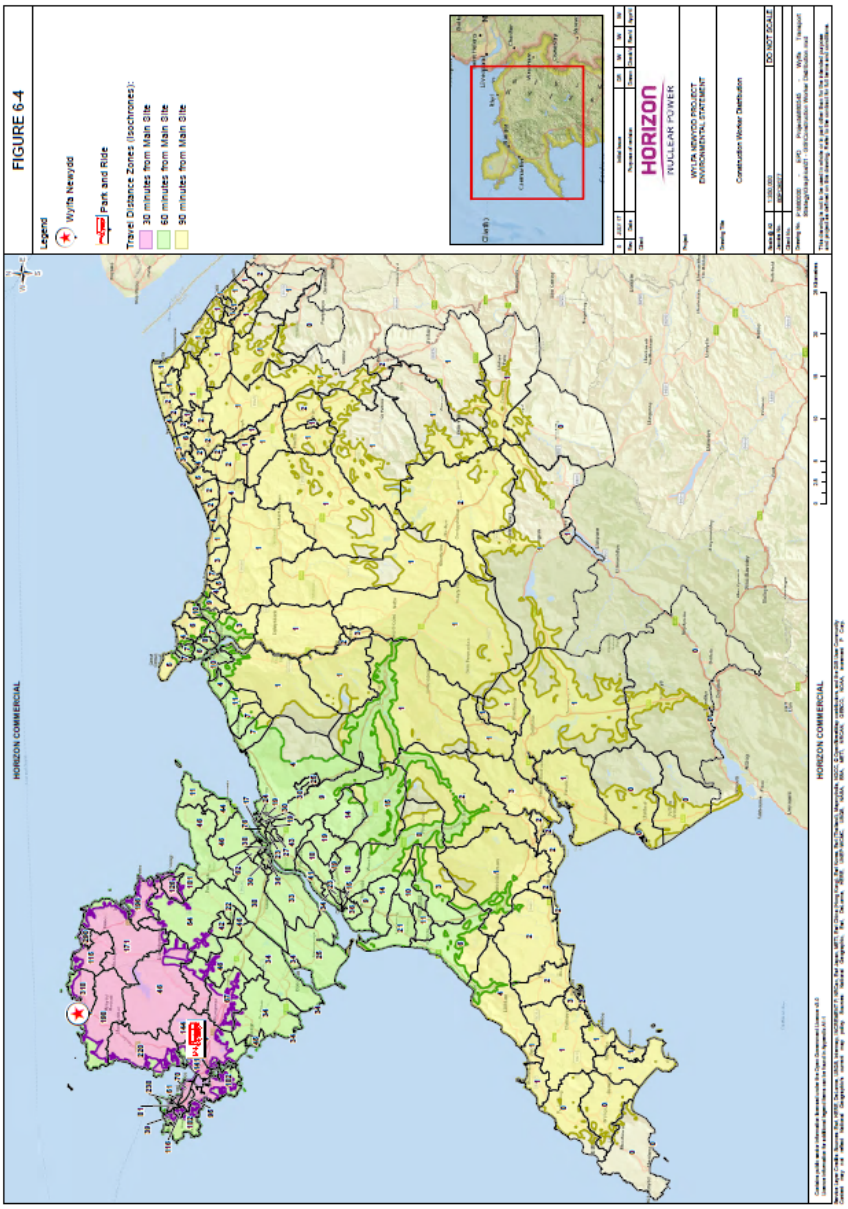
5.3.9 Horizon proposes to accommodate up to 4,000 bed spaces on land in the northern part of the Wylfa Newydd Development Area, close to Wylfa Head and west of Cemaes. Associated welfare facilities and services such as leisure facilities will be provided as part of the Site Campus, to mitigate any potential additional demand on local services and facilities. Car parking will be provided for a proportion of construction workers residing within the Site Campus, with parking for the remaining workers located off site at the Park and Ride facility at Dalar Hir. Workers will then be transported to the campus via shuttle buses. Adequate parking for operational staff will be provided adjacent to the Site Campus. Access to the site will utilise the existing local road serving the car park at Wylfa Head. An indicative layout of the accommodation is illustrated at figure 5.3

Figure 5-3 Site Campus illustrative layout

Overall

5.3.10 The transport strategy has been developed based on the socio-economic study, in particular the gravity model which predicts where each type of worker may live. The extent of each journey time zone and the overall DCCZ is illustrated in figure 5.4.

Figure 5-4 Construction worker distribution



5.3.11 A summary of the home-based and non-home-based workers based on their expected location of residence during construction is provided in table 5.1.

Table 5-1 Location of construction workers by type at peak

Location	Home based	Non home based	Total
Anglesey	1,255	2,560	3,815
Mainland	745	440	1,185
Site Campus	0	4,000	4,000
Total	2,000	7,000	9,000

5.4 Construction materials

5.4.1 Horizon estimates that 5.7 million tonnes of materials will be transported to/from the Wylfa Newydd Project during the construction phase. These include construction materials, waste and consumables.

5.4.2 The current programme is based on Hitachi-GE Nuclear Electric's experience of constructing Advanced Boiling Water Reactor type power stations in Japan and is augmented by data from UK experience to allow for differences in construction practices between countries. The construction material requirements for each phase of the programme have been estimated in order to identify the potential transportation needs of the Wylfa Newydd Project. Each of these phases is outlined below.

Enabling Works

5.4.3 The majority of the Enabling Works and other major earthworks, which includes Site Preparation and Clearance, will be carried out in advance of the main construction activities. The A5025 On-line Highway Improvements will also be carried out during this phase. This phase will require minimal materials as it will predominantly involve earthmoving and excavation of material for use on-site. As the Enabling Works phase will have minimal requirements, any materials, offices or welfare facilities required have been included within the site mobilisation phase, which will overlap with this phase.

Site Mobilisation and Access

5.4.4 Following consent of the Wylfa Newydd Project, the first major phase will involve creating an access into the site and mobilising the site for construction purposes, such as constructing laydown areas, internal access roads and delivery of temporary cabins for offices and welfare provision.

MOLF

5.4.5 The construction of the MOLF will be a time-critical element as this will be required for the delivery of major reactor components. It will also be used to accommodate bulk deliveries of concrete-related materials. A large proportion of the rock required to construct the breakwater will be excavated from the site, while pre-cast units will be required to form the harbour walls and the armour layer of the breakwater. This phase will overlap with site mobilisation and access.

Main Construction

5.4.6 The completion of the MOLF will allow the major construction activities to commence. The construction of Units 1 and 2 of the Power Station is estimated to require around 4 million tonnes of materials, a large proportion of which is associated with concrete batching at the Power Station Site. Large quantities of aggregate, sand, cement and rebar (bulk materials), general building materials such as scaffolding and formwork (common materials), and electrical equipment, reactor components, ducting and cabling (specialist materials) will need to be delivered to the Power Station Site.

Site Campus

5.4.7 The construction of the Site Campus will take place in phases, reflecting the growth of worker numbers over time. The completion of each phase will be timed to avoid stress on the existing accommodation stock. The accommodation will be constructed using modular units as these will be an efficient method for construction and removal upon completion of the Wylfa Newydd Project.

Park and Ride

5.4.8 The construction of the Park and Ride at Dalar Hir will be phased such that it becomes operational once worker numbers at the Power Station Site exceed approximately 2,000. Construction is anticipated to begin post-DCO consent and will primarily consist of parking areas with a small facilities building and bus pickup / drop off area.

Logistics Centre

5.4.9 The Logistics Centre will be an important feature to control HGV movements along the A5025 and therefore will benefit from being constructed as early as possible. Construction is anticipated to begin post-DCO consent and will primarily consist of HGV parking areas with a security building.

A5025 Highway Improvements

5.4.10 The highway improvements along the A5025 are proposed to be carried out in phases in order to minimise disruption to existing traffic. The on-line improvements are anticipated to commence in advance of the DCO being granted with the off-line improvements being constructed post-DCO consent.

5.4.11 The on-line improvements will comprise resurfacing and some widening of the existing carriageway. It is intended to recycle the majority of the existing pavement, which will be transported to a temporary recycling facility along the A5025, within the section of works. This will minimise the environmental impact by reducing the volume of waste materials and HGV movements with around 13,000m^3 of material expected to be recyclable. Additional surfacing, kerbs and drainage materials will be required to complete construction.

5.4.12 The off-line improvements will initially involve major earthworks to create the land profile that has been designed to minimise the visual and noise impacts of the proposed scheme. The earthworks will require excavation of existing ground for cuttings and placement of material to create embankments. The overall 'cut and fill' has been designed to minimise the need for additional material to be imported or excess material to be exported. Around 86,000m^3 of material will be excavated and placed elsewhere along the scheme with only around 7,000m^3 of new material needing to be imported. A relatively large volume of materials will be required to construct concrete structures and new carriageway.

Material Types

Raw bulk

5.4.13 The largest proportion of materials by weight relates to the bulk materials for reinforced concrete production, comprising aggregate, sand, cement and rebar. These may be sourced from the UK or the EU, potentially with more than one origin due to the considerable requirements of the project. The MOLF has been designed to provide a number of bulk berths where such materials can be unloaded into silos ready for concrete production at the batching plant. Appropriately sized vessels will be used to transport these materials direct from a UK or EU based port.

5.4.14 Transporting such materials by sea is the most efficient method, minimising impacts on road and rail networks, and there is a clear policy preference for sea over other other modes, wherever possible and practical.

5.4.15 Transporting this type of material by rail would require up to three trains per day during peak construction, limiting the source of materials to the UK. A lack of existing rail infrastructure in the vicinity of Wylfa Newydd would also require onward transport to the Wylfa Newydd Development Area via road, while future daytime line capacity would constrain rail freight deliveries.

5.4.16 Transporting bulk materials by road would add significant volumes of HGVs to the road network and would not be a cost effective option. Once the MOLF is complete, it is estimated that around 238,000 HGV deliveries would be required over the remaining duration of the project to deliver the

equivalent volume of these materials. However, there may still be a need to deliver a proportion of these materials by road if there are supply delays, such as extended periods of bad weather, to top up the on-site stockpile.

5.4.17 The MOLF itself requires around 300,000 tonnes of pre-cast units, which will be cast off-site and transported to the MOLF via barge and placed directly to create the dockside area. The sizes of some of these units are too large in size and/or weight to be transported by road.

Common / palletised goods

5.4.18 A large proportion of goods will consist of common building materials, food and consumables, which can mostly be palletised and will likely be sourced in the UK. These types of goods would typically be delivered by road by a wide range of suppliers from across the UK by standard goods vehicle, e.g. curtain sided or flat bed vehicles.

5.4.19 Transporting by sea or rail could logistically be unrealistic for the majority of such goods, although bulk orders of specific goods from the right location may offer alternative delivery routes. These would need to be considered on a case by case basis by the Principal Contractor.

Containerised goods

5.4.20 The majority of the specialist products and components will be sourced from origins outside the UK and can be containerised. The MOLF will be designed to cater for vessels around 100 metres long and will therefore not be able to accommodate large ocean going vessels. Containerised goods travelling by sea from abroad would arrive at a major UK port via existing frequent shipping routes such as large container ships with onward transport being required.

5.4.21 Aside from requiring infrastructure improvements to provide terminal facilities, transportation of goods by rail is limited by two key constraints, these being the loading gauge and the number of freight paths available. The current restricted loading gauge of W7, as indicated in Network Rail's *Wales Route Utilisation Strategy* (2008) [RD26], precludes movement of many of the larger containers now used in both deep-sea and short-sea shipping, which require the 'W10' gauge. Although such containers can be moved on special wagons where the loading gauge is less than W10, there are only limited numbers of such wagons available and their deployment adds both costs and complexity.

5.4.22 Based on Network Rail's *Welsh Route Study* (2016) [RD27], proposals to increase passenger services to 4 trains per hour (tph) from a current service of 3 tph will restrict the potential for rail freight as train paths will no longer be available during hours when passenger service frequencies reach this level. There may be some available train paths as the current Virgin Trains service, which represents 1 tph, does not operate in every hour. Otherwise, night time deliveries would be relied upon, which could result in unacceptable noise levels for unloading and transporting of material.

Abnormal indivisible loads (AILs)

5.4.23 The components that will form the Power Station, for example transformers and reactor vessels, will require a large number of AILs. The size of these goods is such that marine transport has been selected as the only practical method of transport for a large proportion of these. The MOLF is therefore an important element of infrastructure, which will facilitate all Power Station component AILs, estimated to be around 800 items, to be transported by sea.

5.4.24 A large number of the construction plant required to construct the Wylfa Newydd Project may exceed the standard load dimensions able to be carried by road and will therefore be categorised as AILs. These will be transported by road and will be controlled through the Code of Construction Practice. (Application Reference Number: 8.6)

Waste (construction and commercial).

5.4.25 Waste has been considered by relevant stakeholders in order to reach agreement on the site-wide Integrated Waste Strategy and the transport method for exporting this type of goods is only one aspect of the overall strategy for waste management.

5.4.26 A key component of the waste management strategy has been to re-use as much material on-site as possible. The ground profile has therefore been designed to ensure that no excavated material is required to be exported from the Wylfa Newydd Development Area. Over 10 million tonnes of material will either be used to construct the breakwaters or re-profiled around the Wylfa Newydd Development Area as landscaping and screening, thereby avoiding significant logistical considerations. The only waste being exported from the site will include items such as construction packaging, hazardous waste and commercial type waste from the Site Campus, construction offices and canteens. These exports will be spread across the whole construction period.

Overall

5.4.27 A summary of the approximate tonnages of materials requiring transportation for each phase and part of the Project as outlined above is set out below along with the possible transport options. These estimates of construction materials include reference to contingencies which vary, dependent upon the progress made to date on the design of each aspect and the likely accuracy of any quantities. This will ensure that changes to the design can be made without affecting the overall strategy and associated mitigation being proposed.

Table 5-2 Transportation of Construction Materials

Material	Estimated tonnage	Transport by sea	Transport by road
Pre Main Construction			
Site mobilisation and access			
Concrete	87,000	70%	30%
Site roads / laydown areas	36,000	0%	100%
Temporary buildings	133,000	0%	100%
Total Site mobilisation	256,000		
MOLF			
Pre-cast concrete units	250,000	100%	0%
Concrete for marine works	67,000	0%	100%
Rebar	9,000	0%	100%
Total MOLF	326,000		
Sub-total Pre Main Construction	582,000		
Contingency (20%)	116,000		
TOTAL Pre Main Construction	698,000		

Material	Estimated tonnage	Transport by sea	Transport by road
Main Construction			
Bulk	3,530,000	Min 80%	Max 20%
Common/palletised	146,000	0%	100%
Containerised	60,000	0%	100%
AILs (Power Station components)	50,000	100%	0%
AILs (construction plant)	-	Max 10%	Max 100%
Sub-total Main Construction	3, 786,000		
Contingency (10%)	378,000		
TOTAL Main Construction	4,166,000		

Material	Estimated tonnage	Transport by sea	Transport by road
Consumables & waste			
Consumables	64,000	0%	100%
Waste (municipal)	21,000	0%	100%
Waste (industrial)	124,000	0%	100%
Sub-total Pre Main Construction	209,000		
Contingency (20%)	42,000		
TOTAL Pre Main Construction	251,000		

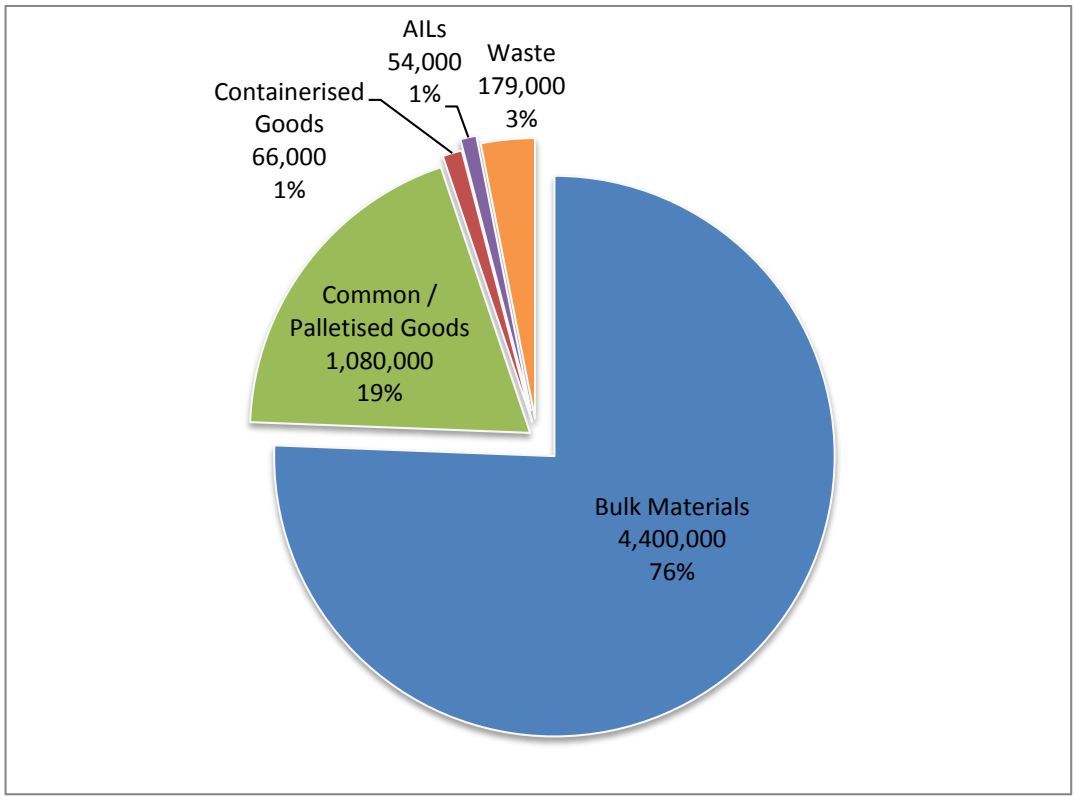
Material	Estimated tonnage	Transport by sea	Transport by road
Off-site development			
Site Campus (excludes modular units)	59,000	0%	100%
Park & Ride	57,000	0%	100%
Logistics Centre	85,000	0%	100%
AECC/MEEG/ESL	29,000	0%	100%
Sub-total Off-site development	230,000		
Contingency (40%)	92,000		
TOTAL Off-site development	322,000		

Material	Estimated tonnage	Transport by sea	Transport by road
Highway Improvements			
A5025 On-line schemes	9,000	0%	100%
A5025 Off-line schemes	116,000	0%	100%
Sub-total Highway Improvements	125,000		
Contingency (20%)	25,000		
TOTAL Highway Improvements	150,000		

WYLFA NEWYDD TOTAL	**5,780,000**		

5.4.28 A summary of the proportion of each of these goods types is illustrated below, without any assignment of transport mode. It is anticipated that the MOLF will accommodate between 60% and 80% of all construction materials .

Figure 5-5 Summary of goods types



5.4.29 During peak periods construction materials will be required 24/7. However, timing of deliveries will be dependent on suppliers, many of which will not deliver at a weekend or at night. Therefore, materials will be stockpiled for a minimum of two weeks (three weeks for bulk materials) to ensure that they are available at the required time of their use. This will prevent disruption to the construction programme if events beyond Horizon's control occur, such as extreme weather or traffic accidents.

5.4.30 Deliveries to the Power Station Site will be controlled through the Logistics Centre, once this facility has been completed. Where practical, deliveries during peak hours and other agreed times, such as ferry arrivals, will be minimised to avoid conflict with peak movements. Further details of the Logistics Centre are provided later in this strategy.

5.5 Operational Staff and Logistics

5.5.1 The operational characteristics of the Power Station will be broadly similar to that for the adjacent existing Magnox power station, which is currently undergoing its decommissioning process. However, it is expected that higher numbers of staff will be required to operate and maintain the Power Station compared to the Existing Power Station.

5.5.2 The operation of the Power Station and off-site facilities is estimated to require around 850 staff for general purposes. Given the 24/7 nature of the Wylfa Newydd Power Station two shifts will operate, starting at 08:00 and 16:00, seven days a week with around 50 staff per shift. Around 650 staff, such as those in administration, training and support, will work on a single shift 08:00 to 16:00 Monday to Friday. This will result in a maximum of around 750 operational staff at any one time on a weekday, most of which will be located at the Power Station Site with a small number of individuals at Off-Site Power Station Facilities. Based on the worker profile for the existing Magnox Power Station, around 87% of staff are expected to live in Anglesey with the remaining 13% on the mainland in North Wales.

5.5.3 The Power Station will require daily deliveries of post, food, equipment spares and other consumables. General waste will also need to be collected from the Power Station, details of which are outlined in the Waste Management Plan. This is expected to result in 34 HGV movements per day to and from the Power Station, which is commensurate with the Existing Power Station. Occasionally, larger replacement components that may represent an AIL may be required and the majority of these will be transported via the MOLF with the remainder arranged with the relevant authorities as required. It is likely that these will represent around one per year.

5.5.4 There will be road-based movements associated with the removal of Low Level Radiation Waste (LLRW) from the Power Station.

Scheduled Outage Periods

5.5.5 Each reactor will require regular planned maintenance, which will take place every 18 months and are known as Scheduled Outage. Only one unit will undergo an outage at any one time. Each Scheduled Outage lasts for up to a month and requires up to an estimated 1,000 additional workers, resulting in up to 1,850 workers in total during this period. While some of these workers will transfer from operational duties, the majority are likely to be sourced from outside Anglesey as they will carry out maintenance at a number of power stations across the UK throughout the year. This already occurs at the existing Magnox power station. They are expected to reside in locally available accommodation and will work across two 12 hour shifts.

5.5.6 A variety of materials and replacement components will be required during a Scheduled Outage, which will result in up to 10 HGV deliveries per day. These will be similar in size and nature to those already occurring along the A5025 associated with the existing Magnox power station.

6 Worker Travel Strategy

6.1 Introduction

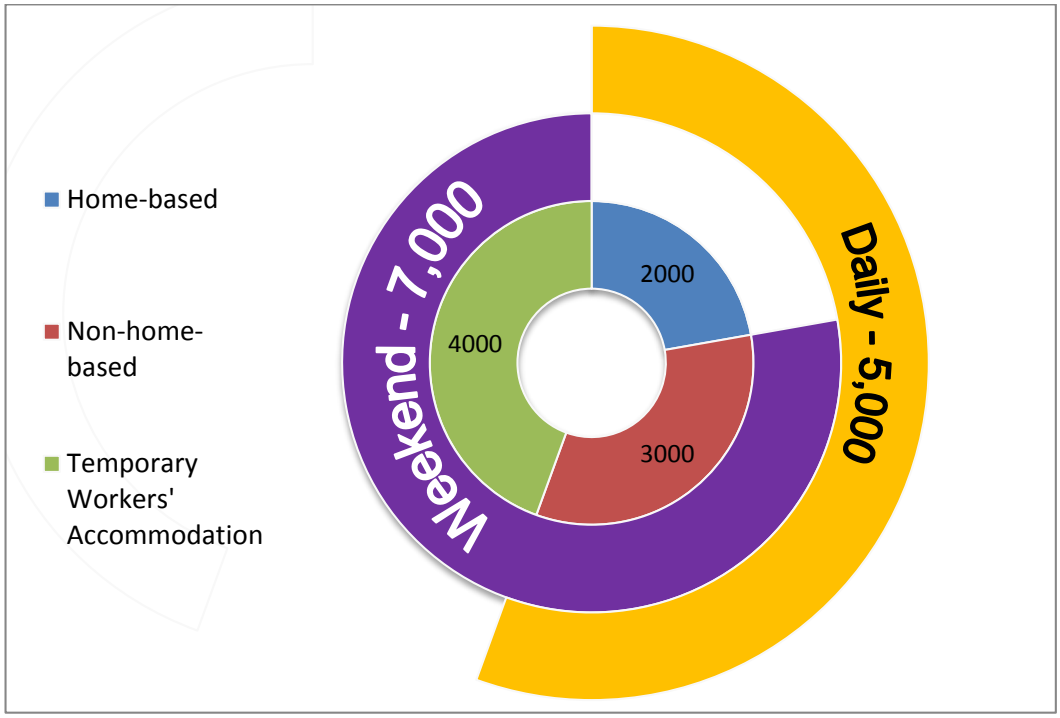
6.1.1 This chapter sets out the transport-related proposals for construction workers associated with the Wylfa Newydd Project. It identifies the transport options available for weekend travel (Thursday to Sunday evenings) and daily commuting purposes as well as sustainable travel measures that will be provided by Horizon as part of the Wylfa Newydd Project.

6.1.2 As the Wylfa Newydd Project progresses, the number of construction workers required will grow to a peak, that will last for around one year, and then start to reduce as the labour-intensive activities are completed. A fundamental part of the transport strategy is to ensure that it is flexible to meet these varying demands and adapt to the reality of day-to-day construction, programme changes and accommodation decisions, which will evolve across the whole construction programme.

6.1.3 In the context of transporting workers, there are two types of travel; fortnightly travel from workers' permanent homes to North Wales; and daily travel to the Wylfa Newydd Development Area.

6.1.4 The types of worker associated with these different travel types are illustrated in figure 6.1 below, highlighting how the different groups of home-based workers, non-home-based workers and workers in the Site Campus represent daily and weekend travel.

Figure 6-1 Summary of peak 9,000 worker types and travel types



6.1.5 The choice of worker travel modes depends on the origin of workers. This assessment considers the expected travel demand, based on the promotion

of sustainable transport across the Wylfa Newydd Project including any supporting transport, as follows:

- weekly shuttle bus service between Holyhead rail/ferry terminus and the Site Campus / Amlwch;
- daily shuttle bus service between Holyhead / Bangor / Caernarfon and Wylfa Newydd Development Area;
- daily shuttle bus services around the north of Anglesey to the Wylfa Newydd Development Area;
- Park & Ride Facility at Dalar Hir, off Junction 4 of the A55; and
- on-site car parking for high occupancy vehicles.

6.1.6 Worker travel will be controlled, monitored and enforced through the Code of Construction Practice (Application Reference Number: 8.6), which will be implemented by Horizon and its supply chain.

6.2 Weekend Travel

6.2.1 Up to 7,000 workers are predicted to be non-home-based and will therefore travel between their permanent home and North Wales on a regular basis. It is anticipated that workers will have the opportunity to travel home each fortnight using a three day period of leave encompassing Friday to Sunday, effectively a long weekend. It is reasonable to assume that those workers who are based outside of the UK will travel home less frequently than those living in Wales, for example, due to the longer journey time.

6.2.2 The origin of non-home-based workers has been based upon a worker source study, undertaken as part of the socio-economic assessment, to determine the likely origins of workers across a number of regions. This identifies the start point of their journey to the DCCZ, divided by UK region and Europe (and beyond). The propensity to use different forms of travel is dependent on these locations. For example, those travelling from Europe are more likely to fly to a regional airport than drive or take a train than those travelling from the rest of the UK.

6.2.3 Non-home-based workers seeking temporary accommodation will have access to the web-based Construction Workers' Accommodation Management Portal, which will provide details of available bed spaces across North Wales. The portal will highlight the transport options available to them based on their permanent location, recommending them to use sustainable modes of transport as an alternative to driving. The available transport options for workers travelling between their permanent home and North Wales on a weekend are summarised below.

Rail

6.2.4 Rail provides a suitable choice for those travelling from across the UK and from airports with international connections. The key towns along the North Wales Coast Line route are Holyhead and Bangor, where a significant proportion of workers are predicted to live. Existing accommodation within

these towns is a short walk or taxi journey away from the station. For those living in the Site Campus, workers will be encouraged to utilise Project-sponsored transportation arrangements (i.e. shuttle buses to Holyhead ferry port and railway station). The shuttle buses would continue along the A5025 to serve Cemaes and Amlwch, which are also expected to accommodate a large number of workers.

6.2.5 The number of workers likely to use rail as a mode of transport as part of their fortnightly commute will depend on their permanent base, the ease of travelling to Holyhead by train and the location of their temporary accommodation.

Ferry

6.2.6 For those who are travelling from Ireland, the ferry services at Holyhead Port provide a convenient transport option, sharing passenger facilities with the railway station. Existing accommodation within Holyhead is a short walk or taxi journey away. The Holyhead terminus shuttle buses will transport them to the Site Campus, Cemaes and Amlwch.

Air

6.2.7 Anglesey Airport may be used occasionally by construction workers, via connecting flights from Cardiff Airport, though it is likely that this will comprise a limited number of specialist workers. The service is already used by Horizon staff to travel to Anglesey.

6.2.8 International airports at Liverpool, Manchester, Birmingham and London offer frequent domestic flights across the UK and international flights to a wide variety of destinations across Europe and the rest of the World. For workers arriving at these airports, onward rail travel is likely to be the quickest way to reach North Wales. Direct train services from Manchester Airport are available as far as Llandudno where workers could change trains to reach Holyhead.

Road

6.2.9 Those workers travelling by road will most likely reach North Wales via the A55 or A5, either along the North Wales coast or via the ferry from Ireland, and drive directly to their accommodation using the local road network.

6.2.10 A Code of Conduct will be signed by all workers which will stipulate that appropriate access routes will be via the A55 and A5025, followed by A roads and B roads, and only using minor roads where necessary to reach their accommodation. This will aim to minimise impacts on local communities through use of inappropriate roads, such as narrow rural lanes.

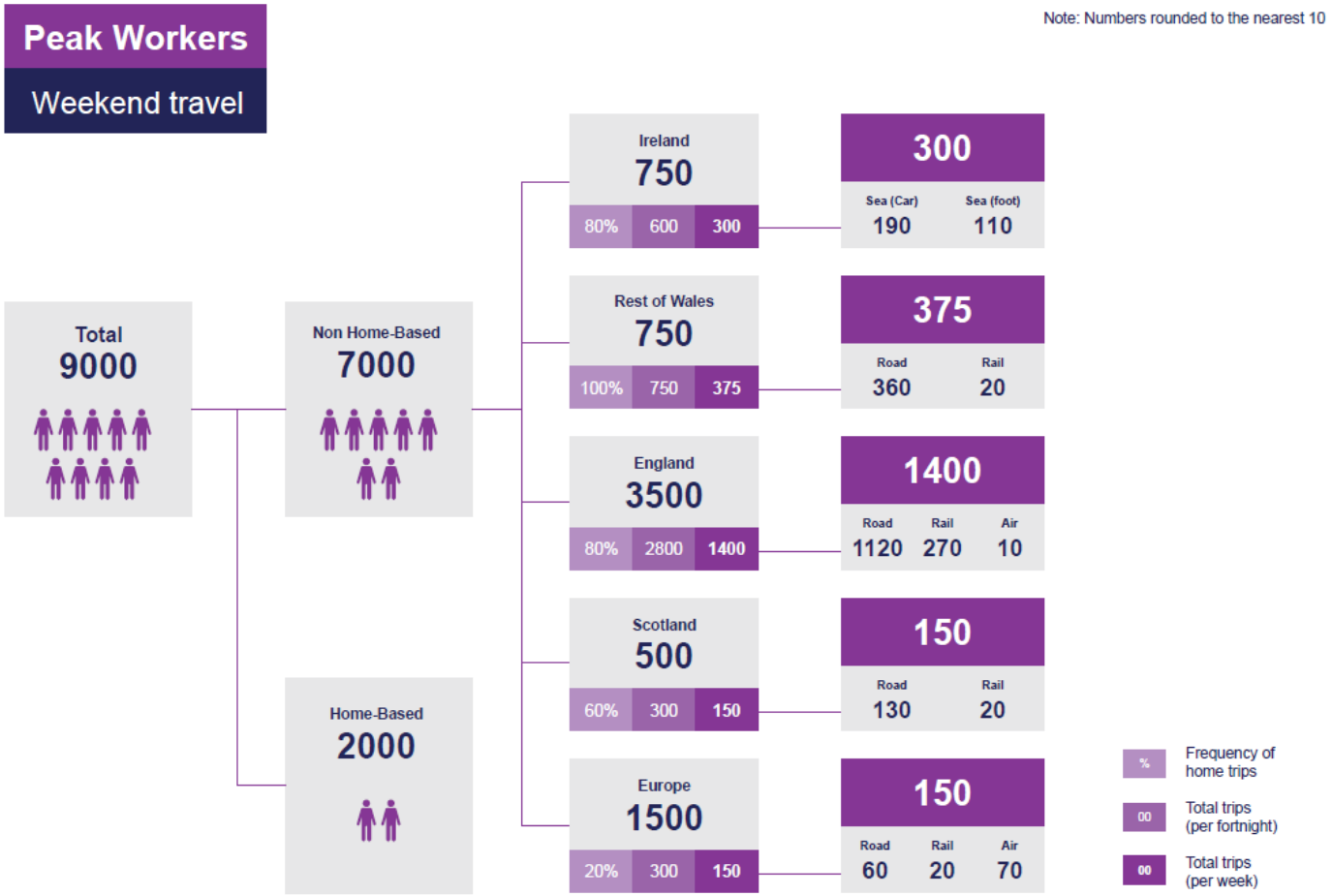
6.2.11 Horizon will promote car sharing and lift sharing between employees using internal media, for example, the intranet or a mobile app. Car sharing will also be promoted using other appropriate methods, which if required, could include a suitable car share website or a web-based platform, which may use information from the Construction Workers' Accommodation Management Portal.

6.2.12 This will allow potential car sharers to be matched so that workers travelling from a similar area by car can share their journey. The car sharing strategy will be promoted, monitored and managed and enforced by Horizon through its supply chain. Workers will be recommended via appropriate channels, including the Construction Workers' Accommodation Management Portal, to car share with others to reduce the number of journeys being made, in particular across the Britannia Bridge.

Summary

6.2.13 Worker travel occurring at a weekend has been assessed based on the above modes and a number of assumptions around their origin, propensity to travel and likely use of available modes. Figure 6.2 provides a useful summary of weekend (Thursday to Sunday) travel.

Figure 6-2 Summary of weekend travel



6.2.14 The above results highlight that out of 7,000 non-home-based workers, around 2,375 are predicted to travel to their permanent home in any given week with the remaining 4,625 staying in their accommodation and either working or benefiting from leisure time. Those workers travelling furthest are less likely to travel at the end of every fortnightly cycle and are also those more likely to use non-car based modes to complete their journey.

6.2.15 The results highlight that over 20% of weekly trips, associated with non-home-based workers travelling to/from their permanent home, are predicted to be made using sustainable forms of transport. It is estimated that 110 trips as foot passengers could be made on the ferry to Ireland, with the potential to generate over 400 trips by rail, including those travelling by train to an airport. These ferry and rail passengers will be transported from the Site Campus and Amlwch to the Holyhead ferry/rail terminus by shuttle bus.

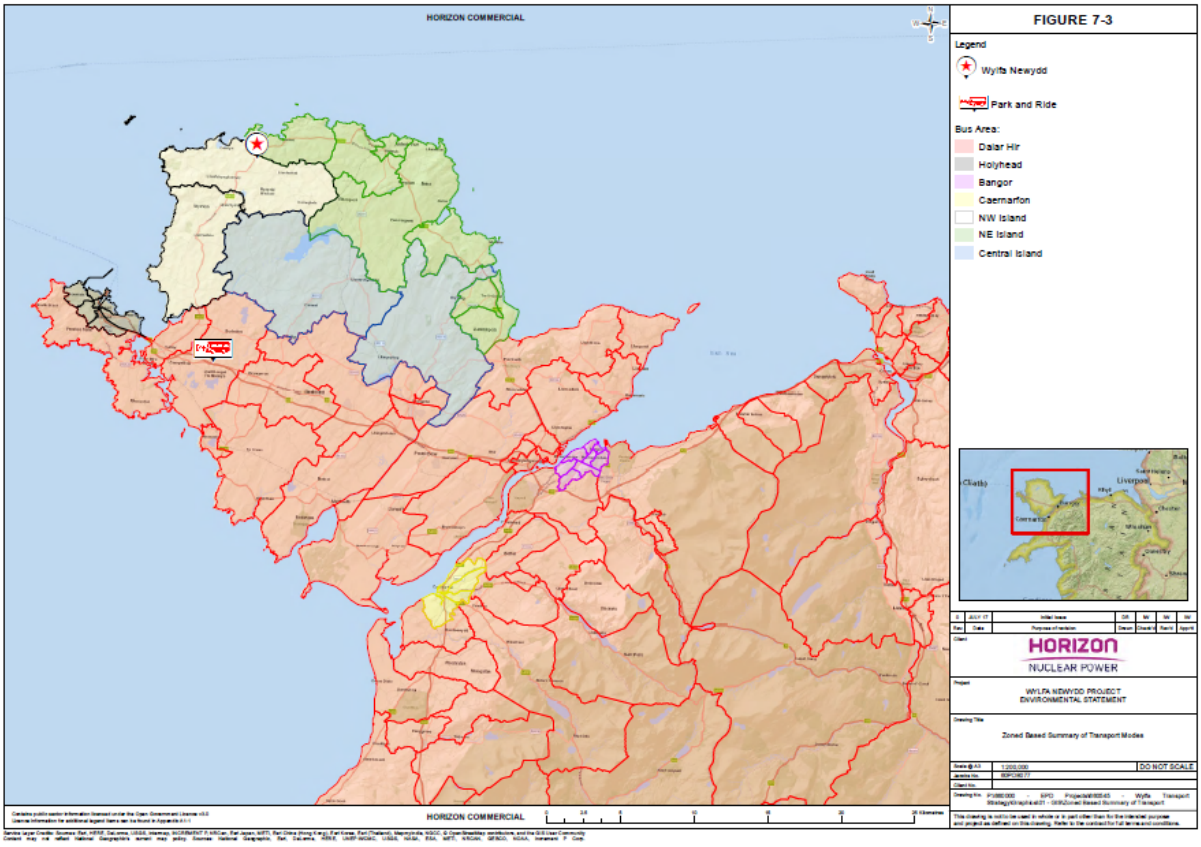
6.2.16 Alternatively, subject to demand for rail services, coach services could be provided to major interchange stations, such as Chester and Crewe, to mitigate the increase in rail passengers and prevent over-capacity on the North Wales Main Line at peak construction.

6.3 Daily Commuting

6.3.1 Having 4,000 workers living in the Site Campus reduces the need for daily travel for a substantial proportion of the workforce. Therefore, on a daily basis, up to 5,000 workers will require transportation to either the Wylfa Newydd Development Area or to Associated Development sites, for which a range of transport solutions will utilise and/or enhance the existing transport network. The solutions have been developed to maximise the use of sustainable transport, increase vehicle occupancy for those not within reach of sustainable modes and provide flexibility and resilience.

6.3.2 The DCCZ can be divided up into areas based on the transport solution proposed, allowing each solution to respond to actual demand through the construction period. Some of these transport options will only be implemented once worker numbers reach a particular level as the demands of the Wylfa Newydd Project during the early stages of construction are unlikely to trigger the need to provide mitigation. The DCCZ areas and Site Campus, along with their associated transport solutions, are outlined below. The division of the main transport modes to be used across the North Wales area is illustrated in figure 6.3.

Figure 6-3 Zone based summary of transport modes



Site Campus

6.3.3 Up to 4,000 workers will be accommodated adjacent to the Power Station Site. Their proximity will allow workers to walk to the northern entrance plaza for entry to the Power Station Site.

Holyhead

6.3.4 Based on the relatively compact nature and walkability of the town, around 60% of the 690 workers forecast to live in Holyhead are estimated to utilise the bus terminus, adjoining the railway station, or other bus stops designated for use by workers. Frequent shuttle buses, timed to coincide with shift times, will transport workers to the Power Station Site via the A55 and A5025. The remaining 40% will travel by car, either to the Park and Ride facility at Dalar Hir or the Power Station Site car park.

Anglesey: North West

6.3.5 Up to 420 workers are expected to live in the north western portion of the island, the majority of which will be within villages along the A5025. Frequent shuttle buses will pick up at designated stops in towns and villages and they are expected to transport an estimated 60% of workers to the Power Station Site along the A5025, with the remaining 40% travelling by car to the Power Station Site car park.

Anglesey: North East and Central

6.3.6 Up to 1,500 workers are forecast to live in the north eastern and central parts of the island, including towns such as Amlwch and Benllech. A number of Horizon bus services will be provided across the north-east part of the island to serve selected routes, designed to maximise their utilisation by workers. A large proportion of workers are likely to live in the towns and villages along the A5025 with 60% estimated to utilise the bus routes that will lead directly to the Power Station Site via the A5025. The remaining 40% not within easy access of bus travel will travel by car to the Power Station Site car park.

6.3.7 The starting point for these services will vary to ensure that there is always adequate space on the bus for workers, irrespective of how close they live to the Power Station Site. In particular, a bus service will start in Amlwch, where around 400 workers are predicted to live.

Anglesey: South

6.3.8 Up to 1,200 workers are predicted to live in the southern part of the island, predominantly in towns and villages along the A55 corridor. These workers will drive either to the Park and Ride facility at Dalar Hir or to the Power Station Site car park.

Bangor

6.3.9 Up to 280 workers are predicted to live in the Bangor area with a proportion of these likely to have arrived by train to take advantage of the city's connectivity. A number of Horizon buses will pick up workers in locations across the city. Shuttle buses will transport an estimated 60% of workers direct to the Power Station Site across the Britannia Bridge and along the A55 and A5025. The remaining 40% not within easy reach of shuttle buses will drive either to the Park and Ride facility at Dalar Hir or to the Power Station Site car park.

Caernarfon

6.3.10 Up to 110 workers are predicted to live in the town of Caernarfon. A number of Horizon buses will pick up workers in convenient locations. Shuttle buses will transport an estimated 60% of workers direct to the Power Station Site along the A487, across the Britannia Bridge and along the A55 and A5025. The remaining 40% not within easy reach of shuttle buses will drive either to the Park and Ride facility at Dalar Hir or to the Power Station Site car park.

Gwynedd

6.3.11 Up to 340 workers are predicted to live in the wider Gwynedd area with a large proportion of these in rural areas. With such a diverse spread of workers across a wide area it will be difficult to provide an efficient bus-based solution for these workers. Therefore, these workers will drive either to the Park and Ride facility at Dalar Hir or to the Power Station Site car park. Workers will be encouraged to car share with others to reduce the number of journeys being made, in particular across the Britannia Bridge.

Mainland beyond Gwynedd

6.3.12 Up to 470 workers are predicted to live in Conwy and other local authority areas along the North Wales coast, which predominantly features towns and villages close to the A55. The number of workers are spread relatively thinly along the A55 corridor and adjoining rural areas, primarily due to the journey time from these locations to the Power Station Site.

6.3.13 The distribution of these workers is less predictable and with lower levels of confidence due to the distance from Wylfa Newydd. Bearing this in mind, combined with such a spread of workers, it will likely be difficult to provide an efficient bus-based solution for these workers. Therefore, these workers will drive either to the Park and Ride facility at Dalar Hir or to the Power Station Site car park.

Visitors

6.3.14 There will be a range of visitors to the Power Station Site on a daily basis, such as representatives of Hitachi-GE Nuclear Energy, Horizon and their consultants. The majority will be directed to the Park and Ride facility at Dalar Hir where a regular shuttle bus service will operate throughout the day to transport them to the Power Station Site via the A5025. A number of visitors may drive direct to site if pre-arranged.

Facilities Management Staff

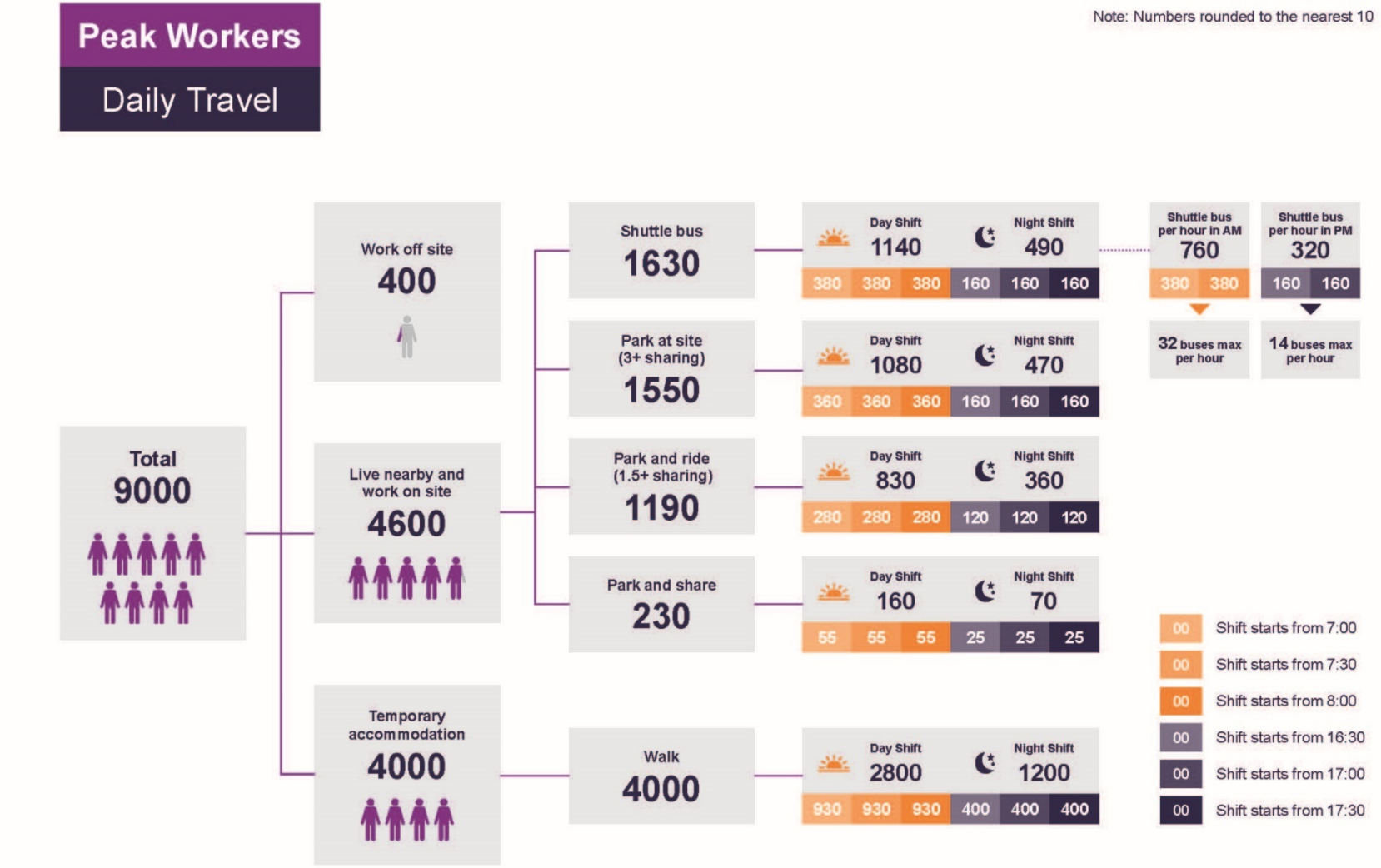
6.3.15 There will be a range of facilities operating during construction of the Power Station, both on and off site that will require operational staff on a daily basis. These will include catering, cleaning, security and administration staff, which are represented by 'facilities management' staff.

6.3.16 A total of around 400 workers will be required at the Site Campus, the Park and Ride facility at Dalar Hir, and the Logistics Centre. Those working at off-site locations will be encouraged to live within easy walking or cycling distance of the facility, where possible. For those living more remotely from the facilities, they will be transported using specific shuttle bus services, either from the Park and Ride at Dalar Hir or along the A5025. These staff will be spread across Anglesey and the mainland.

Summary

6.3.17 Worker travel on a daily basis has been assessed based on the above modal choices, staggered shift start times and day / night shift proportions. Figure 6.4 provides a summary of workers by each mode per day shift start, i.e. each 30 minute demand. The number of vehicles has also been calculated for shuttle buses.

Figure 6-4 Summary of daily travel



6.4 Infrastructure

6.4.1 In order to deliver the above transport solutions, a range of infrastructure will be provided or be relied upon, as described below.

Power Station Site Car Park

6.4.2 Experience of other major construction projects has shown that construction workers will want to minimise their journey time at the start and end of each day, given the length of their shift, preferably by parking as close to the site as possible. A car park will be provided at the Power Station Site to accommodate around 1,100 spaces at peak construction for a proportion of daily commuting workers, though only for those granted access based on meeting specific criteria, such as exceeding vehicle occupancy thresholds or requiring disabled access.

6.4.3 During the initial stages of the construction programme, when worker numbers are low, the Power Station Site car park will be available for all workers. As the number of workers increase the criteria for accessing this car park will also become more stringent. For the vast majority of workers this will be based upon vehicle occupancy with an expected threshold of three per vehicle at peak construction. However, the intention is to achieve as high a car share ratio as possible.

6.4.4 This approach will offer preferential parking for construction workers, while creating a mechanism to encourage higher levels of car sharing than might be achieved through provision of a single car parking facility.

6.4.5 ~Some workers residing in the Site Campus will be able to park in the Power Station Site car park.

6.4.6 The actual use of the car park (and other modes of travel) will be managed and monitored during the construction of the Wylfa Newydd Project and the relatively slow build-up of workers will enable management measures to be refined or put in place to ensure demand matches supply.

Park and Ride

6.4.7 A Park and Ride facility will be provided on Anglesey at Dalar Hir, immediately to the north east of Junction 4 of the A55. This will reduce the number of vehicles travelling along the A5025, consolidating car-based worker movements into buses. Its location adjacent to the strategic road network of the A55 at Junction 4 will reduce demand on Junction 3, where traffic leaves the A55 to travel along the A5025 to the Wylfa Newydd Development Area, helping to ensure resilience in the road network.

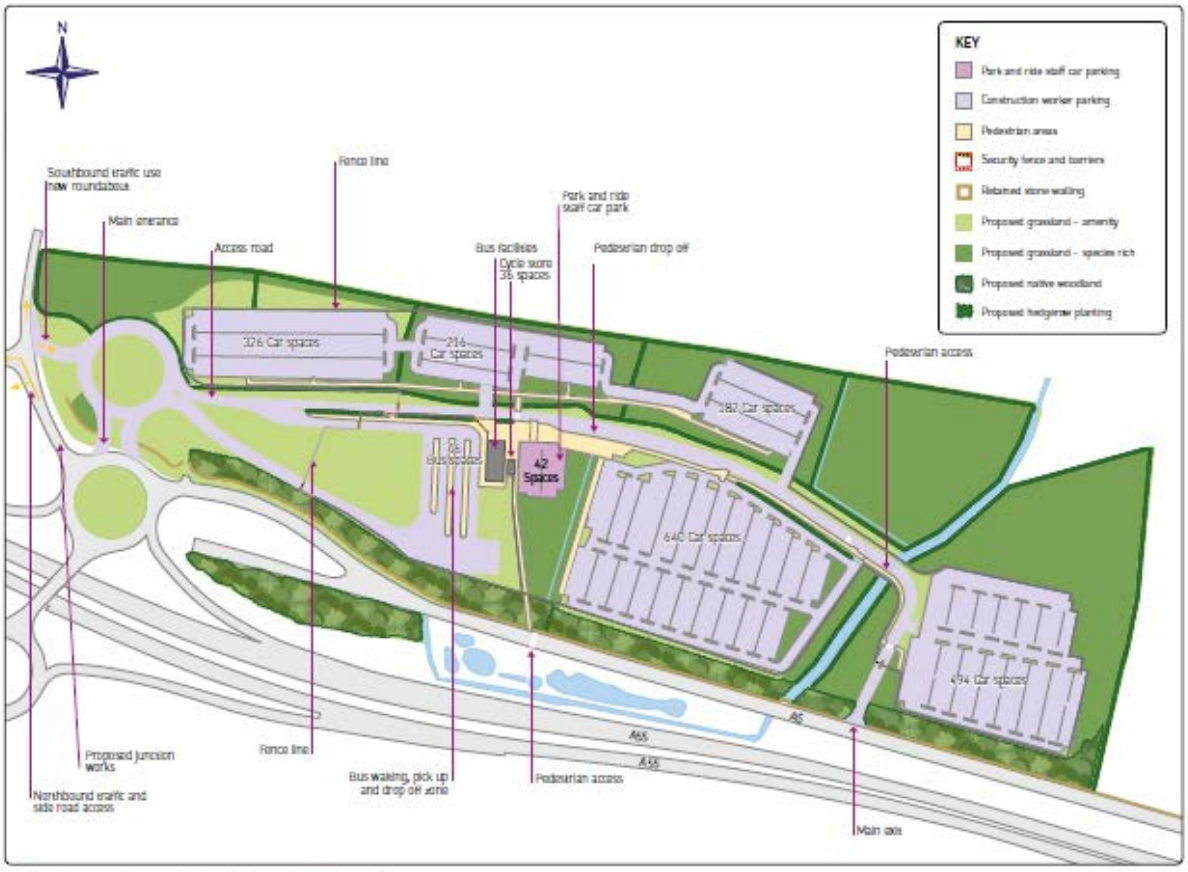
6.4.8 The Park and Ride facility will be accessed directly from the northern roundabout at Junction 4 for all bus movements and incoming workers. Workers exiting the facility are proposed to be routed via a signal controlled junction towards the eastern end of the site onto the A5. The proposals are based on the likely demand for the facility.

6.4.9 The Park and Ride facility is expected to become operational once the number of workers at the Power Station Site reaches around 2,000. Once operational, it will provide up to 1,900 car parking spaces, welfare facilities and security personnel. It will be manned 24 hours a day with lighting, secure fencing and CCTV. In addition, larger spaces for minibuses and electric vehicle charging points will be provided to encourage use of sustainable transport.

6.4.10 The facility will be used for daily commuting purposes and for long stay parking for a proportion of those residing in the Site Campus. Up to 900 spaces will be allocated for long stay use with shuttle buses provided at changeover times. The remaining 1,000 spaces will be allocated for daily travel and will accommodate fluctuations in demand and vehicle occupancy rates to ensure resilience and avoid overspill parking onto local roads. Workers who do not qualify for access to the Power Station Site car park will be directed to Dalar Hir. At peak construction it is expected that an average vehicle occupancy of 1.5 will be achieved. An illustrative layout of the site is provided in figure 6.5.

6.4.11 Buses serving the Park and Ride facility at Dalar Hir will travel along the A55 between junctions 4 and 3, before joining the A5025 at Valley and continuing north to the Wylfa Newydd Development Area. This journey will take around 25 minutes in free-flow conditions. Park and Ride buses will not be permitted to remain on the Power Station Site when not in use so will return to the Park and Ride facility after workers have disembarked.

Figure 6-5 Illustrative layout of Park and Ride facility at Dalar Hir



Indicative park and ride site layout – Dalar Hir

Shuttle Buses

6.4.12 Horizon will provide a dedicated shuttle bus service for construction workers living in Anglesey and North Wales. These services will be demand driven to ensure flexibility as the number of workers fluctuate. Therefore some services may be express routes, such as the Holyhead, Caernarfon and Bangor services, while services around the north and east of Anglesey, such as Cemaes, Amlwch and Benllech, are likely to be 'multi-stop' services.

6.4.13 These services will be routed to maximise the number of workers that can be picked up to meet the actual demand of workers. There will be core routes that serve key settlements and along the A5025. However, the route through these key settlements can be flexible. Similarly, where there are villages not directly located along the A5025, buses may either be re-routed away for a short distance or a route could start in these villages before joining the A5025, for example. The anticipated core bus routes are illustrated at figure 6.6, including an indication of the catchment area for these routes. It is considered likely that at least 60% of workers will be living within easy access of these routes as a robust assessment of travel.

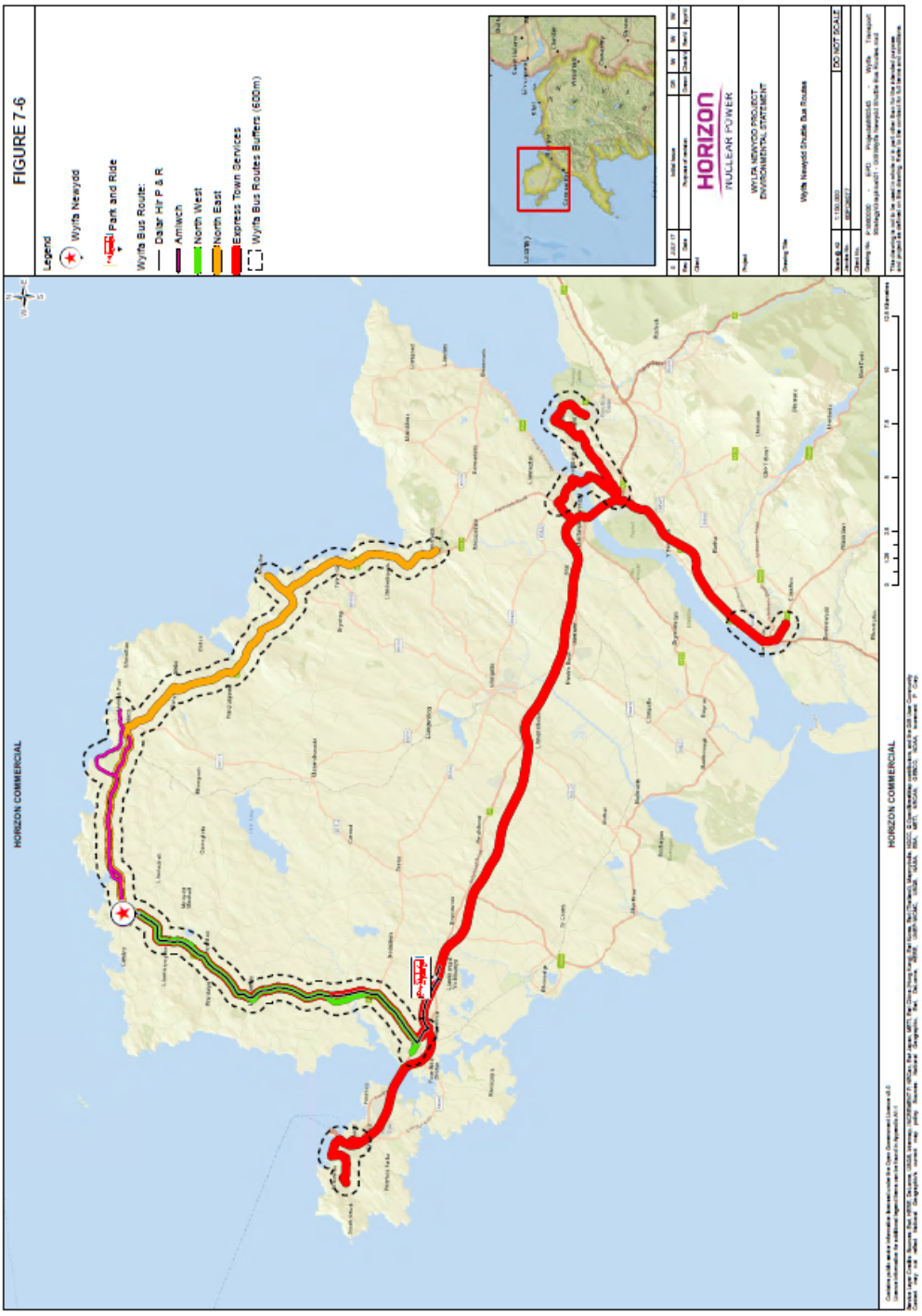
6.4.14 The routing will be determined by the operator, who will be required by Horizon through the Code of Construction Practice (Application Reference Number: 8.6) to maximise the service to workers while ensuring it remains an attractive mode of transport. While the routing will be flexible and could change depending on demand, the majority of routing is likely to be established at an early stage once worker numbers have reached a reasonable volume and therefore avoid confusion by changing routes on a regular basis.

6.4.15 The services will primarily operate during the morning and evening shift changeover times. However, a lower frequency service will also be provided during the inter-peak period to accommodate worker travel outside of the main shift peaks, such as facilities management staff and a small number of construction workers who may be on a short shift.

6.4.16 All shuttle buses travelling to the Power Station Site will be for the exclusive use of construction workers associated with the Wylfa Newydd Project. Workers using shuttle bus services will therefore be required to show appropriate accreditation upon boarding.

6.4.17 All buses procured for the Wylfa Newydd Project will meet a minimum standard for emissions, this currently being Euro IV diesel engines. The procurement of these bus services will be based upon operators meeting these requirements and any exceedance of these, such as the use of low emission vehicles, will attain a higher score in line with the overall sustainability aspirations of the Wylfa Newydd Project. The procurement process has yet to be finalised, however local operators will be encouraged to tender for services to utilise their local knowledge and offer support in the form of depot and maintenance facilities.

Figure 6-6 Wylfa Newydd Indicative Shuttle Bus Routes



Non-Motorised Users

6.4.18 Covered and secure cycle parking will be provided at the Site Campus to encourage more sustainable travel options for leisure purposes. The Site Campus will also be developed with pedestrian facilities and connections to link with the existing wider footway network.

6.4.19 Covered and secure cycle parking will also be provided at the Logistics Centre and the Park and Ride facility and Dalar Hir to encourage those Facilities Management staff living within a short distance to cycle to these facilities or for onward transfer by bus for construction workers.

Rail

6.4.20 There are a number of railway stations along the North Wales Coast Line route with frequent trains to Bangor and Holyhead. However, the current service provision is not conducive to daily commuting patterns for workers associated with the Wylfa Newydd Project. The predicted distribution of workers across North Wales indicates that only around 70 workers would be within easy access of a station, which would not be sufficient to introduce specific viable services for daily commuting purposes.

6.4.21 However, should the future train operator provide timetabled services that coincide with shift times, Horizon would provide a shuttle bus from Bangor railway station to the Wylfa Newydd Development Area, travelling across the Britannia Bridge and along the A55 and A5025, subject to demand.

6.5 Strategy Operation

6.5.1 The specifics of the transport strategy will need to be agreed as part of the trade union agreements and a balance between minimising the commuting traffic and attracting and retaining highly skilled personnel will be required. A proposal for how such a scheme would work is outlined in the following section. Specific numbers and ratios are indicative and require further development in coordination with the unions and local stakeholders.

Horizon and Supply Chain Involvement

6.5.2 Horizon, through its supply chain, procurement and contract process, will ensure that all necessary requirements are incorporated such that all contractors are committed to the strategy and work within the structure and requirements set out in the strategy.

6.5.3 Horizon, through its supply chain, will appoint a Transport Coordinator, who will be responsible for implementing the transport strategy and ensuring that it continually meets the changing demands of the Wylfa Newydd Project. They will act as a central role for all transport-related matters, including worker travel, and will attend regular steering group meetings to discuss transport matters with relevant stakeholders, such as Welsh Government, North Wales Police, Isle of Anglesey County Council and Gwynedd Council. A contact email and telephone number will also be available for reporting issues to Horizon by the public or other stakeholders.

Worker Mode Assignment – Daily Commute

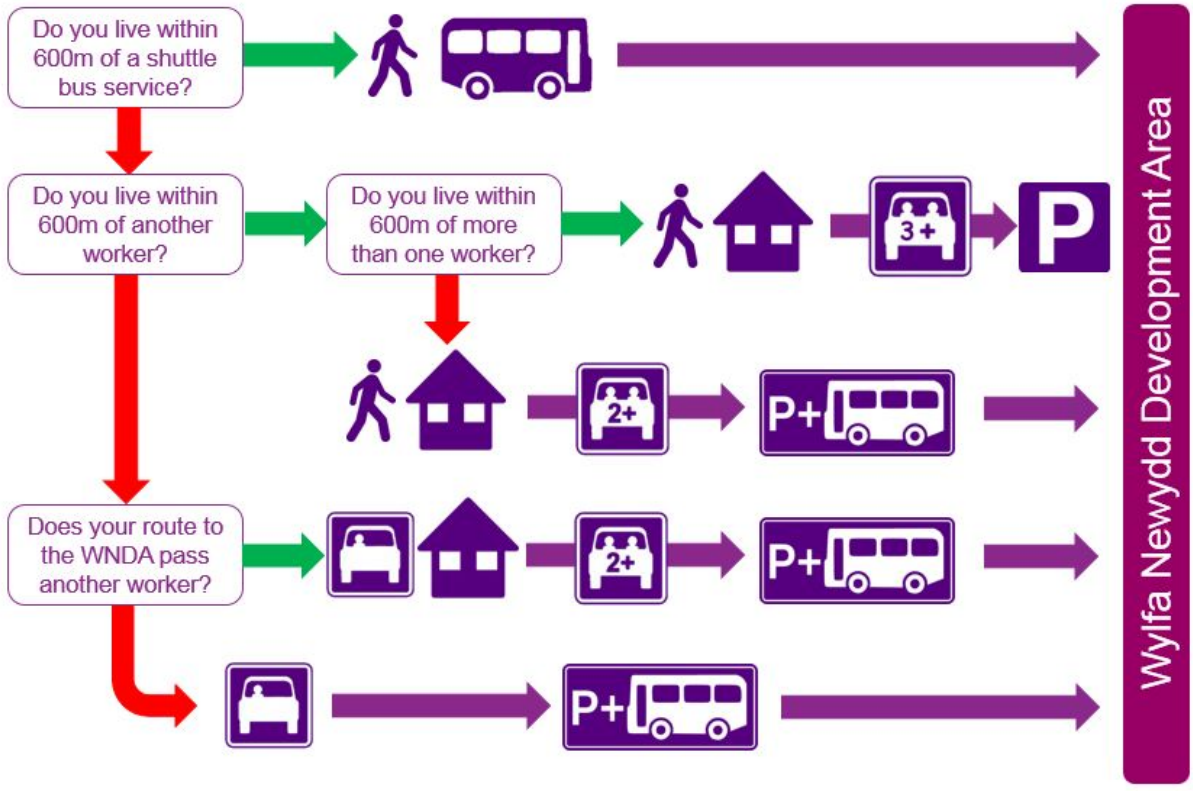
6.5.4 For the proportion of workers that will be commuting to/from site on a daily basis, the following process will be followed to control how such workers travel to/from the Power Station Site.

6.5.5 As part of the induction process for daily commuting construction workers, information on the available transport options will be made clear. This information will also be integrated into the Worker Accommodation Management Service (WAMS).

6.5.6 Once workers have been appointed and accommodation has been assigned (for non-home-based workers) or input in to the system (for home-based workers), they will be allocated a mode of transport to the Wylfa Newydd Development Area based on their location.

6.5.7 Those living within a short distance (up to 600m) of a shuttle bus route will be required to use the shuttle bus services. Workers living beyond 600 metres may choose to use the shuttle services or drive to an allocated car park based on their vehicle occupancy. See figure 6.7 below which explains the mode selection process that will be used to allocate to workers:

Figure 6-7 Work Travel Mode Allocation Process



6.5.8 Workers will be required to commit to the selected transport route, though some changes may occur after a few days of travel while workers settle into their allocated travel pattern. Changes will also be allowed in exceptional circumstances, such as changing accommodation location at short notice. Any changes will be notified through the transport section of the WAMS.

6.5.9 Details of how the car sharing system could work are provided below.

Car Sharing

6.5.10 Car sharing is an important component of the ITTS for the Wylfa Newydd Project and it is expected to provide the following benefits:

- minimising single occupancy car journeys;
- reducing the size of car parks, including Park & Ride facilities;
- reducing the volume of worker traffic travelling on the highway network, including the Britannia Bridge;
- providing increased travel options for workers living in rural or remote areas who may be able to share with people who live close to them; and
- allowing workers to share the cost and burden of driving.

6.5.11 An overall level of car sharing of an average of 2.0 workers per car has been assumed across the Wylfa Newydd Project for daily commuting purposes during peak construction.

6.5.12 In practice, some vehicles will be sole occupancy and some will contain three or more workers. An average of two is considered achievable and some contractors are expected to travel by minibus, thereby potentially achieving far higher vehicle occupancy rates.

6.5.13 Car sharing provides several advantages for workers e.g. significant travel cost savings. In addition, Horizon proposes to implement a series of measures to encourage and enforce the car sharing strategy.

6.5.14 The car sharing strategy has been based on guidance issued by The Chartered Institute of Highways and Transportation (CIHT).

6.5.15 Car sharing for many businesses, such as those located on a business park, will often present several challenges:

- the relatively low number of staff spread over a large area typically results in low densities of employees in any given location.
- staff often have other activities associated with their daily routine, such as dropping off and picking up children, shopping, and leisure activities, which can affect their route and timing of their journey to and from work.
- some staff will work part time, flexi-time or slightly different shifts to others, making a car-sharing match difficult to achieve for a reasonable proportion of the business.

6.5.16 For the Wylfa Newydd Project, these constraints are largely irrelevant because:

- the location of the Project on the western edge of Anglesey means that workers are travelling from a limited number of surrounding areas, with trips focused along a few routes (e.g. A55 and A5025);
- almost all workers are travelling to the same site every day on fixed shift times for an extended period; and

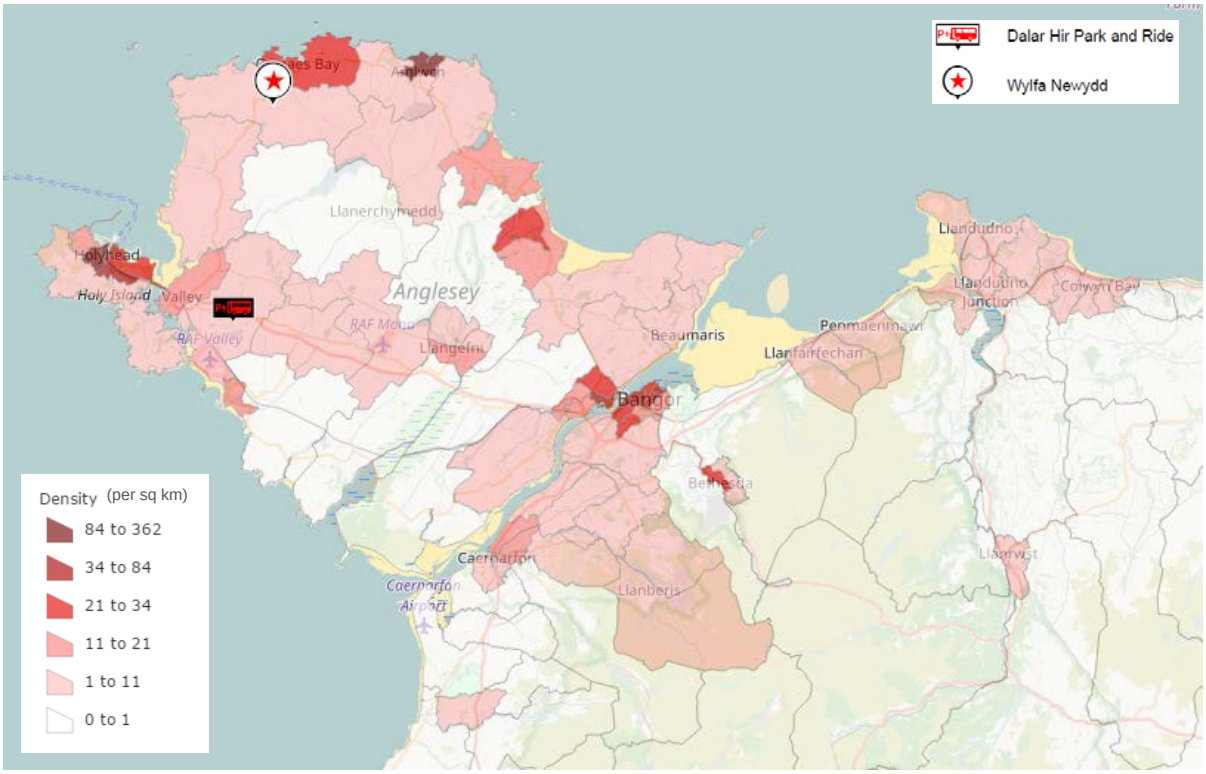
- construction workers who move to the area for this project are less likely to have their daily travel influenced by other factors e.g. the school run.

6.5.17 These travel patterns therefore strongly favour car sharing and greatly increase the opportunities for car sharing compared to a typical development.

Worker locations

6.5.18 The estimated home locations of daily commuting workers have been derived from the gravity model. This information has been used to identify where clusters of workers are likely to live and what the most direct routes to/from a construction site would be. Figure 6.8 shows the forecast density of workers per square km.

Figure 6-8 Density of Workers by Ward (per sq km)



Approach to Implementation

6.5.19 All workers will be registered on a database, which will include details of where each worker is living. This database will be managed by Horizon and its supply chain, and it will be updated as worker numbers and locations change over the course of the construction period.

6.5.20 The database will take account of shift patterns for each worker and together with information on their accommodation, match workers who could potentially car share, i.e. workers on the same (or similar) shift who live close to each other.

6.5.21 Appropriate monitoring arrangements will be developed using information from both the database and the Construction Workers' Accommodation

Management Portal. The monitoring arrangements could potentially include continuous monitoring for some aspects, such as identifying individual breaches, while others could be on a monthly basis, such as shuttle bus routes and frequencies.

6.5.22 Vehicles with the highest level of car sharing (e.g. three workers per car) will be allocated a space at the Power Station Site.

6.5.23 Vehicles with a lower level of car sharing (e.g. two workers per car) will be allocated a space at the Park and Ride facility at Dalar Hir.

6.5.24 This approach will incentivise higher levels of car sharing as travel direct to the Wylfa Newydd Development Area will be quicker than parking at Dalar Hir and taking the shuttle bus.

6.5.25 Allowances will be made for unforeseen changes to agreed car sharing arrangements, for example for sudden shift changes, sickness, or a worker moving before another suitable replacement has been found.

6.5.26 The uptake in car sharing increases significantly when there is trust in the identity of the potential car share partners, i.e. workers in a single organisation are more likely to share than the general public. The database would therefore need to offer verified identities to help maximise uptake from workers. The security clearance of all personnel on site offers the ideal mechanism to achieve this, with workers being able to see a photograph of their car share partner in advance and present their security pass to confirm identities when first meeting.

Weekend Travel

6.5.27 As well as apply for daily trips to the Wylfa Newydd Development Area, the database will also be used to connect workers who will be travelling to their permanent home at the end of an 11-day shift cycle. These journeys will be more ad-hoc in nature so the database or other message board system will aim to share information about journeys taking place to reduce demands on the road network. This approach will also save workers money due to lower travel costs.

6.5.28 All personnel must register with the WAMS. All non-home-based personnel should seek to use the WAMS and the Construction Workers' Accommodation Management Portal to identify and secure accommodation in the first instance before using other accommodation choices when requested for data collection purposes. The portal will advise workers of the recommended route between their permanent home and accommodation locations using a variety of modes.

6.5.29 For travel between workers' permanent homes and their accommodation by car there is also assumed to be a level of car sharing achieved, particularly to the Site Campus, which is currently proposed to be an average of 1.5 workers per car. Those workers who choose to drive to their accommodation will be encouraged to car share with other workers, highlighting the cost savings of doing so.

6.5.30 Similar to daily commuting, there will be some workers who will travel as a sole occupant while many workers will be recruited as a team and travel to North Wales together, either in cars or minibuses. This is likely to apply to a reasonable proportion of workers as co-workers from the same sub-contractor are likely to live in the same part of the country and may already be used to sharing their journey on a daily basis. Such workers are also likely to commute together on a daily basis, thereby establishing car sharing partners before they have reached North Wales.

Communication and Promotion

6.5.31 The shuttle bus routes and car sharing will be promoted to ensure that they achieve maximum visibility to workers. The majority of construction workers will be new to the area and therefore travel patterns will not have been established, offering maximum opportunity to influence their daily travel.

6.5.32 Information packs containing the Construction Traffic Management Strategy will be provided to all construction workers at their induction. The information packs will contain but not be limited to the following:

- HGV routes and route restrictions (if appropriate);
- safety and operational requirements;
- construction vehicle routes (if appropriate);
- non-compliance guidance;
- complaints procedure;
- available transport options, including bus routes.

6.5.33 Construction workers will be bound to comply with the above by the Code of Conduct in line with the principles set out in the Workforce Management Strategy (Application Reference Number 8.5)

Incentives

6.5.34 The buy-in of the use of shuttle buses and car sharing can also be maximised through incentivisation of workers. A key incentive would comprise access to priority car parking adjacent to the Power Station Site which would be the most attractive location for workers. For construction workers, cars would only be allowed to access this car park if they contain a minimum number of occupants. This threshold would rise as the number of workers increases and the demand for high occupancy parking increases accordingly. All other vehicles would be directed to the Park and Ride facility at Dalar Hir.

6.5.35 Financial benefits will already be achieved through the fuel saving of each worker taking a bus or sharing a vehicle rather than driving solo.

6.5.36 Where workers are provided with a travel allowance, subject to trade union agreements, Horizon will ensure that there is no significant financial gain between travelling by shuttle bus or driving.

Summary

6.5.37 Shuttle buses along with car sharing can offer significant benefits by reducing the size of the Park and Ride facility as well as minimising traffic impacts during commuting hours, particularly across Britannia Bridge and sensitive areas of the network.

6.5.38 Car sharing can improve the sustainability of the Wylfa Newydd Project and contribute significantly to vehicle mileage reduction. The process of car sharing will be made as convenient as possible and introduced to workers as part of their induction and accommodation booking so that their travel arrangements are a key consideration of where they choose to live. Targets for car sharing will be developed as part of the Travel Plan with the current commitment to achieve an average of two workers per vehicle at peak construction across the Wylfa Newydd Project. However, Horizon, together with its supply chain, will endeavour to exceed this in order to achieve as high a car share ratio as possible throughout the construction phase.

Monitoring and Enforcement

6.5.39 Notwithstanding the fact that shuttle bus and car share options are expected to be popular option amongst daily commuters for the financial benefits alone, as proven by other projects of a similar scale previously, and the type of system that will be put in place to maximise car sharing, there will be the possibility that some workers may try to circumnavigate the system. Such breaches will result in disciplinary action that will be made clear at the induction phase. The following identifies steps that will be taken to minimise breaches and what action will be taken in the event of a breach.

Identification

6.5.40 Access to shuttle buses will be controlled. Workers will not be allowed to board shuttle buses unless they are assigned to them.

6.5.41 Parking/bus permits will be issued to workers where they meet the relevant qualifying criteria. Criteria may consider proximity to a bus route, commitment to car share and hours of work.

6.5.42 A phone number and e-mail address will be made publically available for members of the public to report suspected fly/illegal parking activity associated with the Wylfa Newydd Project, which will then be investigated. Workers who are caught fly-parking or parking illegally in order to car share will face enforcement action (see below).

6.5.43 Workers arriving on foot at the security gate will only be allowed to enter if they have been granted 'walk-in' access, i.e. if they live within walking distance of the Wylfa Newydd Development Area. This will deter workers from parking on local roads and walking onto the construction site.

Enforcement

6.5.44 Workers failing to adhere to their agreed and chosen route to work (e.g. car share arrangement or bus route) will be refused entry through appropriate enforcement measures and potentially be given a formal warning.

6.5.45 On each occasion, workers would be reminded of their selected transport route and be given assistance if the worker is encountering difficulties with their daily travel.

6.6 Communications

6.6.1 The construction of the Wylfa Newydd Project will bring a number of challenges, which advances in modern technology can assist with. This includes GPS locators on plant and machinery to achieve greater accuracy in excavation and ground profiling, and on goods vehicles and buses to provide real-time locations for routing and timing purposes. Mobile apps for transport purposes and for fieldwork can be used for efficient working and rapid response to identified problems.

6.7 Strategy Summary

6.7.1 This strategy covers construction worker journeys from their permanent home to the Power Station Site. For those living outside of the DCCZ, a

choice of transport modes is available for construction workers travelling to the North Wales area, which will be promoted through initiatives. For daily commuting from the DCCZ, specific controlled transport solutions will be provided for each area, offering flexibility in their design so that they can adapt to varying levels of demand as the Wylfa Newydd Project progresses.

6.7.2 A summary of the predicted movement of non-home-based construction workers travelling to North Wales, representing the weekend commute, is illustrated in figure 6.9. The predicted movement of construction workers between their accommodation and the Power Station Site, representing the daily commute, is illustrated at figure 6.10.

Figure 6-9 Weekend travel to North Wales

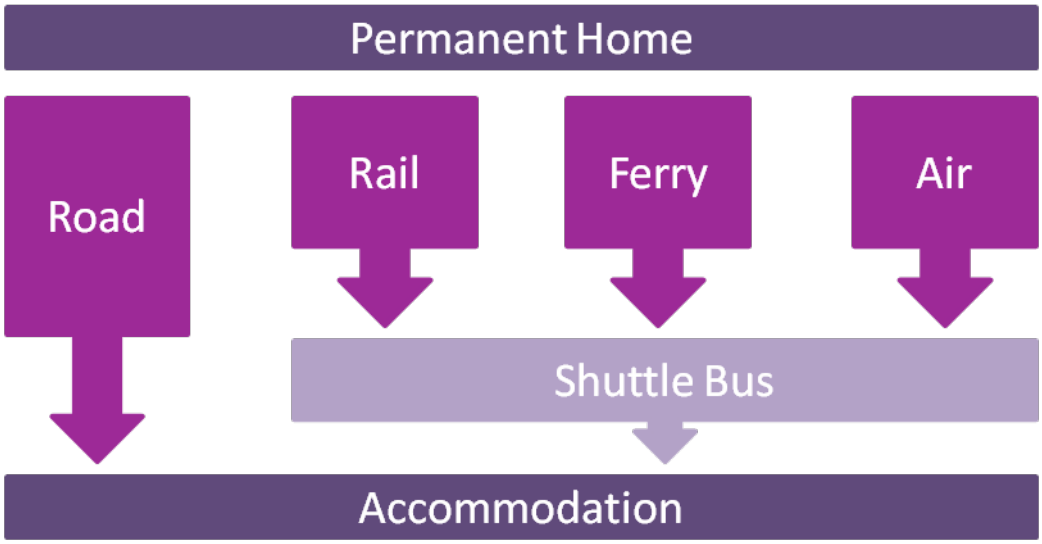
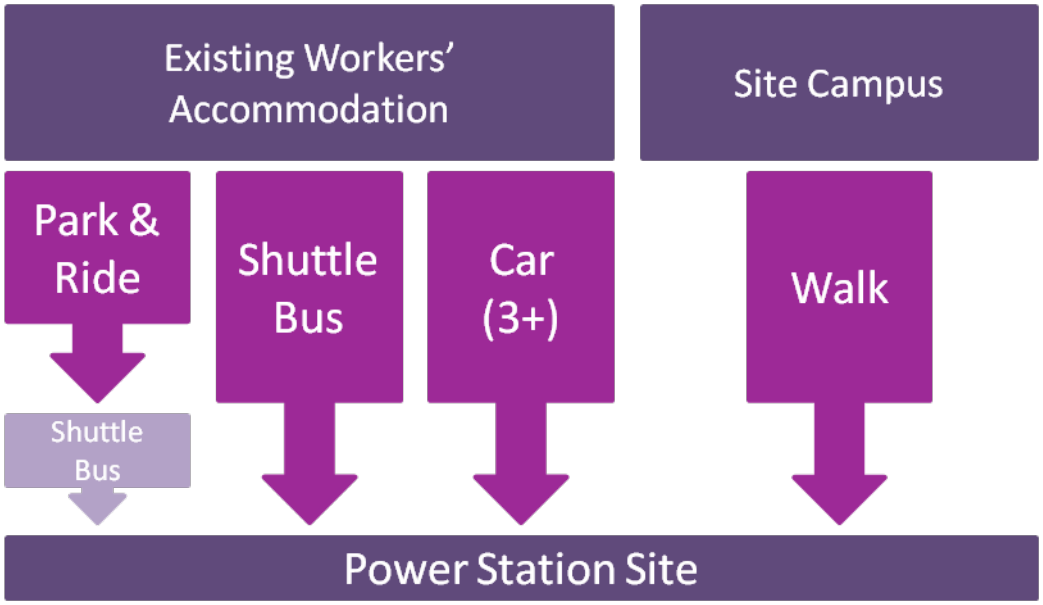


Figure 6-10 Daily commuting to Power Station Site



7 Freight Management Strategy

7.1 Introduction

7.1.1 This chapter sets out the transport-related proposals for construction logistics associated with the major construction activities for the Wylfa Newydd Project. It identifies the transport measures available for freight, including bulk materials, plant and equipment, Power Station components and consumables, as described earlier.

7.1.2 The origin and size of many of the loads influence the choice of mode of transportation. A major consideration of freight handling for the Wylfa Newydd Project has been the requirement to transport large modular reactor components from Japan, where they will be manufactured. In addition, the majority of materials associated with the Project will be stockpiled within the Power Station Site, avoiding the need for 'just in time' deliveries.

7.1.3 Based on current estimates for the major construction activities, the large volume of bulk materials for concrete production will represent around three quarters of all construction materials for the Wylfa Newydd Project. The most efficient and least disruptive mode of transport for these deliveries is by sea, as advocated by national and local planning policy, and therefore the Wylfa Newydd Project proposals include the construction of a MOLF, which will handle the majority of bulk materials and large components.

7.1.4 The remaining materials, representing around a quarter of the Wylfa Newydd Project requirements, will be transported by a mixture of road and sea. It is expected that between 60% and 80% of all materials will be transported by sea. Road-based transport will follow the A55 and A5025 from Valley to the Power Station Site. The impact of these movements will be minimised through the A5025 highway improvements and the construction of a Logistics Centre, which will offer the ability to control the frequency and volume of movements of road-based freight along the A5025. A Code of Construction Practice will be implemented by Horizon through its supply chain to control freight transport movement.

7.2 Transport Routes

7.2.1 A review of available transport routes was undertaken to ensure that all modes of freight transport were considered, comprising sea, rail and road. The review took account of physical constraints and practicalities of the delivery of abnormal loads and bulk materials to the Wylfa Newydd Development Area by these different transport modes. This included the financial viability of different transport modes, taking account of any infrastructure improvements required to accommodate such movements. A copy of the review is enclosed at appendix A.

7.2.2 The findings of this concluded that there were primary transport routes for each type of material, while opportunities may exist for other modes to be used for specific deliveries and as a contingency, should other modes be affected long term.

Bulk goods – representing the vast majority (76%) of construction materials for the Wylfa Newydd Project, these are to be transported by sea directly to the MOLF. The significant investment in berth facilities avoids the need to double handle goods and potentially removes almost 240,000 HGVs from the road network. The road network may be used for contingency purposes, while the opportunity for transport by rail or via Holyhead Port would only realistically be utilised in the event of extended interruption to the MOLF;

Common / palletised goods – representing 19% of construction materials, these are to be predominantly transported by road directly to the site. This offers the greatest opportunity for local suppliers to be used and minimises risk to certain types of goods, such as fresh food. These will be managed and coordinated through construction of a Logistics Centre and a modern electronic Delivery Management System, which will control the flow of HGVs on a daily basis and be able to react quickly to incidents on the road network. Engaging with suppliers to consolidate deliveries at source will further reduce the number of lorries that would potentially travel on the road network. There are potential opportunities for bulk orders or some of these goods to be transported by sea via a port to the MOLF should the supplier be located close to a port or the goods will already pass through a port; and

Containerised goods – representing 1% of construction materials, these are likely to be transported by road for the last part of their journey. Their journey may include a significant portion by sea or rail to a port/freight facility to enter the UK if originating from abroad, though will utilise existing freight corridors such as the Channel Tunnel or large container ships. Onward transport by road will minimise the need for additional handling, which would otherwise increase risk of damage to such specialist goods. Opportunities may arise for these containers to arrive directly to the MOLF if containers arrive in bulk. The constraints of the rail network for containers is likely to limit opportunities for rail transport of this type of goods.

7.2.3 Overall, the Freight Management Strategy defines the primary choice of transportation for construction materials associated with the Wylfa Newydd Project and aligns with the ITTS outcomes and objectives, particularly in relation to using sustainable modes of transport and minimising the need to travel. However, this does not preclude the potential for other opportunities to arise during construction of the project or for specific deliveries to be made using other routes, should they offer a practical and cost-effective alternative.

7.3 Sea Transport

7.3.1 The transportation of materials by sea offers the opportunity to minimise road freight and its associated impacts on the road network, other road users, air quality and residents living alongside haulage routes. Based on their likely origins, a significant proportion of materials could be transported by sea.

7.3.2 The reactor components will be manufactured in Japan and be shipped to the UK. Bulk materials could be transported from a range of origins around the EU, while a range of other materials may be sourced from the EU, Asia and the US. Where non-time-dependent materials can be containerised these can also be transported by vessel.

7.3.3 Overall, by tonnage, it is estimated that between 60% and 80% of all materials associated with the construction of the Power Station could be transported by sea. Although the choice of transport mode for some materials will be dependent on the suppliers and contractors, it is expected that a higher proportion of materials will be transported by sea.

EU Customs Port

7.3.4 Freight arriving from outside of the EU will arrive at a port selected for customs checks and goods trans-shipped to vessels appropriately sized to be accommodated at the MOLF. Freight arriving from within the EU could be transported on vessels able to sail direct to the MOLF.

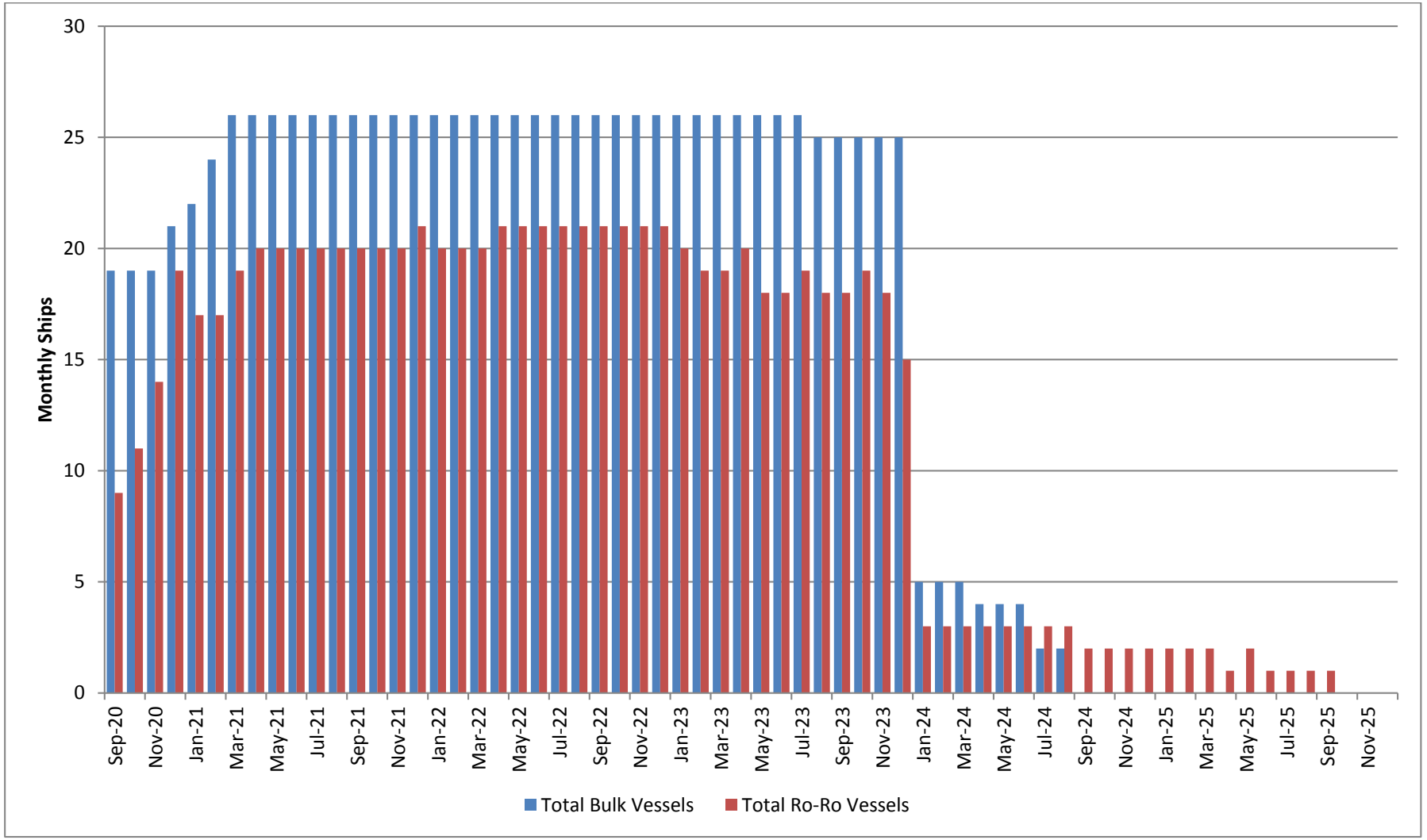
7.3.5 Several UK ports have been considered for trans-shipment activities including Holyhead, Liverpool and Southampton, along with ports in Holland. Horizon recognises that Holyhead Port offers the shortest onward journey to the MOLF but at present the available facilities are not suitable for the delivery of the materials required for the Wylfa Newydd Project.

MOLF

7.3.6 Construction of the MOLF will commence shortly after the DCO has been granted and will be completed in time for the first delivery of bulk materials for construction of the Power Station in late 2020 with the MOLF fully open by Quarter 2 2021. The majority of materials required for the construction of the MOLF will either be extracted from the Power Station Site or be delivered through sea-based transportation.

7.3.7 Once completed, the MOLF will provide a bulk unloading berth, which is expected to accommodate the majority of bulk materials required to construct the Power Station. It will also provide a ‘roll on, roll off’ (Ro-Ro) berth, which will accommodate all of the AIL components that will be transported from Japan. Based on the estimates of materials requiring sea-based transport, figure 7.1 illustrates the predicted number of ship movements for each berth type at the MOLF by month throughout its operation.

Figure 7-1 Monthly ship movements



7.4 Rail

7.4.1 The number of deliveries that could be transported by rail to Anglesey in an efficient and sustainable manner will be limited. Therefore, where goods can potentially travel by rail, they could be transported to the EU customs and trans-shipment port and transferred to a vessel or lorry for onward transport to the Power Station Site via the MOLF or road.

7.5 Road Transport

7.5.1 Those materials sourced in the UK are likely to be transported from a wide area and many deliveries may be small in size. Such deliveries are more efficiently transported by road, particularly as part of the journey is likely to be by road and would therefore require double handling if other modes of transport to the site are considered.

7.5.2 It is estimated that up to 40% of materials may arrive by road, including allowances for contingency planning, however this is a conservative estimate with the likely volume of goods being transported by road being less than this. Construction materials for Associated Development sites will arrive by road as access to these sites will only be via road.

7.5.3 Profiles of each construction activity and type of material has been profiled across the construction programme, from which the number of monthly HGV movements on the road network has been predicted. The profiles of these HGVs on the A55 and A5025 are illustrated at figures 7-2 and 7-3 respectively, including an estimate of the peak hourly flow. The maximum hourly flow shown in figure 7-3 is based on 25% of the daily flow occurring in a single hour. Given that there are at least ten hours in a working day this provides a worst case estimate of HGV flows along the A5025.

Figure 7-2 Monthly HGV deliveries on A55

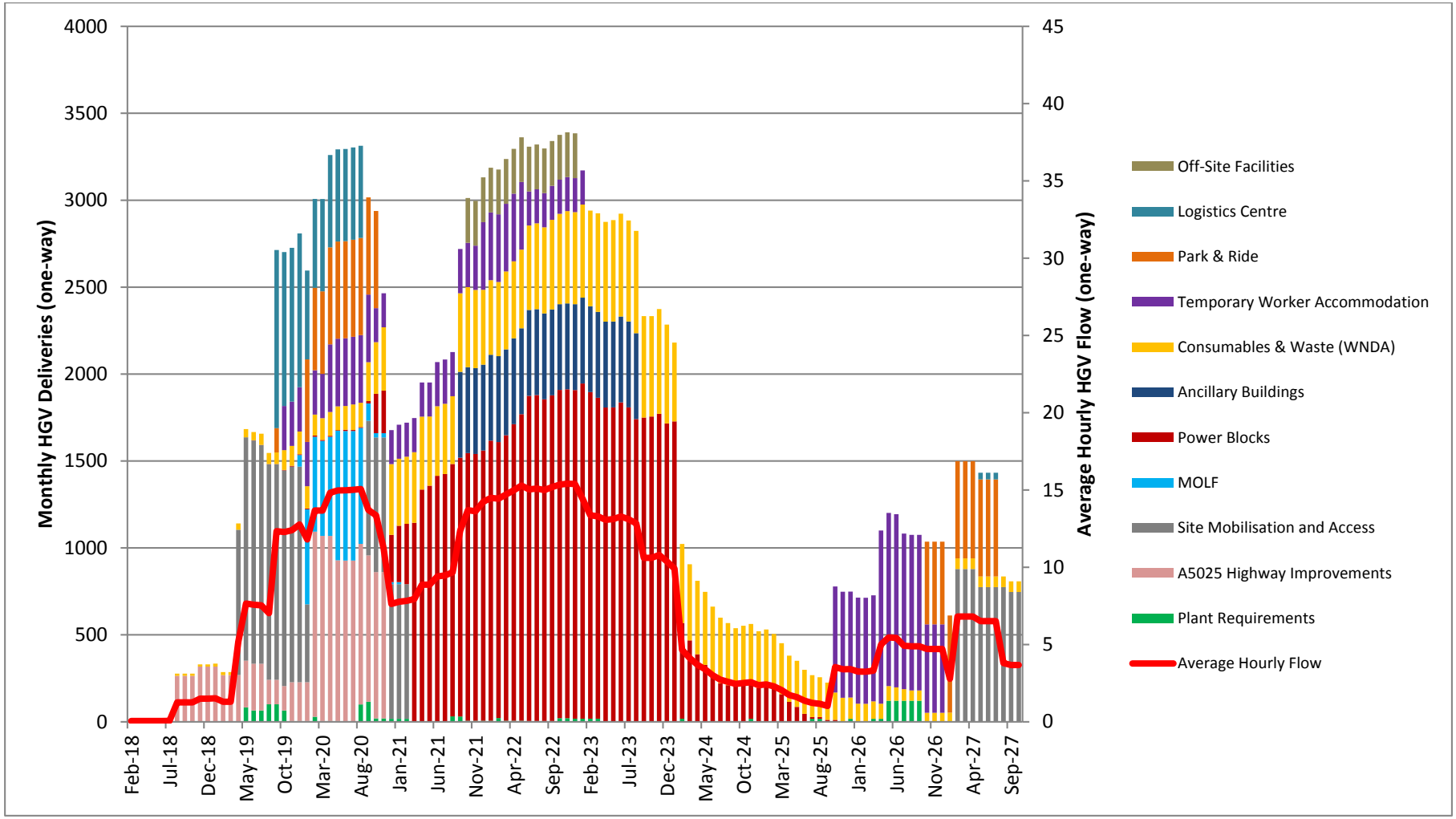
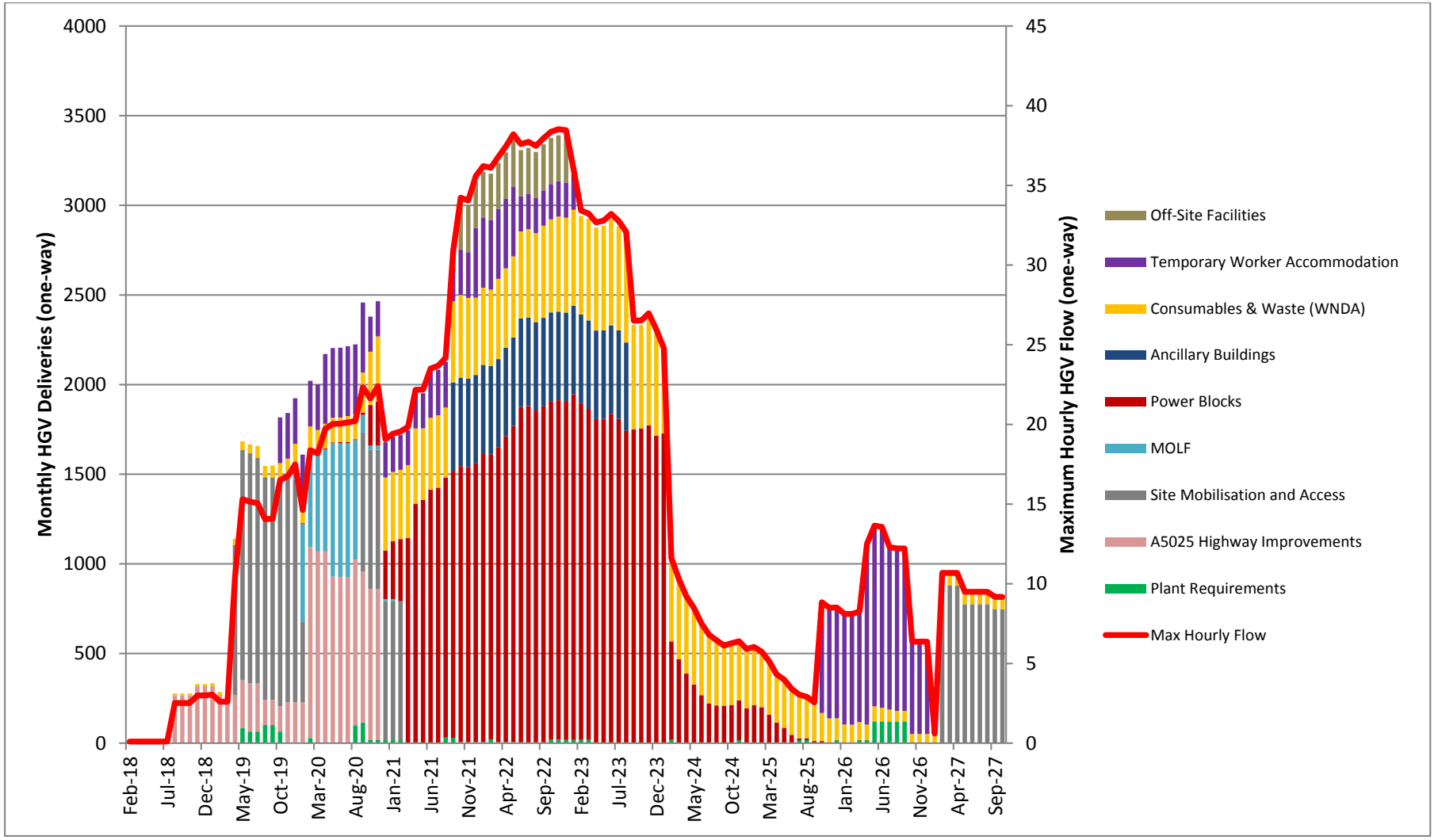


Figure 7-3 Monthly HGV deliveries on A5025



Logistics Centre

7.5.4 Logistics facilities are typically provided at strategic locations to maximise their effectiveness for controlling traffic flows on the highway network. The ideal location for such a facility would therefore be close to the A55 and near to the southern end of the A5025.

7.5.5 A Logistics Centre will be provided on Anglesey at Parc Cybi, immediately to the south of Junction 2 of the A55. Its location at Junction 2 will avoid pressure on Junction 3, ensuring resilience in the road network. This location will maximise the interception of goods deliveries along the A55, from both the mainland and the ferry from Ireland, while minimising the distance to the Power Station Site to ensure that movements can be adequately managed in an efficient manner.

7.5.6 Construction of the Logistics Centre will commence shortly after the DCO has been granted and will aim to be completed within 12 months. Upon completion, this facility will control the timing of all deliveries travelling northbound along the A5025 towards the Power Station Site. In advance of the facility opening, incoming deliveries will be significantly less than at peak of construction and will travel direct to the Power Station Site.

7.5.7 This facility will be able to accommodate up to 100 large parked vehicles and is designed for a throughput of around 40 vehicles an hour. There will be a range of welfare facilities on-site, including toilets, showers and refreshments and it will be able to accommodate vehicles overnight as well as during drivers' mandatory rest periods. The proposed layout is illustrated at figure 7.4.

7.5.8 All incoming road-based deliveries associated with the Wylfa Newydd Project will arrive at the Logistics Centre for checking and weighing, except for a small number of exceptions, such as AILs. Onward vehicle movements will be controlled to ensure that vehicles are not travelling in convoy, limit movement during sensitive times of the day, where necessary and practical, and to restrict all movements when an incident occurs along the A5025. Once released, these vehicles will travel along the A55 to junction 4 and along the A5025. Vehicles leaving the Power Station Site will also be controlled in order to meet the same objectives. Only a small area will be available to withhold vehicles within the Power Station Site in the event of an incident along the A5025.

7.5.9 A Traffic Incident Management Plan will be implemented by Horizon through its supply chain to manage construction traffic movements in the event of an incident on the road network. Depending on the location of such an incident, drivers of HGVs and buses associated with the Wylfa Newydd Project will be given instructions that prevent, where possible, additional vehicles being added to roads affected.

7.5.10 The establishment of a Logistics Centre between Valley and Holyhead, where deliveries to the Power Station Site are managed effectively, is central to the Project's strategy to control deliveries to site and minimise impacts on the local road network. An integrated Distribution Management Asset Tracking System (DMATS) will be used to monitor, manage and control deliveries to site and will likely comprise three elements:

- A Delivery Booking System;
- A Vehicle Tracking System; and
- Asset Tracking System.

7.5.11 A DMATS is a collection of applications contained within a single electronic system designed to monitor, manage and control an entire distribution network efficiently and reliably. The Delivery Booking System will allow contractors and other users requiring delivery of items to site to pre-book entry, typically 24 hours in advance. Vehicles will register and wait at the logistics centre ready to fulfil their reserved delivery slot. The Vehicle Tracking System will monitor vehicle movements from source, to the logistics centre and then to site and provides delivery assurance. Asset Tracking will enable the tracking of all delivery items (maximising delivery items per vehicle), ability to pinpoint individual items quickly and efficiently holistically from source to site, provide accurate information to all contractors as well as clear accountability for material and goods ownership.

7.5.12 The DMATS will include appropriate use of technology such as barcoding, GPS tracking and 'just in time' delivery systems and will allow capacity optimisation and maximised efficacy of the overall system.

Figure 7-4 Illustrative layout of Logistics Centre

Indicative Logistics Centre site layout – Parc Cybi

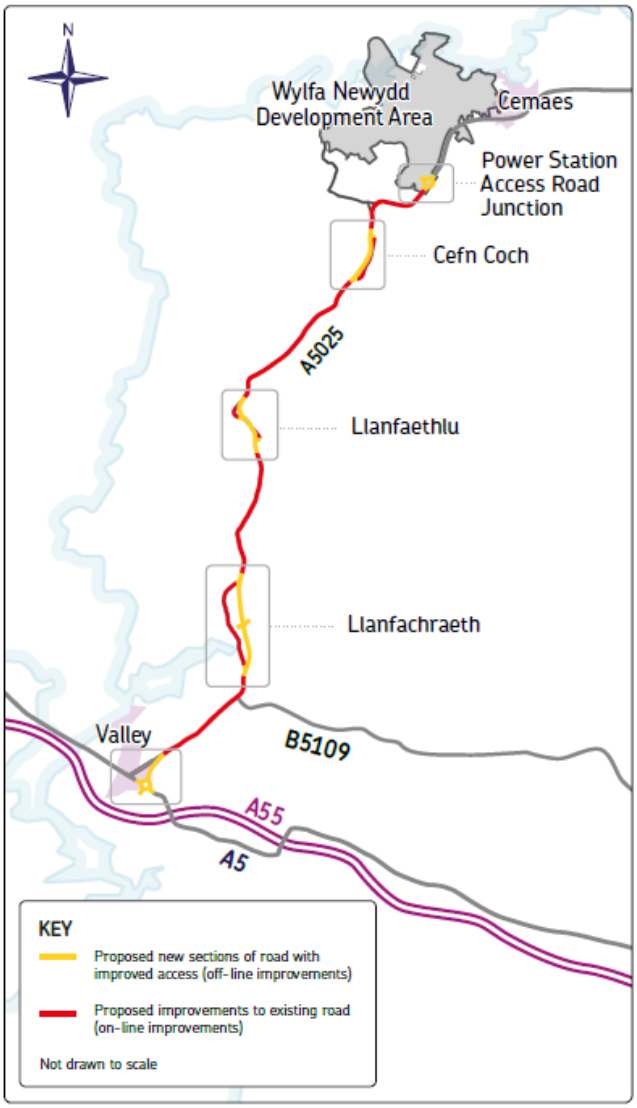
A5025 Highway Improvements

7.5.13 The introduction of the Wylfa Newydd Project will increase traffic flows along the A5025 between Valley and the Site. To help reduce the impact on local residents and facilities along the corridor, a scheme of Off-line and On-line Highway Improvements has been developed and consulted upon to mitigate potential adverse impacts of construction traffic on both those travelling on and living adjacent to the A5025. The off-line improvements form part of the DCO application, while the on-line improvements form part of a separate Town and Country Planning Act application.

7.5.14 The improvements focus on the section of the A5025 between Valley and the Power Station Site and include four sections of off-line improvements in the form of bypasses and four sections of carriageway widening to improve the geometry for HGVs to pass and deliver environmental improvements as part of the Wylfa Newydd Project.

7.5.15 The location of these proposed schemes is shown in figure 7.5 and further details are provided in associated reports.

Figure 7-5 A5025 Highway Improvements



7.5.16 Those existing sections of the A5025 that will be improved for use by construction traffic will benefit from widening to improve road safety and reconstruction of the carriageway to ensure that the lifespan of the road is maintained, while those sections that will be bypassed by the Off-line Highway Improvements and be de-classified will benefit from surface dressing.

7.5.17 The resurfacing operations will include recycling of the existing carriageway material into the laying of the new surface. A recycling unit will be located along the A5025 between Valley and Tregele which will potentially avoid the exportation of over 13,000m^3 of excavated material and importation of the same volume of new surfacing. Recycling of material could therefore save up to 13,500 HGV movements on the wider road network.

7.5.18 Where Public Rights of Way intersect or terminate at the A5025, the improvements have been designed to not affect their operation. Sufficient verge width at the intersections with the A5025 will be provided to keep pedestrians away from the carriageway edge. All existing means of access to the highway (i.e. stiles, gates etc.) will be retained in their current position as they should be unaffected by the proposed works.

7.5.19 The National Cycle Network intersects the A5025 in a number of locations and new crossing points and surfaced cycleways will be provided as part of the improvement works.

A5025 Power Station Site to Menai Bridge

7.5.20 The proposals and socio-economic EIA modelling data indicate that a large proportion of the construction workforce are likely to reside to the east of the Power Station Site, particularly in the Amlwch and Benllech areas. The transportation of these workers to the Power Station Site will result in buses travelling along the eastern section of the A5025 with the section between Amlwch and the Power Station Site, where routes would converge, with the highest increase of buses around the time of each shift changeover.

7.5.21 As the timing of these bus movements will occur outside of the traditional peak periods no capacity or safety improvements are considered necessary to mitigate these movements.

Construction Traffic Signage

7.5.22 The routing of construction traffic to the appropriate location is an important aspect in ensuring that goods vehicles only use designated routes and to avoid wrong turns and re-routing. Horizon will provide a comprehensive signing strategy to coordinate the various construction sites that will be in place throughout the construction phase. Appropriate symbols, colours, and/or abbreviations will be used to direct goods deliveries to the correct location, particularly as some sites may have more than one temporary construction compound. The signing strategy will be agreed with the local highway authority in advance of construction and will be integrated into the web-based delivery booking system for suppliers.

7.6 AIL Transport

7.6.1 The construction of the Power Station requires a large number of specific components, the majority of which will be manufactured in Japan. Such components from Japan or Europe will be delivered by sea, via a modularisation / assembly area located in a UK port, to the MOLF and be unloaded using cranes. It is estimated that up to 800 such AILs will arrive via the MOLF.

7.6.2 In some exceptional circumstances, a small number of components may arrive from the UK and will be more practical to be delivered by road, directly to the Power Station Site along the A5025. In most cases, transfer of AILs from one mode to another is impractical and therefore road-based travel from UK origins represents the most efficient form of transport.

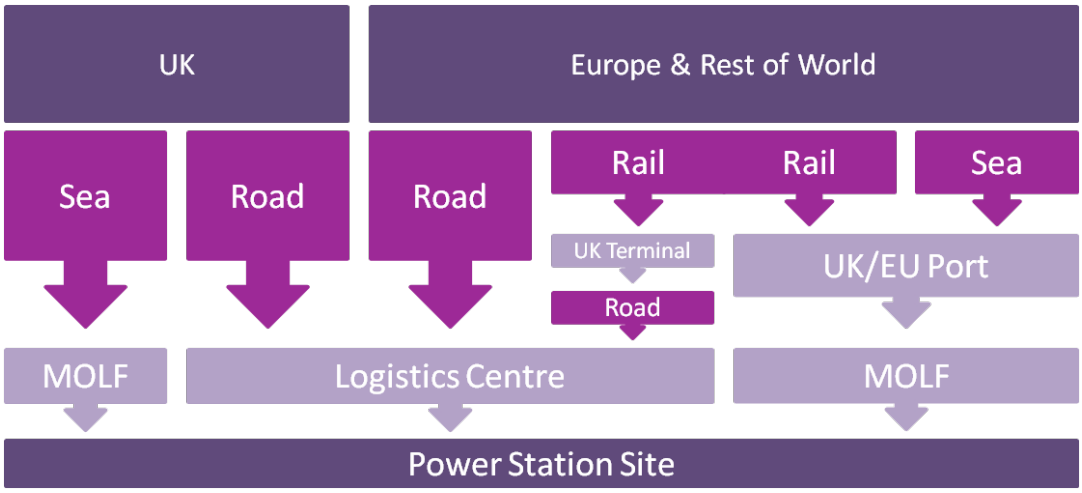
7.6.3 A range of construction plant will be required at the various construction sites and these are likely to originate from the UK. It is currently estimated that around 800 of these will be categorised as AILs due to their size and/or weight. These will be managed through the Code of Construction Practice (Application Reference Number: 8.6) and follow the standard processes for movement of AILs on the road network.

7.7 Strategy Summary

7.7.1 This strategy covers the transportation of all construction materials from their origin to the Power Station Site. For those materials arriving from outside of the EU, sea-based transport is likely to be the preferred method of delivery via the MOLF. For those materials originating within the EU, a choice of either road or sea transport modes is available, with sea-based transport being promoted through a Freight Management Plan. For road-based movements, the Logistics Centre will provide adequate control to ensure that impacts along the A5025 are minimised.

7.7.2 A summary of the predicted movement of materials travelling to North Wales is illustrated in figure 7.6.

Figure 7-6 Freight Management Strategy summary

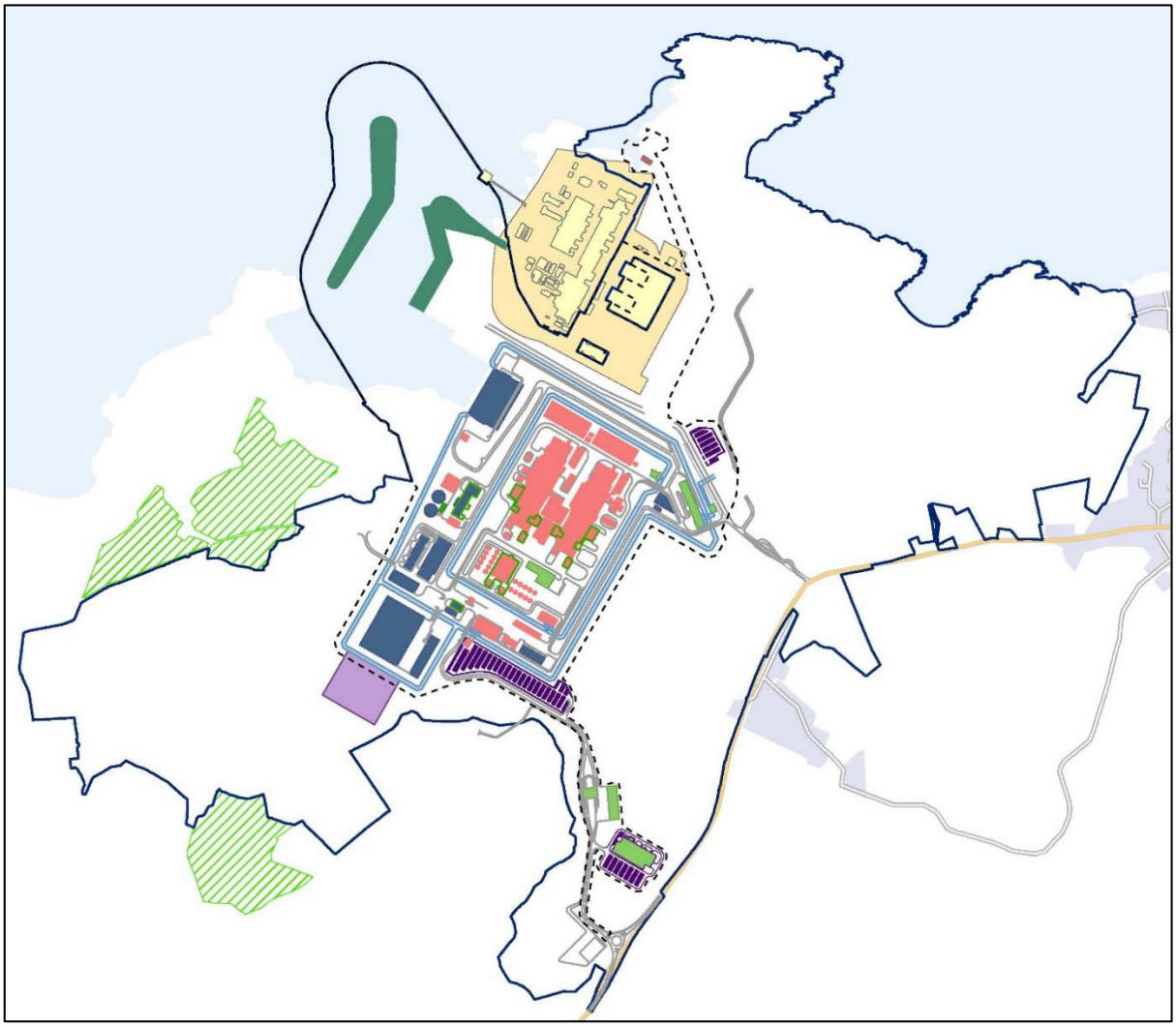


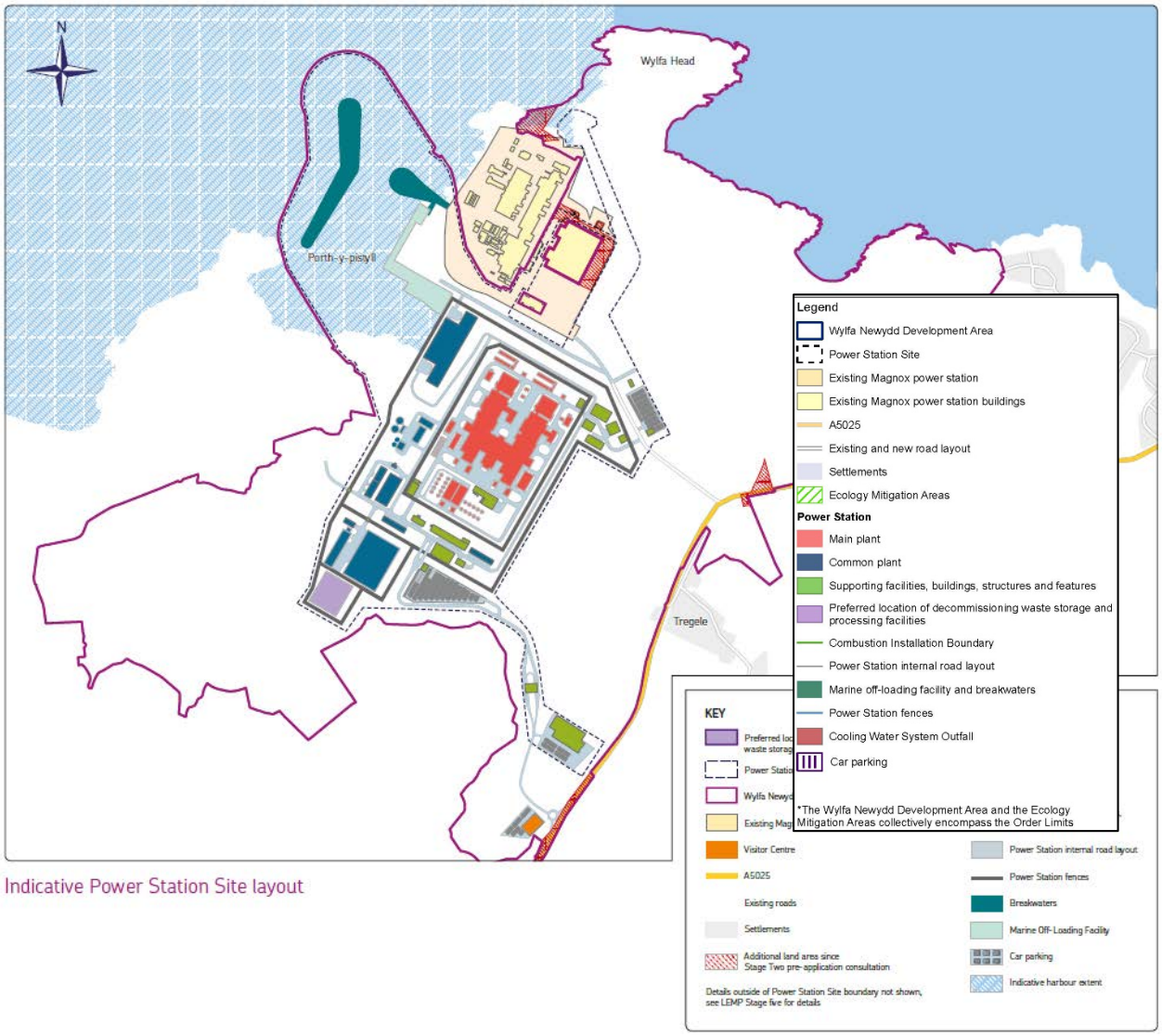
8 Operational Strategy

8.1.1 This chapter sets out the transport-related proposals for the operation of the Wylfa Newydd Project. It identifies the transport measures for operational staff, including during outage periods, as well as handling of freight for daily requirements as well as occasional larger loads.

8.1.2 As described earlier, the operational requirements will not be dissimilar to those already established at the adjacent Existing Power Station, which is anticipated to no longer be operational once the Power Station is completed. Therefore, any additional measures will provide a longer term enhancement to the current transport conditions and could lead to a potential reduction in operational vehicle trips associated with the Power Station when compared to the Existing Power Station.

Figure 8-1 Layout of Permanent Power Station





Indicative Power Station Site layout

8.1 Road

8.1.1 The proposed highway improvements for the A5025 between Valley and the Power Station Site will be left in place to provide a lasting benefit to both residents and visitors to Anglesey. In particular, residents who live in Llanfachraeth and Llanfaethlu will benefit from reduced traffic movements passing their residences as by-passes will be provided to route through traffic away from these settlements. Residents in Cefn Coch and Valley will also benefit from realignment of the through route, in many cases increasing the distance between properties and moving traffic

8.1.2 In addition, the improvements will provide enhanced overtaking opportunities at a number of locations, which will improve the flow of traffic along the principal north/south route on the western side of Anglesey.

8.1.3 Improvements to Nanner Road are proposed to provide a lasting legacy benefit through the provision of new and formalised passing bays, highway widening and highway reconstruction in a number of locations.

8.2 Bus

8.2.1 The construction of the Power Station will require a significant number of buses to transport workers to and from their accommodation and Park and Ride sites on a daily basis. The source of these vehicles has yet to be determined, though it is likely that a number of new vehicles will need to be purchased in order to fulfil the transport requirements, with a proportion of these buses likely to be low emission vehicles.

8.2.2 Horizon will work with IACC and local public transport operators to provide adequate local bus services to and from the Power Station in response to demand at the time.

8.3 Rail

8.3.1 Given the distance of the existing railway from the Power Station and the predicted catchment area for operational workers, it is unlikely that rail travel will be an attractive alternative for the vast majority of those on a daily commuting pattern. The opportunities are likely to be limited to those living close to Bangor city centre, who can travel by rail to Valley or Holyhead.

8.3.2 As part of its discussions with bus operators, Horizon will explore the potential for enhanced bus connections between the Power Station and Holyhead and Valley railway stations along its route.

8.3.3 Through the implementation of an Operational Travel Strategy, Horizon will be able to monitor the number of staff that travel by rail via annual travel surveys.

8.4 Air

8.4.1 The number of operational staff who could travel to the Power Station via Anglesey Airport is likely to be limited. The Census data obtained for those working at the Existing Power Station indicates that only around 10% of workers live on the mainland with the majority of these living in the environs of North Wales and a small proportion further afield around Liverpool and Manchester. As such air is not likely to be an appropriate travel option for day-to-day staff.

8.4.2 A number of ad-hoc journeys will be made by Horizon staff to the Power Station Site for meetings/briefings and training during the operational period, some of which could be via air travel. However, these are likely to be broadly similar to the existing patronage on flights between Cardiff and Anglesey. As such, no additional air facilities are proposed at either Anglesey or Cardiff Airports.

8.4.3 Hitachi GE may on occasion, send existing or new employees to the Power Station Site or the training and simulator facility for training purposes. However, these air trips are likely to be made to larger, international airports such as Manchester, Liverpool or Heathrow with the onward journey encouraged to be made by rail.

8.5 Walking and cycling

8.5.1 On-site cycle facilities will be provided and maintained for members of staff and visitors including cycle parking, changing facilities with showers and lockers, and areas where wet clothes can be dried to ensure that walking and cycling are attractive alternatives to the private car for those living within comfortable distance of the Power Station.

8.5.2 A number of Public Rights of Way will be diverted during the construction stage to accommodate the Power Station Site, including the Wales Coast Path. The diversions have been subject to discussions with IACC and the Project will ensure that the Public Rights of Way still provide continuous, joined-up routes designed to limit the impact on the visual amenity provided for those walking the paths.

8.5.3 A section of shared use footway/cycleway will be provided along the eastern section of the A5025 between the Public Right of Way 18/08/1 and the minor road which runs west from the northernmost extent of section 3 towards Llanfwrog.

8.6 Parking

8.6.1 In total up to 500 car parking spaces will be provided for those working or travelling to the Power Station during the operational period. Dedicated spaces for car sharers and electric vehicle charging will be provided in preferential locations close to the Power Station entrance to encourage use of sustainable travel. Provision will also be made to park and turn larger HGVs, public services vehicles and buses.

8.6.2 Subject to future demand, Horizon may choose to develop and implement a parking permit allocation strategy as part of implementing a Travel Plan, to ensure that only those who are unable to access the Power Station Site by more sustainable means are allocated a parking permit. Signed designated pedestrian routes will also be provided throughout the Power Station Site.

8.6.3 During outage periods additional parking areas will be available within close proximity to the Power Station Site to accommodate the increased demand. These car parks would only be made available for outage periods and therefore could be constructed using aesthetically blending products that will better complement the visual amenity of the area surrounding the Power Station Site.

8.7 Freight

8.7.1 All incoming deliveries will arrive at the Power Station Site for checking and unloading into an on-site warehouse. Standard freight management measures will be adopted during periods of outage when increased volumes of HGVs may be expected.

8.7.2 The MOLF will be retained throughout the operational phase. This allows any AILs that need to be transported to the Power Station Site to arrive by sea rather than travelling by road on the A5025. However, it will not be used for the transportation of nuclear materials. It could also play an important role in the eventual decommissioning of the Power Station as a significant amount of large structural items including steel, rock armour and reinforced concrete may need to be transported away from the Power Station Site during this period.

8.8 Smarter Travel

8.8.1 The Operational Travel Strategy will reduce the environmental effects of operational traffic by encouraging and promoting car sharing, bus services, cycle parking and key walking routes.

8.8.2 All measures to encourage sustainable travel will be promoted by a Travel Plan Coordinator (TPC) appointed for the Power Station during the operational phase. The TPC will be suitably trained and qualified for the role.

8.8.3 The TPC is key to the success of the Operational Travel Strategy and will represent the main driving force behind the travel plan. The key responsibilities of the TPC will be as follows:

- lead, actively promote and publicise the Operational Travel Strategy;
- ensure that information on sustainable travel opportunities is provided (and regularly updated);
- ensure the Operational Travel Strategy is easily available (by a variety of platforms);
- ensure the Operational Travel Strategy becomes part of the site management policy and its aims and information are broadcast via other associated literature;
- be a point of a contact for information and resolve any transport-related problems;
- develop new initiatives, implement and manage the Operational Travel Strategy and disseminate information to staff at regular intervals;
- develop and launch a staff travel survey to inform future Operational Travel Strategy development; and
- ensure that the objectives and targets under the Operational Travel Strategy are set up and being met.

8.8.4 The key measures currently under consideration for inclusion within the Operational Travel Strategy are:

- staff will be encouraged to use Traveline Cymru to plan their most efficient travel route(s). If this service is not available, the TPC will look at alternative systems. New members of staff joining the Power Station workforce post-opening will be similarly encouraged to use these systems;
- canteen facilities will be provided on-site to reduce the need for trips during working hours;
- video conferencing facilities will be provided and promoted as an alternative method of holding meetings rather than travelling;
- where appropriate, staff will be provided with suitable equipment to enable flexible working, for example, working from home and away from the office.
- sustainable Travel Information outlining the travel options to the site, links to the car share database and other websites displaying key information, will be part of the induction materials provided to staff; Horizon will promote car sharing and lift sharing between employees using internal media, for example, the intranet or a mobile app;if still available when the site becomes operational, Horizon will sign up to the UK Government's Cycle to Work scheme, which enables employees to purchase a bicycle and ancillary equipment through their employer,

providing tax benefits. If the Cycle to Work scheme has been discontinued, the TPC will look at the alternative options available.

- on-site cycle facilities will be provided and maintained for members of staff and visitors including cycle parking, changing facilities with showers and lockers, and areas where wet clothes can be dried.
- commitment to restrict parking at the Power Station Site to accommodate only operational demand. This will limit the number of single occupancy vehicles travelling to the Power Station Site;
- parking spaces on site for car sharers will be prioritised and a suitable number of car share spaces will be available;
- electric vehicle charging points will be provided in the main staff car park to incentivise the use of sustainable transport, compatible with others across Anglesey and North Wales;
- staggered shift times will be implemented to reduce peak hourly flows associated with private vehicle and bus movements.;

8.8.5 A review of the Operational Travel Strategy will be undertaken with IACC and Welsh Government on a regular basis by the Travel Plan Coordinator. Appropriate monitoring will be discussed and agreed

8.8.6 The Code of Construction Practice (Application Reference Number: 8.6) for the Power Station supports the DCO application for the Wylfa Newydd Project and provides the mechanism to implement a Travel Plan.

9 Summary

9.1.1 Overall the ITTS has the following goals and approach:

"Through our integrated approach to traffic and transport, we are committed to improving the transport system while reducing adverse effects on communities and the environment.

Our approach sets out how we intend to transport construction workers and materials to the Power Station Site by road, rail and sea. It shows our commitment to road safety; promoting sustainable travel by making fewer journeys; and leaving a lasting transport legacy after the construction phase of the Project."

9.1.2 The ITTS has been developed in tandem with the development of the design of Wylfa Newydd Project and the measures to mitigate and manage the transport impacts of the Project are incorporated into the design of the Project either as embedded or good practice mitigation, as summarised in table 9-1 and table 9-2.

Table 9-1 Embedded mitigation – physical

Mitigation	Description
Marine Off-Loading Facility	A facility comprising purpose-built quays and ramp to allow delivery of freight such as Abnormal Indivisible Loads and construction materials by sea.
Logistics Centre	An Off-site facility at which deliveries can be regulated and the timing of traffic movements to the Wylfa Newydd Development Area can be controlled during both the Enabling Works and Main Construction stages.
Site Campus	The Site Campus is a temporary facility that would house up to 4,000 construction workers in modular accommodation blocks, providing an independent living space for each worker, with shared campus-style amenities.
Park and Ride facility at Dalar Hir	Park and Ride facility at Dalar Hir to minimise travel in private vehicles, particularly on the A5025 by construction workers who would live in existing accommodation, including on the mainland.
A5025 Highway Improvements	Infrastructure improvements (including three bypasses) to the A5025 to improve safety and reduce traffic along particularly sensitive sections of the A5025.
Associated bus services for the Park and Ride facility at Dalar Hir	Bus service from the Park and Ride facility at Dalar Hir to the Power Station Site to minimise travel by private vehicles, particularly on the A5025.
Shuttle bus services for construction workers living on	Shuttle buses for workers living in existing accommodation to reduce the need for the use of private cars to access the Power Station Site during construction. Shuttle buses will

Mitigation	Description
Anglesey and the mainland	serve rail stations at Holyhead and Bangor if required.
Provision of a new bus stop on A5 at Dalar Hir	New bus stop to improve access to the Park and Ride facility from local towns and villages for construction workers and operational staff at the facility.
Improvements to Fisherman's Car Park access road to access the Site Campus	Widening of the access road to the Fisherman's car park to provide access to the Site Campus and provide an improved road for existing users.
Wylfa Head Coastal Path	Circular loop of the Wales Coast Path around the National Trust Headland to be diverted during construction.

Table 9-2 Good practice mitigation – management

Mitigation	Description
Measures within the Code of Construction Practice	A Code of Construction Practice (Application Reference Number: 8.6) has been produced which contains proposed environmental management requirements and measures that will be adhered to throughout the construction of the Power Station to manage impacts.
Measures within the Code of Operational Practice	A Code of Operational Practice (Application Reference Number: 8.13) has been produced which contains proposed environmental management requirements and measures that will be adhered to throughout the operation of the Power Station to manage impacts.

9.1.3 The measures described in the ITTS will be implemented during the construction and operation of the Wylfa Newydd Project and the resulting transport impacts are considered in the Transport Assessment for the scheme (Application Reference Number: 6.3.14).

10 References

Table 10-1 Schedule of references

ID	Reference
RD1	Department of Energy & Climate Change. 2011. *Overarching National Policy Statement for Energy (EN-1)*. [Online]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf
RD2	Department of Energy & Climate Change. 2011. *National Policy Statement for Nuclear Power Generation (EN-6)*. [Online]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47859/2009-nps-for-nuclear-volumeI.pdf
RD3	Welsh Government. 2014. *Welsh Transport Planning and Appraisal Guidance (WelTAG)*. [Online]. Available at: http://gov.wales/topics/transport/planning-strategies/weltag/?lang=en
RD4	Horizon Nuclear Power. 2017. *Statement of Community Consultation*. [Online]. Available from: https://www.horizonnuclearpower.com/files/downloads/SOCC/SOCC%20May%202017%20ENG.pdf
RD5	Welsh Assembly Government. 2008 Update. *People, Places, Futures: The Wales Spatial Plan.* [Online]. Available from: http://gov.wales/docs/desh/publications/130701wales-spatial-plan-2008-update-en.pdf
RD6	Welsh Government. 2007. *Technical Advice Note (TAN) 18: Transport*. [Online]. Available at: http://gov.wales/topics/planning/policy/tans/tan18/?lang=en
RD7	Welsh Government. 2016. *Planning Policy Wales.* Edition 9. [Online]. Available from: http://gov.wales/topics/planning/policy/ppw/?lang=en
RD8	Welsh Assembly Government. 2008. *One Wales: Connecting the Nation, The Wales Transport Strategy.* [Online]. Available from: http://gov.wales/docs/det/publications/140909-transport-strategy-en.pdf
RD9	Welsh Government. 2015. *National Transport Finance Plan.* 2015. [Online]. Available at: http://gov.wales/docs/det/policy/150722-ntfp15-en.pdf
RD10	Wales Office. 2014. *Building a more prosperous Wales: Infrastructure for a modern economy*. [Online]. Available from: https://www.gov.uk/government/publications/a-more-prosperous-wales-infrastructure-for-a-modern-economy
RD11	Anglesey, Conwy, Denbighshire, Flintshire, Gwynedd and Wrexham Councils. 2009. *North Wales Regional Transport Plan.* [Online]. Available from: http://www.flintshire.gov.uk/en/PDFFiles/Planning/North-Wales-Regional-Transport-Plan-2009.pdf
RD12	Conwy, Denbighshire, Flintshire, Gwynedd, Isle of Anglesey and Wrexham County Councils. 2015. *North Wales Joint Local Transport Plan 2015*.

	[Online]. Available from: http://www.flintshire.gov.uk/en/PDFFiles/Planning/LDP-evidence-base/Local/North-Wales-Joint-Local-Transport-Plan-2015.pdf
RD13	Isle of Anglesey and Gwynedd County Councils. 2017. *Anglesey & Gwynedd Joint Local Development Plan*. [Online]. Available at: http://www.anglesey.gov.uk/planning-and-waste/planning-policy/joint-local-development-plan-anglesey-and-gwynedd/
RD14	Isle of Anglesey County Council. 2014. *New Nuclear Build at Wylfa: Supplementary Planning Guidance*. [Online]. Available at: http://www.anglesey.gov.uk/business/energy-island/energy-island-news/new-nuclear-build-at-wylfa-supplementary-planning-guidance/123426.article
RD15	Isle of Anglesey County Council. 2008. *Supplementary Planning Guidance: Parking Standards*. [Online]. Available at: http://www.anglesey.gov.uk/Journals/public/attachments/78/SPG_PARKING_ADOPTED.pdf
RD16	Institute of Environmental Assessment. 1993. *Guidelines for the Environmental Assessment of Road Traffic*. NBS
RD17	Highways England. 2017 Update. *Design Manual for Roads and Bridges*. [Online]. Available at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/index.htm
RD18	Department for Transport. 2014. *Guidance on Travel Plans, Transport Assessments and Statements*. [Online]. Available at: https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements
RD19	Chartered Institution of Highways & Transportation. 2005. *Car Sharing- Factsheet 03*. [Online]. Available at: http://www.ciht.org.uk/en/document-summary/index.cfm/docid/40CF0014-B83F-4E0F-9C561E0922481A10
RD20	Network Rail. 2010. *Output Definition Report: Llangefni- Gaerwen Junction Branch Line re-opening.* [Online]. Available at: http://gov.wales/docs/det/policy/101101llangefni.pdf
RD21	Network Rail. 2013. *A Better Railway for a Better Britain.* [Online]. Available at: http://16cbgt3sbwr8204sf92da3xxc5m-wpengine.netdna-ssl.com/wp-content/uploads/2016/11/A-better-railway-for-a-better-Britain-January-2013.pdf
RD22	National Grid Website for North Wales Connection: http://www.northwalesconnection.com/
RD23	Isle of Anglesey County Council. 2014. *New Nuclear Build at Wylfa Supplementary Planning Guidance: Topic Paper 5- Transport*. [Online]. Available from: http://www.anglesey.gov.uk/business/energy-island/energy-island-news/new-nuclear-build-at-wylfa-supplementary-planning-guidance/123426.article
RD24	Network Rail. 2017. *Route Specifications Wales*. [Online]. Available at:

	https://www.networkrail.co.uk/running-the-railway/our-routes/wales/
RD25	Isle of Anglesey County Council. 2013. *Isle of Anglesey County Council Cycling Strategy*. [Online]. Available at: http://democracy.anglesey.gov.uk/documents/s3404/The%20Councils%20Cycling%20Strategy.pdf?LLL=0
RD26	Network Rail. 2008. *Route Utilisation Strategy*. [Online]. Available at http://archive.nr.co.uk/browseDirectory.aspx?root=&dir=%5cRUS%20Documents%5cRoute%20Utilisation%20Strategies%5cWales
RD27	Network Rail. 2016. *Welsh Route Study*. [Online]. Available at https://cdn.networkrail.co.uk/wp-content/uploads/2016/11/Welsh-Route-Study.pdf
RD28	Halcrow. 2010. *Heavy Route and MOLF Strategy Study*.
RD29	Department for Business, *Energy and Industrial Strategy. 2017. Statement on Energy Infrastructure.* [Online]. Available at: http://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Lords/2017-12-07/HLWS316/

Appendix 10-1 Appendix A – Freight Transport Routes

10-1.1 Introduction

10-1.1.1 This document provides a review of potential methods of transporting construction materials to the Wylfa Newydd Development Area.

10-1.1.2 A number of documents have been reviewed as part of the assessment of potential options for the transportation of materials associated with the construction stage of the Wylfa Newydd Nuclear Power Station. A large tonnage of materials is required to be transported to the Wylfa Newydd Development Area along with a number of other locations associated with the construction phase, including Site Campus, AECC/ESL/MEEG, Park & Ride and a Logistics Centre. However, the vast majority of materials is required at the Wylfa Newydd Development Area, for which a Marine Off Loading Facility (MOLF) is proposed to be constructed to enable sea-based transport to be used. The three principle modes of transportation for construction materials are road, sea and rail, and they have been considered in this report.

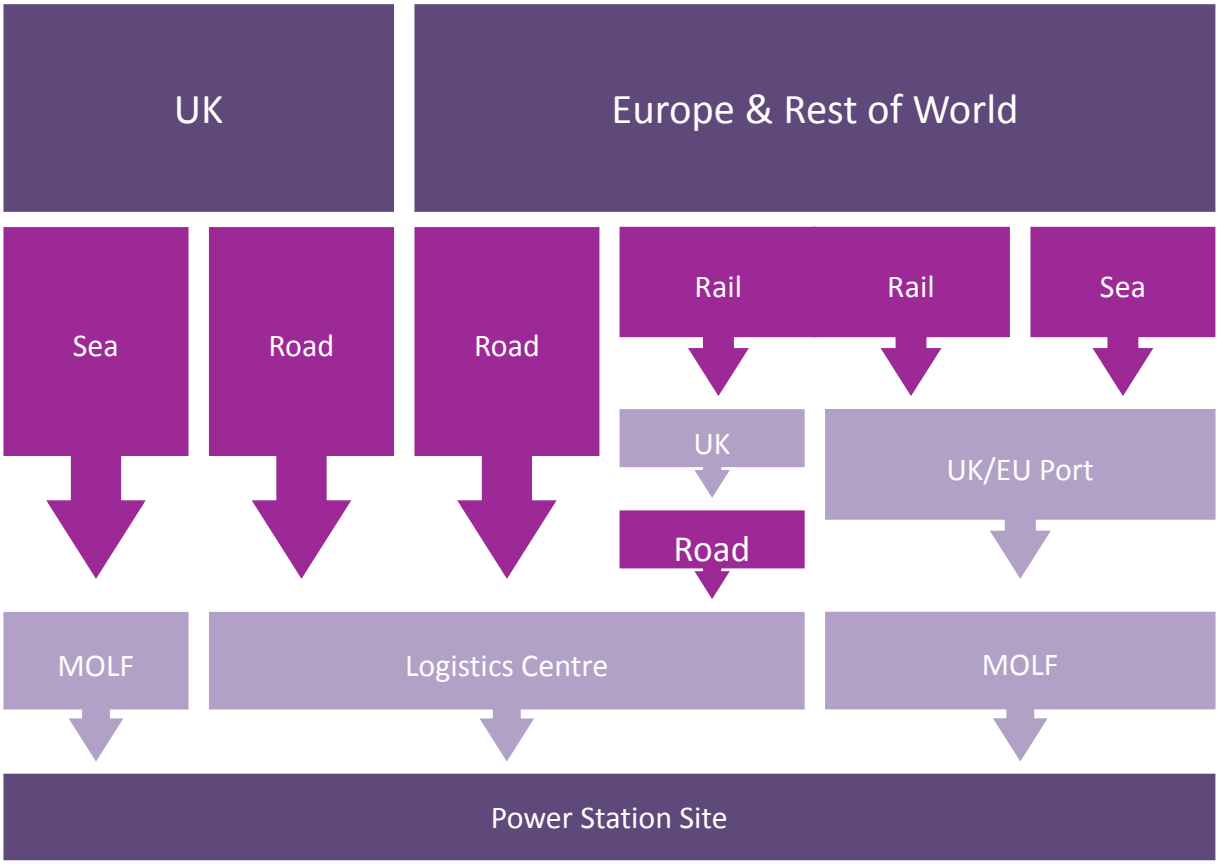
10-1.1.3 The primary source of information for this assessment is Halcrow's *Heavy Route and MOLF Strategy Study* (2010) [RD28] produced on behalf of Horizon Nuclear Power (HNP). This established a clear understanding of the physical constraints and practicalities of the delivery of abnormal loads and bulk materials to the Wylfa Newydd Development Area by different transport modes. This included the financial viability of different transport modes, taking account of any infrastructure improvements required to accommodate such movements.

10-1.1.4 A secondary source of information is Hitachi Transport Systems' detailed study of sea transport in 2014 for the delivery of major equipment and effective delivery of other materials to a Marine Off Loading Facility (MOLF) located within the Wylfa Newydd Development Area. Each of these studies engaged with the operators of ports and assessed each port's capabilities that were applicable at that time.

10-1.2 Findings of review

10-1.2.1 There are a number of potential freight paths that could be utilised to transport construction materials to the Wylfa Newydd Development Area, and they are summarised in figure 2-1 below.

Figure 10-2 Potential freight transport routes



10-1.1.1 These routes form the basis of this review and they are summarised in table 3-1 later in this report, while detailed assessments are outlined in tables 3-2 to 3-6.

10-1.1.2 The MOLF represents a key element of the freight transport infrastructure, and it is required to transport the major reactor components that would be classed as Abnormal Indivisible Loads (AILs). Alternative routing for a large proportion of these components is not possible due to constraining factors on the road network which provides connections to port or rail terminal facilities. These reactor components will be delivered by sea from Japan to a port facility where modularisation can be carried out, before being transported by sea directly to the MOLF on a roll-on/roll-off (RoRo) type vessel. The port or dock facility to be used for modularisation will be selected by the Principal Contractor post-DCO consent. The MOLF has the potential to accommodate the majority of construction materials associated with the Wylfa Newydd Project, representing a significant investment which aligns with the ITTS outcomes and objectives relating to sustainable modes transport.

10-1.1.3 The local context of the key transport routes can be summarised into the following:

- Sea via Marine Off Loading Facility
- Sea via Holyhead, then road to site
- Road via Britannia Bridge and A5025
- Rail via Valley, then road to site
- Rail via Holyhead, then road to site

10-1.1.4 There are potentially other alternatives not contained within the above list, either as a minor variation of routes or options not considered. Examples of these provided by stakeholders include using UK rail to a port for onward sea transport or using the Amlwch branch line to transport goods to Rhosgoch with onward travel by road. The majority of permutations can be covered by the routes already identified as they can be considered to use a variety of transport modes to reach a port, for example.

10-1.1.5 In the case of the Amlwch branch line, this option was considered to be cost prohibitive unless a significant proportion of materials could be transported by rail. The anticipated cost of reopening the branch line was estimated to be in the region of £100m, while additional significant highway improvements would likely be required along the A5025 at further cost. Given the policy preference for sea transport over rail, the need for a marine facility to accommodate AILs and the wider selection of suppliers that sea transport offers, it was discounted at an early stage.

10-1.1.6 An assessment of these freight route options has been undertaken to identify the key strengths and weaknesses of each option, including the financial viability, constraints and opportunities. These have been assessed in relation to three main types of goods, as follows:

Raw bulk

10-1.1.7 The largest proportion of materials by weight relates to the bulk materials for concrete production, comprising aggregate, sand, cement and rebar. These may be sourced from the UK or the EU, potentially with more than one origin due to the vast requirements of the project. The MOLF has been designed to provide a number of bulk berths where such materials can be unloaded into silos ready for concrete production at the batching plant. Appropriately sized vessels will be used to transport these materials direct from a UK or EU based port.

10-1.1.8 Transporting this type of material by rail would require up to three trains per day during peak construction, limiting the source of materials to the UK. A lack of existing rail infrastructure in the vicinity of Wylfa Newydd would also require onward transport to the Wylfa Newydd Development Area via road.

10-1.1.9 Transporting bulk materials by road would add substantial volumes of lorries to the road network and would not be a cost effective option. Once the MOLF is complete, it is estimated that around 238,000 HGV deliveries

would be required over the remaining duration of the project to deliver the equivalent of these materials. However, there may still be a need to deliver a proportion of these materials by road if there are supply delays, such as extended periods of bad weather, to top up the on-site stockpile.

10-1.1.10 The MOLF itself requires around 300,000 tonnes of pre-cast units, which will be cast off-site and transported to the MOLF via barge and placed directly to create the dockside area. The size of some of these units is too large in size and/or weight to be transported by road. However, these are categorised as bulk materials and the design could theoretically be altered to accommodate smaller units to enable road transport to be used.

Common / palletised goods

10-1.1.11 A large proportion of goods will consist of common building materials, food and consumables, which can mostly be palletised and will likely be sourced in the UK. These types of goods would typically be delivered by road by a wide range of suppliers from across the UK by standard goods vehicle, e.g. curtain sided or flat-bed vehicles.

10-1.1.12 Transporting by sea or rail could logistically be unrealistic for the majority of such goods, although bulk orders of specific goods from a suitable location may offer alternative delivery routes. These would need to be considered on a case-by-case basis by the Principal Contractor.

Containerised goods

10-1.1.13 Some of the specialist products and components will be sourced from origins outside the UK and can be containerised. The MOLF will be designed to cater for vessels around 100 metres long and will therefore not be able to accommodate large ocean-going vessels. Containerised goods travelling by sea from abroad would be expected to arrive at a major UK port via existing frequent shipping routes such as large container ships with onward transport being required.

10-1.1.14 Aside from requiring infrastructure improvements to provide rail terminal facilities, transportation of goods by rail is limited by two key constraints, these being the loading gauge and the number of freight paths available. The current restricted loading gauge of W7, as indicated in Network Rail's *Wales Route Utilisation Strategy* (2008) [RD26], precludes movement of many of the larger containers now used in both deep-sea and short-sea shipping, which require the 'W10' gauge. Although such containers can be moved on special wagons where the loading gauge is less than W10, there are only limited numbers of such wagons available and their deployment adds both costs and complexity.

10-1.1.15 Based on Network Rail's *Welsh Route Study* (2016) [RD27], proposals to increase passenger services to 4 trains per hour (tph) from a current service of 3 tph will restrict the potential for rail freight as train paths will no longer be available during hours when passenger service frequencies reach this level. There may be some available train paths as the current Virgin Trains service, which represents 1 tph, does not operate in every

hour. Otherwise, night time deliveries would be relied upon, which could result in unacceptable noise levels for unloading and transporting of material.

10-1.1.16 Additional goods require delivery or export from the site, as follows:

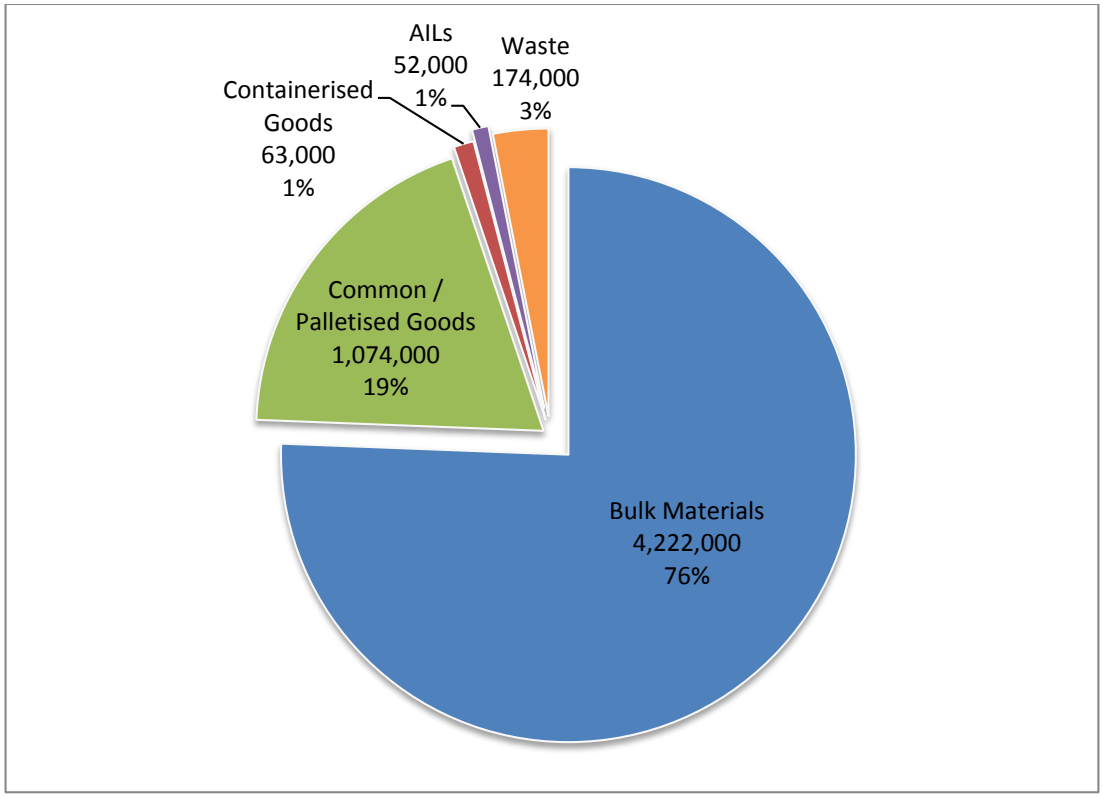
- abnormal indivisible loads (AILs); and
- waste (construction and commercial).

10-1.1.17 AILs included within this list comprise the components that will form the Power Station, for example transformers and reactor vessels. The size of these goods is such that marine transport has been selected as the only practical method of transport for a large proportion of these.

10-1.1.18 Waste has been considered by relevant stakeholders in order to reach agreement on the site-wide Integrated Waste Strategy and the transport method for exporting this type of goods is only one aspect of the overall strategy. A key component of the strategy has been to re-use as much material on-site as possible. The ground profile has therefore been designed to ensure that no excavated material is required to be exported from the Wylfa Newydd Development Area. Over 10 million tonnes of material will either be used to construct the breakwaters or re-profiled around the Wylfa Newydd Development Area as landscaping and screening, thereby avoiding significant logistical considerations. The only waste being exported from the site will include items such as construction packaging, hazardous waste and commercial type waste from the Worker Campus, construction offices and canteens. This will be spread across the whole construction period.

10-1.1.19 To inform the assessment, a summary of the split of each of these goods types is illustrated in Figure 2-2, without any assignment of transport mode.

Figure 10-3 Summary of freight types



10-1.3 Assessment of Route Options

Key Assumptions

10-1.3.1 An important consideration for transporting goods relates to cost. The overall costs should take into account the infrastructure needed to accommodate such transport modes, for example road improvements or MOLF, as well as the supplier's transport costs per vehicle/vessel/wagon per mile for each mode.

10-1.3.2 The overall cost for a specific type of goods has been estimated and then has been divided by the number of tonnes to be delivered to provide a cost per tonne as a method of comparison. The costs in the following tables are factored to a common year of 2017 to ensure that a robust comparison can be made between transport routes.

10-1.3.3 For some modes, the cost of additional infrastructure has been considered, such as a continued need to construct the A5025 Off-line improvements. For all scenarios, it has been assumed that the A5025 On-line improvements will be implemented as they will be required to accommodate worker traffic and are therefore not factored into the costs. No costs relating to A55 shadow tolls have been included as this information is not publicly available.

10-1.3.4 For the assessment of each mode, 100% of goods have been assumed to be transported via that specific mode as the most economical and practical option would be to apply such a proportion. Any reduction in the use of a specific mode would increase the cost per tonne. The effect of doing so can be considered on an individual basis between different types of goods and transport modes to reflect realistic logistics, but would be inappropriate to do so for contingency purposes in terms of the assessment. This includes use of the MOLF, for example, whereby assessment of transport routes do not automatically allow for operation of the MOLF as this is only one option when considering a range of routes.

10-1.3.5 Freight calculations have been based upon a key principle of having at least two weeks' storage of construction materials on-site and three weeks' storage for bulk materials. This avoids the need for "just in time deliveries" which could be affected by adverse weather conditions or major incidents on the road network, for example. The only exception to this would be perishables, such as fresh food supplies for the canteens.

Assessment Tables

10-1.3.6 Table 3-1 provides a summary of the freight transport routes while Tables 3-2 to 3-6 provide further detail on each option.

Table 10-2 Summary of Freight Transport Routes

	Sea via MOLF	Sea via Holyhead	Road via Britannia Bridge	Rail via Valley	Rail via Holyhead
Description of facility and arrangements	New Marine Off Loading Facility provided adjacent to Wylfa.	New port terminal facilities required together with transfer facility to road for transfer along A5025 to Wylfa.	Using existing road network and new off-line alignments on A5025.	Additional rail siding provided at Valley with loading facilities to transfer from rail to lorry to Wylfa using A5025.	New port terminal facilities required together with transfer facility to road for transfer along A5025 to Wylfa.
Indicative capital costs for implementation of facility	£75m	£5.2m (+£40m A5025 Off-line)	£40m	£2.9m (+£40m A5025 Off-line)	£6.5m (+£40m A5025 Off-line)
Site requirements / need for land purchase / CPO	Land already within control of HNP	New land required adjacent to port. Scheme to be delivered by Stena	New land required to provide bypasses along A5025	Needs new land adjacent to railway sidings.	Needs new land adjacent to railway sidings.
Impact on programme for Wylfa	Achievable within existing programme, subject to Marine Licence	Reliant on Stena to deliver, risk of delay to programme	Achievable within existing programme	Reliant on Network Rail negotiations, risk of delay to programme	Reliant on Network Rail negotiations, risk of delay to programme
Legacy	Future transport option during Wylfa operation to minimise traffic effects	Upgraded port facilities	New bypasses	Expanded rail facility provided	New rail freight facility provided
Environmental issues	Likely minimum interaction with receptors, reduces traffic volumes along A5025.	Likely to interact with a small number of receptors, unlikely to reduce traffic volumes along A5025.	Likely to interact with range of receptors during construction of bypasses and from Wylfa construction traffic.	Likely to interact with range of receptors during construction of facilities, unlikely to reduce traffic volumes on A5025.	Likely to interact with a small number of receptors, unlikely to reduce traffic volumes along A5025.
RAW BULK (76%)					

	Sea via MOLF	Sea via Holyhead	Road via Britannia Bridge	Rail via Valley	Rail via Holyhead
Handling requirements	Producer to ship to MOLF – handled once	Producer to ship to lorry to site – handled twice	Producer to lorry to site – handled once	Producer to rail to lorry to site – handled twice	Producer to rail to lorry to site – handled twice
Total no. of vessels / trains	1,750	1,750	n/a	4,750	4,750
Total no. of lorries over Britannia Bridge (A55)	0	0	260,500 (one-way)	0	0
Total no. of HGVs on A5025	0	260,500 (one-way)	260,500 (one-way)	260,500 (one-way)	260,500 (one-way)
Overall cost per tonne	£48	£45	£35	£21	£23
COMMON / PALLETISED GOODS (19%)					
Handling requirements	Producer to lorry to ship to MOLF – handled twice	Producer to lorry to ship to lorry to site – handled three times	Producer to lorry to site – handled once	Producer to lorry to rail to lorry to site – handled three times	Producer to lorry to rail to lorry to site – handled three times
Total no. of vessels / trains	630	630	n/a	4,200	4,200
Total no. of HGVs over Britannia Bridge (A55)	0	0	126,000 (one-way)	0	0
Total no. of HGVs on A5025	0	126,000 (one-way)	126,000 (one-way)	126,000 (one-way)	126,000 (one-way)
Overall cost per tonne	£94	£63	£58	£59	£64
CONTAINERISED GOODS (1%)					

	Sea via MOLF	Sea via Holyhead	Road via Britannia Bridge	Rail via Valley	Rail via Holyhead
Handling requirements	Producer to lorry to ship to UK port to MOLF – handled three times	Producer to lorry to ship to UK port to Holyhead to lorry to site – handled four times	Producer to lorry to site – handled once	Producer to lorry to rail to lorry to site – handled three times. Also requires low loader wagons.	Producer to lorry to rail to lorry to site – handled three times. Also requires low loader wagons.
Total no. of vessels / trains	104	104	n/a	550	550
Total no. of HGVs over Britannia Bridge (A55)	0	0	10,400 (one-way)	0	0
Total no. of lorries on A5025	0	10,400 (one-way)	10,400 (one-way)	10,400 (one-way)	10,400 (one-way)
Overall cost per tonne	£74	£165	£57	£132	£192

Table 10-3 Delivery of Construction Materials – Sea via MOLF – Further Details

	Sea via MOLF
Description of facility and arrangements	New Marine Off Loading Facility provided adjacent to Wylfa. This facility will include two bulk berths and a RoRo berth to allow unloading of bulk materials and major reactor components.
Indicative capital costs for implementation	£75m (2017 HNP budget estimate)
Site requirements / need for land purchase / CPO	The site identified for the MOLF lies within the Wylfa Newydd Development Area, adjacent to the Nuclear Island construction area. No requirement for additional land purchase or CPO.
Impact on programme for Wylfa	Current programme is designed around the construction period for the MOLF and delivery of key components on the critical path for construction of Unit 1.
Legacy	The MOLF can be used for future maintenance of the Wylfa Newydd Power Station during the operational stage in the event of replacement of major components and for decommissioning purposes. This will reduce future environmental effects on the local road network.
Environmental issues	Likely to interact with a number of marine receptors, such as water quality and marine habitat. However, unlikely to impact air quality and noise receptors. This option avoids impacts on roadside receptors, except during construction of the facility.
RAW BULK (76%)	
Handling requirements	Assuming the producer/supplier is located adjacent to a port facility in the UK, the bulk materials would be transported onto a ship to be transported direct to the MOLF. This would result in materials being handled just once. If outside the UK, these would have to travel via a customs port before onward travel to the MOLF, which could lead to additional handling.
Total no. of vessels / trains	1,750 vessels – results in a peak of 39 vessels per month, within capacity of berths taking into account average seasonal weather conditions.
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs
Total no. of HGVs on A5025	0 HGVs
Indicative transport cost (capital + operational)	£48 per tonne
COMMON / PALLETISED GOODS (19%)	

	Sea via MOLF
Handling requirements	Goods from a producer would need to be transported by lorry to a UK port onto a ship and then direct to the MOLF. This would result in goods being handled twice. It would be unrealistic to assume that all common / palletised goods could be transported by sea due to timing of travel (impact on fresh food) and distance from producer, effectively excluding North Wales suppliers. A significant level of consolidation from a wide range of suppliers would be required to ensure sea transport (using 1,500 dwt vessels) was efficient for this type of goods, which is likely to have a subsequent impact on programme. Some opportunities may exist for specific bulk orders.
Total no. of vessels / trains	630 vessels – this would require an additional berth to accommodate this volume of ships with further cost, estimated to be around £10m, including dockside unloading facilities. Occasional opportunities are likely to be able to use the existing MOLF design, including dockside cranes.
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs
Total no. of HGVs on A5025	0 HGVs
Indicative transport cost (capital + operational)	£94 per tonne plus handling x2 for 100% of goods £15 per tonne plus handling x2 for 5% of goods (excludes capital cost)
CONTAINERISED GOODS (1%)	
Handling requirements	Specialist goods from an overseas producer would need to be transported by lorry to a standard container ship in the origin country to travel along regular shipping routes to a UK port and then onto another ship direct to the MOLF. This results in goods being handled a minimum of three times. A reasonable level of consolidation from a large number of incoming container vessels would be required to ensure sea transport (using 1,500 dwt vessels) was efficient for this type of goods, which could have a subsequent impact on programme. Some opportunities may exist for specific bulk orders.
Total no. of vessels / trains	10,400 containers @ 100 per vessel = 104 vessels – this volume of ships could be accommodated within the existing MOLF design.
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs
Total no. of HGVs on A5025	0 HGVs
Indicative transport cost (operational)	£74 per tonne plus handling x3

Table 10-4 Delivery of Construction Materials – Sea via Holyhead – Further Details

	Sea via Holyhead
Description of facility and arrangements	New port terminal facilities required together with transfer facility to road for transfer along A5025 to Wylfa. This would require improvements to existing berthing facilities, craneage, indoor/outdoor storage areas to allow of materials. This route would not accommodate a number of the AIL deliveries due to their physical size and the constraints along the A5025.
Indicative capital costs for implementation	£5.2m (2017 indexed from Halcrow report estimate)
Site requirements / need for land purchase / CPO	The port is currently at capacity and would require new land being reclaimed in order to avoid affecting the port's operations. The scheme would need to be delivered by Stena, as operators of the port.
Impact on programme for Wylfa	New facilities at Holyhead Port would be reliant upon delivery by Stena, for which the current programme does not meet the requirements for the Wylfa Newydd Project.
Legacy	The facilities could be used to offer freight handling facilities as part of the port's future provision.
Environmental issues	Likely to interact with a number of marine receptors, such as water quality and marine habitat. The onward journey by road will also impact air quality and noise receptors, particularly along the A5025.
RAW BULK (76%)	
Handling requirements	Assuming the producer/supplier is located adjacent to a port facility, the bulk materials would be transported onto a ship to be transported to Holyhead Port. An unloading facility and bulk storage would be required with the need to transport onwards to Wylfa Newydd by road via the A55 and A5025. This would result in materials being handled twice.
Total no. of vessels / trains	1,750 vessels – results in a peak of 39 vessels per month, requiring two berths at the port taking into account weather conditions.
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs
Total no. of HGVs on A5025	260,500 HGVs one-way (521,000 two-way), which would still require the A5025 off-line highway improvements implementing.
Indicative transport cost (capital + operational)	£45 per tonne plus handling x2
COMMON / PALLETISED GOODS (19%)	

	Sea via Holyhead
Handling requirements	Goods from a producer would need to be transported by lorry to a UK port onto a ship and then to Holyhead Port where onward transport by road would be required via the A55 and A5025. This would result in goods being handled three times. It would be unrealistic to assume that all common / palletised goods could be transported by sea due to timing of travel (impact on fresh food) and distance from producer, effectively excluding North Wales suppliers. A significant level of consolidation from a wide range of suppliers would be required to ensure sea transport (using 1,500 dwt vessels) was efficient for this type of goods, which is likely to have a subsequent impact on programme. Some opportunities may therefore exist for specific bulk orders.
Total no. of vessels / trains	630 vessels – this would require a dedicated berth at Holyhead Port to accommodate this volume of ships and dockside unloading facilities. This may be available through the port's development proposals, though these don't include freight unloading facilities
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs
Total no. of HGVs on A5025	126,000 HGVs one-way (254,000 two-way), which would still require the A5025 off-line highway improvements implementing.
Indicative transport cost (capital + operational)	£63 per tonne plus handling x3 for 100% of goods £58 per tonne plus handling x2 for 5% of goods (excludes capital cost)
CONTAINERISED GOODS (1%)	
Handling requirements	Specialist goods from an overseas producer would need to be transported by lorry to a standard container ship in the origin country to travel along regular shipping routes to a UK port and then onto another ship to Holyhead Port where onward transport by road would be required via the A55 and A5025. This results in goods being handled a minimum of four times. A reasonable level of consolidation from a large number of incoming container vessels would be required to ensure sea transport (using 1,500 dwt vessels) was efficient for this type of goods, which could have a subsequent impact on programme.
Total no. of vessels / trains	10,400 containers @ 100 per vessel = 104 vessels – this volume of ships could potentially be accommodated within the existing Holyhead Port capabilities
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs
Total no. of HGVs on A5025	10,400 HGVs one-way (20,800 two-way) – assumed that A5025 off-line highway improvements are

	Sea via Holyhead
	already implemented or not required.
Indicative transport cost (operational)	£165 per tonne plus handling x4

Table 10-5 Delivery of Construction Materials – Road via Britannia Bridge – Further Details

	Road via Britannia Bridge
Description of facility and arrangements	Transport along the A55, across the Britannia Bridge, and along an improved A5025 with on-line improvements and new off-line alignments.
Indicative capital costs for implementation	£40m (2017 HNP budget estimate)
Site requirements / need for land purchase / CPO	Requires purchase of land and/or CPO on either side of on-line sections for minor widening and for new sections of off-line carriageway.
Impact on programme for Wylfa	Can be achieved within the current programme for the Wylfa Newydd Project.
Legacy	The improved road provides an extended life of carriageway for existing traffic flows and accommodates future maintenance traffic for Wylfa Newydd as well as providing relief for some residents in terms of air and noise pollution and safety improvements.
Environmental issues	Likely to interact with a range of receptors, particularly associated with air quality and noise, during construction of the on-line and off-line improvements, while from Wylfa construction traffic travelling along the A5025 once complete. Also likely to impact on receptors associated with the Britannia Bridge, including increased driver delay.
RAW BULK (76%)	
Handling requirements	From the producer/supplier, the bulk materials would be transported by lorry direct to Wylfa Newydd. This would result in materials being handled just once.
Total no. of vessels / trains	0
Total no. of HGVs over Britannia Bridge (A55)	Minimum of 7,250 HGVs one-way (14,500 two-way) Maximum of 260,500 HGVs one-way (521,000 two-way) 20% contingency = 49,000 HGVs one-way (98,000 two-way)
Total no. of HGVs on A5025	Minimum of 7,250 HGVs one-way (14,500 two-way) Maximum 260,500 HGVs one-way (521,000 two-way) 20% contingency = 49,000 HGVs one-way (98,000 two-way)
Indicative transport cost (capital + operational)	£26 per tonne for minimum HGVs (excludes capital cost) £35 per tonne for maximum HGVs

	Road via Britannia Bridge
	£35 per tonne for 20% contingency HGVs
COMMON / PALLETISED GOODS (19%)	
Handling requirements	Goods from a producer would be transported by lorry direct to Wylfa Newydd. This would result in goods being handled just once. This would allow 'just in time' deliveries, such as for perishables, and would ensure that local suppliers could be used to minimise transport costs.
Total no. of vessels / trains	0
Total no. of HGVs over Britannia Bridge (A55)	126,000 HGVs one-way (252,000 two-way)
Total no. of HGVs on A5025	126,000 HGVs one-way (252,000 two-way)
Indicative transport cost (capital + operational)	£58 per tonne
CONTAINERISED GOODS (1%)	
Handling requirements	Specialist goods from an overseas producer would need to be transported by lorry to a standard container ship in the origin country to travel along regular shipping routes to a UK port and then onto a lorry for onward transport to Wylfa Newydd. If originating in the UK, containerised goods are likely to travel by road for the whole journey, while such goods from Europe could travel by rail to an International Freight Terminal and transfer to lorry for onward transport to Wylfa Newydd. This results in goods being handled up to three times, depending on the origin. This is an efficient and popular method of freight transport, often utilising sea or rail transport for the largest portion of the journey with road only being used for those sections where necessary.
Total no. of vessels / trains	0
Total no. of HGVs over Britannia Bridge (A55)	10,400 HGVs one-way (20,800 two-way)
Total no. of HGVs on A5025	10,400 HGVs one-way (20,800 two-way)
Indicative transport cost (operational)	£57 per tonne plus handling x3 (excludes capital cost)

Table 10-6 Delivery of Construction Materials – Rail via Valley – Further Details

	Rail via Valley

	Rail via Valley
Description of facility and arrangements	Additional rail siding to be provided at Valley together with unloading facilities and storage areas to transfer bulk or containerised goods from rail to lorry, with onward travel by lorry to Wylfa using A5025. Maximum siding length of 350 metres and trailing gross weight of around 1,200 tonnes. Route availability (RA) of 8, similar to majority of UK network.
Indicative capital costs for implementation	£2.9m (2017 indexed from Halcrow report [RD28] estimate) plus £40m for A5025 Off-line improvement works
Site requirements / need for land purchase / CPO	The new facilities would require additional land adjacent to the current siding to accommodate the works, including storage areas for bulk materials.
Impact on programme for Wylfa	Reliant heavily on Network Rail negotiations, which pose a significant risk of delay to the programme. Restricted availability of train paths could lead to risks to the programme for critical concrete production. Availability of low-loader wagons for container deliveries could also affect the programme.
Legacy	The facilities could be used to offer freight handling facilities to serve the island.
Environmental issues	The rail facility itself is likely to have minimal impact on receptors. However the requirement for onward road transport will still require the A5025 improvements. These are likely to interact with a range of receptors, particularly associated with air quality and noise, during construction of the on-line and off-line improvements, while from Wylfa construction traffic travelling along the A5025 once complete.
RAW BULK (76%)	
Handling requirements	Assuming the producer/supplier is located adjacent to a rail facility, the bulk materials would be transported onto a train to be transported direct to Valley. The volume per train will require stockpiling on-site before being loaded onto a lorry for onward transport by road via the A5025. This would result in materials being handled at least twice. Unloading facilities would be less than ideal due to limited space and being located along a curve.
Total no. of vessels / trains	4,750 trains (15 wagons per train) – results in up to three trains per day, every day. No freight paths are anticipated to be available during daily service, resulting in night-time deliveries only, which presents a risk to the programme.
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs

	Rail via Valley
Total no. of HGVs on A5025	260,500 HGVs one-way (530,000 two-way), which would still require the A5025 off-line highway improvements implementing.
Indicative transport cost (capital + operational)	£21 per tonne plus handling x2
COMMON / PALLETISED GOODS (19%)	
Handling requirements	Goods from a producer would need to be transported by lorry to a UK rail facility and then direct to Valley where onward transport by road would be required via the A5025. This would result in goods being handled three times. It would be unrealistic to assume that all common / palletised goods could be transported by train due to timing of travel (impact on fresh food) and distance from producer, effectively excluding North Wales suppliers. A significant level of consolidation from a wide range of suppliers would be required to ensure rail transport was efficient for this type of goods, which is likely to have a subsequent impact on programme. The available gauge of this route, currently W7, restricts the size of container on standard wagons. Therefore, this route would also require the use of special low-loader wagons or smaller containers, which would either increase the cost or the number of trains required. The availability of special wagons could also be a risk to the programme.
Total no. of vessels / trains	4,200 trains (15 wagons per train) – this would result in up to 3 trains per day, every day. No freight paths are anticipated to be available during daily service, resulting in night-time deliveries only, which presents a risk to the programme.
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs
Total no. of HGVs on A5025	102,000 HGVs one-way (204,000 two-way), which would still require the A5025 off-line highway improvements implementing.
Indicative transport cost (capital + operational)	£59 per tonne plus handling x3
CONTAINERISED GOODS (1%)	
Handling requirements	Specialist goods from an overseas producer would need to be transported by lorry to a standard container ship in the origin country to travel along regular shipping routes to a UK port with rail facilities and then onto a train direct to Valley where onward road transport would be required via the A5025.

	Rail via Valley
	This results in goods being handled a minimum of four times. A reasonable level of consolidation from a large number of incoming container vessels would be required to ensure rail transport was efficient for this type of goods, which could have a subsequent impact on programme. The available gauge of this route, currently W7, restricts the size of container on standard wagons. Therefore, this route would also require the use of special low-loader wagons or smaller containers, which would either increase the cost or the number of trains required. The availability of special wagons could also be a risk to the programme due to the number and frequency of these required, resulting in logistical problems.
Total no. of vessels / trains	525 trains (15 wagons per train) – this would require an average of 0.5 trains per day. No freight paths are anticipated to be available during daily service, resulting in night-time deliveries.
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs
Total no. of HGVs on A5025	9,900 HGVs one-way (19,600 two-way) – assumed that A5025 highway improvements are already implemented or not required.
Indicative transport cost (operational)	£132 per tonne plus handling x4

Table 10-7 Delivery of Construction Materials – Rail via HolyheadMOLF – Further Details

	Rail via Holyhead
Description of facility and arrangements	New freight handling facilities to be provided at Holyhead Port with storage areas to transfer bulk and/ or containerised goods from rail to lorry. Materials would then travel by lorry to Wylfa using A5025. Current maximum siding length of 350 metres, with no committed proposals to extend, and trailing gross weight of around 1,200 tonnes. Route availability (RA) of 8, similar to majority of UK network.
Indicative capital costs for implementation	£6.5m (2017 indexed from Halcrow report estimate) plus £40m for A5025 off-line improvement works
Site requirements / need for land purchase / CPO	The new facilities would require additional land adjacent to the current siding to accommodate the works, including storage areas for bulk materials. This may become available as part of the Holyhead Port masterplan proposals and therefore these costs are not included within the capital cost.
Impact on programme for Wylfa	Reliant heavily on Network Rail negotiations, which pose a significant risk of delay to the programme. Restricted availability of train paths could lead to risks to the programme for critical concrete production. Availability of low-loader wagons for container deliveries could also affect the programme.
Legacy	The facilities could be used to offer freight handling facilities at the Port to serve the island and offer rail to sea capabilities.
Environmental issues	The rail facility itself may have impacts on nearby residential and commercial receptors if used for unloading bulk materials. In addition, the requirement for onward road transport will still require the A5025 improvements. These are likely to interact with a range of receptors, particularly associated with air quality and noise, during construction of the on-line and off-line improvements, while from Wylfa construction traffic travelling along the A5025 once complete.
RAW BULK (76%)	
Handling requirements	Assuming the producer/supplier is located adjacent to a rail facility, the bulk materials would be transported onto a train to be transported direct to Holyhead Port. The volume per train will require stockpiling on-site before being loaded onto a lorry for onward transport by road via the A5025. This would result in materials being handled at least twice.
Total no. of vessels / trains	4,750 trains (15 wagons per train) – results in up to three trains per day, every day. No freight paths are anticipated to be available during daily service, resulting in night-time deliveries.
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs

	Rail via Holyhead
Total no. of HGVs on A5025	260,500 HGVs one-way (521,000 two-way), which would still require the A5025 Off-line highway improvements implementing.
Indicative transport cost (capital + operational)	£23 per tonne plus handling x2
COMMON / PALLETISED GOODS (19%)	
Handling requirements	Goods from a producer would need to be transported by lorry to a UK rail facility and then direct to Holyhead Port where onward transport by road would be required via the A5025. This would result in goods being handled three times. It would be unrealistic to assume that all common / palletised goods could be transported by train due to timing of travel (impact on fresh food) and distance from producer, effectively excluding North Wales suppliers. A significant level of consolidation from a wide range of suppliers would be required to ensure rail transport was efficient for this type of goods, which is likely to have a subsequent impact on programme. The available gauge of this route, currently W7, restricts the size of container on standard wagons. Therefore, this route would also require the use of special low-loader wagons or smaller containers, which would either increase the cost or the number of trains required. The availability of special wagons could also be a risk to the programme.
Total no. of vessels / trains	4,200 trains (15 wagons per train) – this would result in up to 3 trains per day, every day. No freight paths are anticipated to be available during daily service, resulting in night-time deliveries.
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs
Total no. of HGVs on A5025	126,000 HGVs one-way (252,000 two-way), which would still require the A5025 off-line highway improvements implementing.
Indicative transport cost (capital + operational)	£64 per tonne plus handling x3
CONTAINERISED GOODS (1%)	
Handling requirements	Specialist goods from an overseas producer would need to be transported by lorry to a standard container ship in the origin country to travel along regular shipping routes to a UK port with rail facilities and then onto a train direct to Holyhead Port where onward road transport would be required via the A5025. This results in goods being handled a minimum of four times. A reasonable level of consolidation from a large number of incoming container vessels would be required to ensure rail

	Rail via Holyhead
	transport was efficient for this type of goods, which could have a subsequent impact on programme. The available gauge of this route, currently W7, restricts the size of container on standard wagons. Therefore, this route would also require the use of special low-loader wagons or smaller containers, which would either increase the cost or the number of trains required. The availability of special wagons could also be a risk to the programme.
Total no. of vessels / trains	550 trains (15 wagons per train) – this would require an average of 0.5 trains per day. No freight paths are anticipated to be available during daily service, resulting in night-time deliveries.
Total no. of HGVs over Britannia Bridge (A55)	0 HGVs
Total no. of HGVs on A5025	10,400 HGVs one-way (20,800 two-way) – assumed that A5025 Off-line highway improvements are already implemented or not required.
Indicative transport cost (operational)	£192 per tonne plus handling x4

10-1.4 Summary

10-1.4.1 Each of the tables in chapter 3 highlight the constraints, requirements and indicative costs for transporting different types of good via a number of route options. For some types of goods for a specific transport route, there are significant constraints that could impact the programme for the construction of Wylfa Newydd. The transport cost per tonne offers a useful indicator as this reflects the volume of goods to be transported along with the necessary infrastructure to deliver it (where necessary), thereby highlighting its overall value for money.

10-1.4.2 It should be highlighted that while cost is a key consideration for the choice of transport route, the practicalities of using each route is also an important factor. For example, the cheapest route may not be the preferred choice if it requires multiple handling of goods as this introduces additional risks and liabilities, particularly where this involves specialist goods.

10-1.4.3 Table 4-1 provides a summary of the advantages and disadvantages of each transport route considered and provides a red / amber / green indication of the routes for each type of goods being transported. This categorisation is applied based on all factors from the above tables, and an indication of the key reasons is provided.

Table 10-8 Summary of Route Review Findings

	Sea via MOLF	Sea via Holyhead	Road via Britannia Bridge	Rail via Valley	Rail via Holyhead
Key Advantages	Offers the greatest reduction in road movements on the A5025 and across Britannia Bridge. Most sustainable option.	Provides legacy freight facilities. Significantly reduces road movements across Britannia Bridge.	Provides new road infrastructure and is ideal for transport of common materials with opportunities for local suppliers.	Significantly reduces road movements across Britannia Bridge.	Significantly reduces road movements across Britannia Bridge.
Key Disadvantages	Not suitable for transport of some types of common / palletised goods	Requires multiple handling of goods and does not reduce traffic along A5025. Reliant on Stena to deliver the scheme, which does not align with the Wylfa programme.	Potential impacts on driver delay across Britannia Bridge, depending on type of materials and timings. Requires additional land.	Requires multiple handling of goods and does not reduce traffic along A5025. Reliant on Network Rail negotiations and additional land.	Requires multiple handling of goods and does not reduce traffic along A5025. Reliant on Network Rail negotiations and programme.
Raw Bulk (76%)	Avoids road movements, medium cost per tonne	Significant HGV flows along A5025, multiple handling	Significant HGV flows along A5025 and A55	Significant HGV flows along A5025, limited freight path capacity	Significant HGV flows along A5025, limited freight path capacity
Common / Palletised Goods (19%)	Not suitable for some goods, requires consolidation and additional berth, medium cost per tonne	Requires consolidation at Holyhead	Low cost per tonne, logistically simple	Requires consolidation, limited freight path capacity	Requires consolidation, limited freight path capacity
Containerised Goods (1%)	Medium cost per tonne, logistically simple	High cost per tonne, multiple handling	Low cost per tonne, logistically simple	High cost per tonne, multiple handling	High cost per tonne, multiple handling

10-1.5 Conclusions

10-1.5.1 The Wylfa Newydd Freight Management Strategy has been considered with due consideration for a variety of transport modes, comprising sea, rail and road, including a combination of these, where relevant. This review has sought to summarise the findings of the studies previously undertaken and confirms the previous decision related to transport routes.

10-1.5.2 The findings of this review confirm that, even with more up to date information available and in light of recent discussions, the choices made around transportation routes for different types of goods are appropriate. These comprise the following:

- Bulk goods, which represent the vast majority (76%) of construction materials for the Wylfa Newydd Project, are to be transported by sea directly to the MOLF. The significant investment in berth facilities avoids the need to double handle goods and potentially removes almost 240,000 lorries from the road network. The road network may be used for contingency purposes, while the opportunity for transport by rail or via Holyhead Port would only realistically be utilised in the event of extended interruption to the MOLF;
- Common / palletised goods, which represent a reasonable proportion (19%) of construction materials, are to be predominantly transported by road directly to the site and with some materials being transported via the MOLF. This offers the greatest opportunity for local suppliers to be used and minimises risk to certain types of goods, such as fresh food. These will be managed and coordinated through construction of a Logistics Centre and use of a modern electronic Delivery Management System, which will control the flow of HGVs on a daily basis and be able to react quickly to incidents on the road network. Engaging with suppliers to consolidate deliveries at source will further reduce the number of lorries travelling on the road network. There are potential opportunities for bulk orders or some of these goods to be transported by sea via a port to the MOLF should the supplier be located close to a port or the goods will already pass through a port; and
- Containerised goods, which represent just a small proportion (1%) of construction materials, are likely to be transported by road for the last part of their journey. Their journey may include a significant portion by sea or rail to a port/freight facility to enter the UK if originating from abroad, though will utilise existing freight corridors such as the Channel Tunnel or large container ships. Onward transport by road will minimise the need for additional handling, which would otherwise increase risk of damage to such specialist goods. Opportunities may arise for these containers to arrive directly to the MOLF if containers arrive in bulk. The constraints of the rail network for containers is likely to limit opportunities for rail transport of this type of goods.

10-1.5.3 Overall, the Freight Management Strategy defines the primary choice of transportation for construction materials associated with the Wylfa Newydd Project and aligns with the ITTS outcomes and objectives, particularly in relation to using sustainable modes of transport and minimising the need to travel. However, this does not preclude the potential for other opportunities to arise during construction of the project or for specific deliveries to be made using other routes, should they offer a practical and cost-effective alternative.