HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

Request for Non-Material Change (RfNMC) no.3 Worker Shift Patterns

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1 Introduction

1.1 Purpose of this report

1.1.1 Horizon is currently seeking a Development Consent Order to enable the construction, operation and maintenance of the Wylfa Newydd DCO Project ("**Draft DCO application**"), which was submitted and accepted for examination by the Secretary of State for Business, Energy and Industrial Strategy on 28 June 2018. The Draft DCO application is currently in the examination phase.

1.1.2 The purpose of this report is to set out Horizon Nuclear Power Wylfa Limited's ("**Horizon**") formal written request for a non-material change to the worker shift patterns (i.e. number of shifts, start/end times and duration) during the construction phase of the Wylfa Newydd DCO Project ("**the Project**").

1.1.3 In summary, a new analysis has shown that the shift times in the Draft DCO application result in an overlap between day and night shifts, making a part of each shift unproductive. Accordingly, Horizon is proposing some changes to make the programme more efficient and resilient, while continuing to avoid adverse effects on Britannia Bridge and peak time traffic. In the early years of construction, Horizon is proposing two staggered day shifts and one-night shift; in peak construction years, three staggered day shifts and two staggered night shifts; and changes to shift start times and duration.

1.1.4 Details of the proposed change are provided in section 2.2 of this document and have been assessed against relevant parts of the Draft DCO application to determine whether it would result in any new or different likely significant environmental effects. In conclusion, no new or different likely significant environmental effects are predicted to occur as a consequence of this proposed change.

1.1.5 Horizon carried out public consultation on the proposed change between **Thursday 8 November 2018** and **Thursday 6 December 2018**. Following the close of consultation, Horizon considered the responses received and updated this document to have regard to those responses. This updated document is now submitted to the Examining Authority as a formal written request for the non-material change to be considered for acceptance into examination by the Examining Authority

1.1.6 This document uses terms and definitions that are defined in the DCO General Glossary [APP-006].

1.2 Scope of this report

1.2.1 This report describes the proposed change being sought by Horizon to the Draft DCO application and sets out, the justifications and the environmental appraisal of this proposed change. It includes a table (Table 2-7) clearly setting out the implications of the proposed non-material change for the environmental assessments detailed in the Draft DCO Application, and a statement on any new or different likely significant environmental effects (if any) of the proposed change.

1.2.2 This report also includes a summary of the consultation undertaken and a 'schedule of engagement' (Table 2-8) listing the parties that were identified as having an interest in this proposed change.

1.2.3 Finally, a 'schedule of consequential amendments' is provided (Table 2-9), listing the original application documents (or parts thereof) which may be amended by Horizon should the Examining Authority accept the proposed change into Examination.

1.2.4 Horizon's objective in compiling this report is to ensure that the Examining Authority is provided with sufficient information to consider the merits of the proposed non-material change and the consultation feedback Horizon has received about it from stakeholders. This is to enable the Examining Authority to make a decision on whether or not the proposed non-material change may be accepted and therefore included in the Examination of the Draft DCO application.

1.2.5 However, should the Examining Authority require any further relevant additional information in support of this request, Horizon will endeavour to provide it as soon as possible.

1.3 Non-materiality of the proposed change

1.3.1 In assessing the proposed change, Horizon has had regard to advice contained in the Planning Inspectorate's Advice Note 16: *How to request a change which may be material* (Version 2, March 2018) [RD1].

1.3.2 In determining the materiality of the change, Horizon reviewed the Environmental Statement including the following topics and their associated appendices to determine whether or not there were any new or different likely significant effects resulting from the proposed change in relation to:

- traffic and transport (chapter C2), [APP-089];
- public access and recreation effects of traffic (chapter C3), [APP-090];
- air quality effects of traffic (including those on ecological receptors which are beyond the discrete study areas assessed in volumes D to H of the Environmental Statement) (chapter C4), [APP-091];
- noise and vibration effects of traffic (chapter C5), [APP-092];
- combined topic effects (chapter C7), [APP-094];
- intra-project cumulative effects (chapter I4), [APP-387]; and
- inter-project cumulative effects (chapter I5), [APP-388].

1.3.3 The proposed change has been reviewed and assessed and has not been found to result in any new or different likely significant environmental effects than those reported in the Environmental Statement for the Wylfa Newydd DCO Project.

1.3.4 Further consideration has also been given to the potential effect on the Health Impact Assessment Report [APP-429] via air quality, noise and transport effects. The conclusions remain unchanged and there are no new or different likely significant effects identified.

1.3.5 All other assessments submitted as part of the Draft DCO application (e.g. Welsh Language Impact Assessment [APP-429]; Equality Impact Assessment [APP-434]; and Water Framework Directive Compliance Assessment [APP-444]) would remain unaffected by the proposed change and have therefore not been considered further.

1.3.6 The Shadow Habitats Regulations Assessment Report [APP-050/051], has also been considered in light of the proposed change, and Horizon has concluded that the change would not result in a change to the conclusions on effects in that report.

1.3.7 On the basis of the information presented here and in subsequent sections, it is not anticipated that the proposed change alters the Wylfa Newydd DCO Project to such a degree that it is a materially different project.

Cumulative effects

1.3.8 Horizon is seeking a total of five non-material changes to the Draft DCO application. Horizon has already consulted and submitted the following two non-material change requests, both of which were accepted into examination on 31 October 2018:

- Request for Non-Material Change no.1 – Blasting Strategy [AS-012]; and
- Request for Non-Material Change no.2 – Marine Vessel Movements [AS-013].

1.3.9 In addition to the non-material change (no.3) described in this document, Horizon has consulted on two further non-material change requests:

- Request for Non-Material Change no.4 – Working Hours: and,
- Request for Non-Material Change no.5 – HGV delivery windows

1.3.10 The implications of each proposed change to the cumulative assessment reported in the Draft DCO application is considered and assessed within each document. However, a cumulative assessment of all the proposed changes combined has also been undertaken to determine whether these could interact to result in the Wylfa Newydd DCO Project having a greater cumulative effect to that reported in the Draft DCO application.

1.3.11 The cumulative assessment is summarised in section 2.6 below with further information provided in appendix 1-1. Based on the information presented, it is not anticipated that the proposed change described in this report will interact with any of the non-material changes being sought to produce any new or different likely significant environmental effects resulting from the interaction of these changes either in combination or cumulatively with any other projects.

1.3.12 Taking the above factors into account, and the representations received, Horizon considers that the proposed change to shift patterns should be regarded as non-material.

1.4 Engagement and consultation on the proposed change

1.4.1 Following notification of its intention to submit three further written requests for non-material changes on Wednesday 17 October [AS-011], Horizon consulted on the proposed change to ensure that all persons that could be potentially affected had sufficient opportunity to provide their views.

1.4.2 Consultation on the proposed change ran for a period of **28** days, commencing on **Thursday 8 November 2018** and ending on **Thursday 6 December 2018**.

1.4.3 In developing its approach to consultation on the proposed change, Horizon identified a number of parties which it considered would have an interest in the proposed change (including prescribed persons under section 42(1)(a)-(d) of the Planning Act 2008, statutory consultees and Persons with an Interest in Land). These parties are listed in section 2.7 and were specifically notified of the consultation on the proposed change.

1.4.4 As the proposed non-material change does not require any 'additional land', Horizon did not consider that the consent of persons with an interest in the relevant land was required under the Infrastructure Planning (Compulsory Acquisition) Regulations 2010.

1.4.5 Copies of the consultation documents were made available for public viewing at:

- The Anglesey Business Centre, Isle of Anglesey County Council, Bryn Cefni Business Park, Llangefni, Anglesey, LL77 7XA, Monday to Friday 9am to 5pm, and;
- Wylfa Newydd Site Office, Cemaes Bay, Anglesey, LL67 0AA, Monday to Friday 9am to 5pm by appointment only, and
- on Horizon's consultation website, www.horizonnuclearpower.com/consultation.

1.4.6 As noted above, consultation on the proposed change was undertaken from Thursday 8 November 2018 until Thursday 6 December 2018. This consultation was a combined consultation with proposed changes 4 and 5, Working Hours and HGV delivery windows respectively.

1.4.7 Technical Reports (from which formal request for change documents 3, 4 and 5 are derived) and Summary Information Sheets (in English and Welsh) were published on Horizon's consultation website www.horizonnuclearpower.com/consultation, so that they were publicly available to anyone with an interest in the proposed change.

1.4.8 During the consultation period, Horizon held an Open Surgery event in Cemaes on 19 November 2018 at the Cemaes Village Hall between 13:00 and 19:00. The purpose of this was to enable members of the public to come and speak to Horizon technical experts about the proposed change and view hard copies of the consultation materials. The Cemaes event was attended by 15 members of the public.

1.4.9 In addition to these consultation events, Horizon also undertook a maildrop of its newsletter entitled 'Consultation Update' to all households within Cemaes, Tregele and along the southern stretch of the A5025 as areas to be potentially affected by the proposed changes. The newsletter included an article which summarised proposed changes 3, 4 and 5, the upcoming open surgery event, and how people could have their say on the proposals. A copy of this newsletter is appended to this document as appendix 1-4 and maps of the mailing zones are in appendix 1-5 (five maps total).

1.4.10 All parties were asked to provide their responses to Horizon either by mail or email via its freepost address (Freepost WYLFA NEWYDD) or by emailing wylfaenquiries@horizonnuclearpower.com. A freephone number (0800 954 9516) was provided for questions. Follow-up calls and meetings were also offered if required but none were requested.

1.5 Summary of responses received

1.5.1 At the end of the consultation period Horizon had received responses from 16 parties in respect of the three proposed non-material changes, including from Isle of Anglesey County Council (IACC), Natural Resources Wales (NRW) and the Welsh Government.

1.5.2 This section sets out a summary of the consultation responses received about the proposed non-material change to shift patterns, and a summary of Horizon's response. Full copies of the responses received and Horizon's detailed response have been appended as appendix 1-6.

Views on materiality

1.5.3 The local resident who commented directly on the proposed change to shift patterns did not raise the issue of materiality; however, they did raise concerns about additional impacts from traffic noise. In fact, the shift patterns change is proposed to help avoid traffic impact at peak travel times at the Britannia Bridge and is considered to greatly reduce the disturbance to local communities.

1.5.4 NRW did not comment directly on materiality, rather it characterised its responses in relation to "new or different likely significant environmental effects", concluding that such effects were unlikely as a result of the proposed change to shift patterns. Gwynedd County Council (GCC) and North Wales Fire and Rescue (NWFR) took a similar view.

1.5.5 IACC does not agree that the three non-material changes being sought can be considered individually and that they should be considered as a package of changes that amount to a material change to the Draft DCO application. IACC did not raise specific issues related to the materiality of the proposed change to shift patterns; however, it considered more assessment and information was needed about the potential impacts of the change. Horizon considers the assessments to be robust in their determination of non-materiality for the reasons set out in section 2, and agrees with NRW's view that there will not be new or different likely significant effects arising from the changes individually or cumulatively.

The IACC

1.5.6 IACC requested more evidence on worker behaviour and travel patterns with reference to the Hinkley Point C workforce. Horizon considers that the National Agreement for the Engineering Construction Industry (NAECI) and Construction Industry Joint Council (CIJC) agreements specifically cover the points raised.

1.5.7 IACC considered that the shifts were relatively long but recognised that the hours proposed were worked elsewhere on similar projects (Hinkley Point C). IACC also considered that Horizon's view was reasonable that a worst-case scenario had been used to assess the impact of the changed shift patterns, and that in reality not all workers would be required to work in accordance with the shift patterns. A key concern was whether or not the Wylfa Newydd Development Area would be regarded by workers and Horizon as a "fixed place of work". Given the approximately one-hour travel time for workers to traverse Anglesey from the Britannia Bridge, the extended shifts may result in more workers seeking accommodation nearer the Wylfa Newydd Development Area. Worker safety and well-being concerns were also expressed by the IACC due to driver fatigue. Horizon considers that the NAECI and CIJC agreements specifically cover the points raised. It is expected that a Supplementary Project Agreement (as per the NAECI Agreement) that will set out any specific project requirements. The Wylfa Newydd Development Area will be a fixed place of work for anyone employed on the Wylfa Newydd DCO Project. It will be expected to comply with the agreement.

1.5.8 IACC noted that traffic movements (both construction worker vehicles and shuttle buses) would be concentrated into one or two shifts, rather than spread over three shifts as originally proposed. However, IACC welcomed the avoidance of worker travel / vehicle movements that would coincide with school travel times.

NRW

1.5.9 NRW advised that the proposed change to shift patterns was unlikely to result in new or different likely significant environmental effects.

Welsh Government

1.5.10 The Welsh Government commented that night shift workers on the 06:30 shift will be departing the Park and Ride around the same time as the 07:30 shift workers arrived for the day shift. This is a change from the originally proposed shift pattern that would have seen the night shift workers clear the site before the day shift workers arrived. The Welsh Government questioned whether the Transport Assessment accounted for the overlap in shifts in assessing the capacity of Junction 4 of the A55 in the morning; also, whether the proposed change in timing had taken into account the overlap in construction worker traffic movements against the 05:45 ferry arrival into Holyhead Port. The potential effects of ferry arrivals on traffic flows is considered in paragraph 4.3.6 of the DCO Transport Assessment [APP-101]. Horizon considers that the potential overlap of night shift workers would not affect the operation of Junction 4 of the A55 given the low traffic flows during the period of the

potential overlap at around 07:00. Similarly, traffic associated with the 05:45 ferry is also not considered to cause traffic impacts given the low traffic flows on the road network at this time in the morning and the fact that traffic leaving the ferry would be travelling eastbound (towards the mainland) in contrast to vehicles approaching the Wylfa Newydd Development Area which would be travelling westbound i.e. on the opposite side of the A55.

Coal Authority

1.5.11 The Coal Authority responded to say it had no comment to make on the proposed non-material changes.

Trinity House

1.5.12 Trinity House responded to say it had no comment on the proposed non-material changes.

NWFR

1.5.13 NWFR noted the proposed change to worker shift patterns and did not have any adverse comments to make.

GCC

1.5.14 GCC commented that it maintained its concerns, raised previously, about the shift patterns and the transport analysis and modelling work. However, GCC stated the proposed change to shift patterns did not raise any new concerns. GCC was concerned that the nature of the traffic flows meant there could be "peak spreading" with the construction traffic flows being very close to peak hour flows on the Britannia Bridge. GCC considered that the resilience of the highway network to accidents and unforeseen events would be diminished with limited capacity and a lack of contingency.

1.5.15 GCC concerns focused on the need for sensitivity testing around the peaks, to test mitigation measures if unforeseen circumstances occurred. GCC further stated that assessments need to be undertaken outside of peak periods, as delays are considered to be less, although the impacts could be relatively higher. Also, GCC commented that no assessments had been done for the changes in the 2020 year, as impacts were considered to be lower, due to lower background traffic levels, even though impacts could actually be relatively higher, and no consideration of traffic flows on Saturday mornings appeared to have been undertaken.

1.5.16 Horizon considers that the assessment is robust but has prepared further sensitivity tests set out in section 2 below. In addition, peak spreading is not considered to be a potential issue given that the proposed worker shift timings help construction worker traffic avoid travelling over the Britannia Bridge in peak periods. Sensitivity tests examining the operation of the Britannia Bridge using VISSIM traffic modelling software have been provided to GCC to show the potential limited impact of more workers living on the mainland than expected. As stated by GCC, traffic impacts outside the periods of peak travel on the road network are expected to be lower than traffic impacts during peak periods. A full assessment of traffic impacts in 2020 is provided in chapter 11 of DCO Transport Assessment [APP-101]. Potential impacts of the proposed

change to traffic flows on Saturday mornings is expected to be lower than on a weekday as traffic flows are lower on a Saturday than on a weekday.

Local Resident 1

1.5.17 The local resident expressed concern about the night time working hours and the impact on traffic volumes at times when people would be sleeping, leading to increased disturbance for local people.

1.6 Procedure after consultation

1.6.1 Following consultation, Horizon has had regard to the responses received and has reviewed and updated this document as appropriate. This revised version is now submitted to the Examining Authority as a formal written request for a non-material change to the Draft DCO application.

1.6.2 Horizon acknowledges that the acceptance and procedure for consideration and examination of the proposed changes is entirely at the discretion of the Examining Authority. However, if the Examining Authority is minded to accept this proposed non-material change into the Examination, Horizon considers that the remainder of the Examination would provide sufficient time for Interested Parties to consider and make representations on the published proposed non-material change and for any other procedural requirements to be met.

1.6.3 Horizon also considers that, with the proposed change, the Draft DCO application, would still be of a sufficient standard for Examination and any other procedural requirements can still be met.

2 Non-Material Change: Worker Shift Patterns

2.1 Background to the proposed change

2.1.1 During construction of the proposed Wylfa Newydd Power Station, workers will be required to work both day and night shifts to meet the Wylfa Newydd DCO Project construction programme. The assumed shift timings and day/night splits as submitted in the Draft DCO application are presented in Table 1-1 of the DCO Transport Assessment [APP-101] and provided in Table 2-1 below. On application, it was assumed that there would be three staggered shifts in both the day and night time periods which would be in place throughout Main Construction.

Table 2-1 Original shift patterns assessed in the DCO Transport Assessment [APP-101] and submitted as part of the DCO application

Shift	Start/end times
Construction day shift	07:00-17:00 07:30-17:30 08:00-18:00 (i.e. 10-hour shifts)
Construction night shift	16:30-03:00 17:00-03:30 17:30-04:00 (i.e.10.5-hour shifts)

2.1.2 The original shift start/finish times (including the overlap between day and night shifts) were selected to avoid increased traffic flows across Britannia Bridge during the busiest hours in the morning and evening peak periods (08:00-09:00 and 17:00-18:00). This issue was examined in chapter 4 of appendix L of the DCO Transport Assessment [APP-113]. This assessment included a schematic diagram (figure 4-1) of the shift timings assumed in the Draft DCO application and how they relate to travel over Britannia Bridge.

2.1.3 VISSIM modelling[1] of the road network surrounding Britannia Bridge demonstrated that these shift start/finish times would help to ensure there would be no substantial negative effects for the local residents and other road users of the A55 (see section 11.4 of the DCO Transport Assessment; [APP-101]).

2.1.4 Whilst the impact to the Britannia Bridge would be reduced, the overlap between day and night shifts poses a significant challenge to construction productivity, by limiting the effective transfer of work from one shift to the other.

2.1.5 Since the preparation and submission of the Draft DCO application, Horizon has undertaken additional work to further analyse and understand the practical implications of the proposed shift patterns within the Draft DCO application. This review has been necessitated by a number of factors including:

- rationalisation of the preferred delivery model for the Wylfa Newydd DCO Project (shift from a joint venture to project management contractor

[1] VISSIM is a microscopic multi-modal traffic flow simulation software package.

structure which resulted in Horizon becoming responsible for logistical arrangements);

- the appointment of, and engagement with, the project management contractor; and
- continued engagement with the key stakeholders as part of the Statement of Common Ground (SoCG) process.

2.1.6 This review has resulted in Horizon having a more detailed understanding of the management requirements for controlling worker movements to and from site, and the impacts of the current shift patterns on worker productivity and safety during the overlapping changeover between the day and night shifts.

2.1.7 As a result of this review, Horizon has identified a change to the shift patterns in the Draft DCO application is required to optimise worker productivity and build resilience into the construction programme. These adjusted shift patterns result in an improved or "no worse" environmental effect and ensure adequate construction traffic control on Anglesey and at Britannia Bridge so as to avoid adverse effects on the road network, particularly Britannia Bridge. Further description of the proposed change is provided below.

2.2 Description of the proposed change

2.2.1 Horizon is proposing to reduce the number of shifts in the early years (for example 2020) before the opening of the A5025 Off-line Highway Improvements, from that presented in Table 2-1, to two staggered day shifts and one-night shift. This is due to the relatively low volume of site traffic associated with transporting workers to and from site in the early years of the construction programme.

2.2.2 During the peak construction years (for example 2023) and after the opening of the A5025 Off-line Highway Improvements, Horizon is proposing three staggered day shifts (as per the Draft DCO application) as worker numbers increase but a reduction from three to two staggered night shifts. These dates were based on an assumed programme for DCO Examination at the time traffic modelling was undertaken, and although there is now slippage in this programme, this does not affect the conclusions of the assessment presented.

2.2.3 Horizon is also proposing the following changes to the primary shift times and duration:

- increase the day shift window by a half hour at the end of each shift;
- amend the start of the night shift window, by three hours; and,
- decrease the night shift window by a half hour during peak construction (for example 2023).

2.2.4 The proposed changes are summarised in Table 2-2 alongside the shift patterns submitted in the Draft DCO application. These are shown visually in appendix 1-2 (see figure 3-2, figure 3-3 and figure 3-4).

Table 2-2 Primary shift patterns as submitted in the Draft DCO application and the proposed changes to these

Shift	Primary shift start/end times/durations		
	Draft DCO application	Proposed change (2020)	Proposed change (2023)
Day	07:00-17:00 07:30-17:30 08:00-18:00 (i.e. 10-hour shifts)	07:00-17:30 07:30-18:00 - (i.e. 10.5-hour shifts)	07:00-17:30 07:30-18:00 08:00-18:30 (i.e. 10.5-hour shifts)
Night	16:30-03:00 17:00-03:30 17:30-04:00 (i.e.10.5-hour shifts)	19:30-06:00 - - (i.e.10.5-hour shifts)	19:30-05:30 20:00-06:00 - (i.e.10-hour shifts)

2.2.5 The proposed change reflects the change Horizon is seeking for the primary shift patterns of workers and in this assessment it is assumed all workers follow this shift pattern to provide a worst-case assessment. However, it should be noted that there will continue to be operations on site (as per the Draft DCO application) in which a minority of staff do not follow the primary shift pattern (for example catering, security, cleaning and some specialist construction operational staff). The travel associated with this minority of staff does not affect the assessments contained in the Draft DCO application as a worst case is assessed and this group is therefore not considered further.

2.2.6 As a consequence of the proposed changes to construction worker shift patterns, revised 18-hour annual average weekday traffic flows (AAWT) were calculated to reflect the transfer of some vehicle movements from the early hours (03:00 to 05:00) to the period after 06:00. AWWTs are a key parameter for the modelling of road traffic noise emissions. No changes were made to the 24-hour annual average daily traffic flows (AADT), which are a key parameter for the air quality modelling of traffic emissions, as the total number of vehicle movements on any day would stay the same.

2.3 Justification for the proposed change

Improving construction productivity and resilience

2.3.2 As noted above, the current DCO shift patterns result in overlap between construction shifts which mean that the first three hours of each night shift is unproductive. By amending the shift times so that the day shift has left the site before the night shift arrives, the proposed changes ensure that this overlap is eliminated and that the night shift can start work immediately upon arrival at site.

2.3.3 This increase in the productivity of the construction workforce will ensure that an appropriate level of flexibility and resilience can be built into the construction programme so Horizon can better accommodate unforeseen events.

Urgent need for new nuclear

2.3.4 By improving worker productivity and programme resilience, the proposed changes will enable Horizon to assist the UK Government in meeting its energy security and carbon reduction objectives through the delivery of this nationally significant infrastructure project. The urgent need for new nuclear has been firmly established in National Policy Statements EN-1 [RD2] and EN-6 [RD3] and the recent Ministerial Statement on Energy Infrastructure (December 2017) [RD4] which confirms the Government's continued support for new nuclear power generation post-2025.

Improving road safety and community impacts

2.3.5 With the proposed change, traffic associated with the night shift will be travelling through local communities between 05:30 to 06:30, rather than between 03:00 and 04:30. Shifting travel times to later in the morning will improve the safety of night shift workers who will be able to travel during the early daylight hours in spring and summer (rather than in darkness year-round). In addition, it will also mean that night shift workers are travelling through communities at less sensitive times which will have positive impacts on residential amenity.

2.3.6 Changes to shift timings also helps reduce vehicle movements on the road network during times when pupils are travelling to and from school. In 2020, for the day shift all workers need to commence work by 07:30 rather than by 08:00 as in the Draft DCO application. For the night shift in 2020 and 2023, shifts start in the early evening (19:30 or 20:00) rather than in late afternoon (16:30 to 17:30) as in the Draft DCO application. This means the potential for conflicts between vehicles travelling to the Wylfa Newydd DCO Project and vehicles associated with travel to and from local schools is reduced.

Ensures shift-related traffic avoids Britannia Bridge at peak times

2.3.7 As with the original shift pattern, the proposed change has been designed to ensure that construction shift traffic avoids creating adverse impacts on Britannia Bridge (as identified in Figure 2-1). This is because, under the proposed change:

- By the morning rush hour peak period of 08:00 and 09:00:
  - Day shift workers would have crossed Britannia Bridge (westbound) between 05:00 and 07:00 and started work on site; and
  - Night shift workers traveling from the site would have crossed Britannia Bridge (eastbound) between 06:30 and 07:30; and
- By the evening rush hour peak period between 17:00 and 18:00:
  - Day shift workers will still be traveling eastbound on the A55 from site to cross the Britannia Bridge (eastbound) between 18:30 to 20:00; and

- Night shift workers traveling to the site would still be travelling across the mainland to cross the Britannia Bridge (westbound) between 18:00 and 19:00.

2.3.8 The proposed change results in an improved or "no worse" environmental effect due to improved construction traffic control on Anglesey and at Britannia Bridge. Environmental modelling has demonstrated that these revised shift patterns ensure that negative effects on local residents and other users of the A55 are avoided by ensuring construction workers were travelling to and from the site outside peak periods.

Increasing site safety

2.3.9 The current shift patterns will mean there is a large number of workers moving around site during overlapping shift times. By reducing the number of workers that are on the site at between 16:00 and 20:00, the proposed change will increase site health and safety, particularly in respect of HGV movements around the Main Site.

2.4 Summary of environmental appraisal

2.4.1 The proposed change has been reviewed and assessed in order to identify any potential likely significant effects that would be new or materially different to those assessed in the Draft DCO application. This information is summarised in Table 2-7; where relevant, further discussion is provided below.

Environmental Statement

2.4.2 This review identified that the proposed change could potentially have implications for the following assessments outlined in the Environmental Statement:

- traffic and transport (chapter C2), [APP-089];
- public access and recreation effects of traffic (chapter C3), [APP-090];
- air quality effects of traffic (including those on ecological receptors which are beyond the discrete study areas assessed in volumes D to H of the Environmental Statement) (chapter C4), [APP-091];
- noise and vibration effects of traffic (chapter C5), [APP-092];
- combined topic effects (chapter C7), [APP-094];
- intra-project cumulative effects (chapter I4), [APP-387]; and
- inter-project cumulative effects (chapter I5), [APP-388].

2.4.3 The proposed change to shift patterns only relates to traffic movements as site operations/timings will be unaffected and has implications specifically to assessments outlined in volume C (project-wide effects) of the Environmental Statement. Thus, there are no further implications for ecological receptors assessed in volumes D to H of the Environmental Statement.

2.4.4 The proposed change would not affect the total number of workers present on site (per 24 hours or overall) or the intensity of the construction activities

undertaken, therefore all the remaining topic assessments detailed within volume C of the Environmental Statement are not considered to be affected by the proposed change and thus, the conclusions remain as reported in the Draft DCO application.

Other Assessments

2.4.5 Further consideration has also been given to the potential effect on the Health Impact Assessment Report [APP-429] via air quality, noise and transport effects. The conclusions remain unchanged and there are no new or different likely significant effects identified.

2.4.6 Consideration has also been given to the potential effect of the proposed change to the appropriate assessment for habitats and species detailed in the Shadow Habitats Regulations Assessment Report [APP-050 and APP-051] via effects to air quality and noise. As the peak noise and air quality effects are not predicted to change significantly as a result of the proposed change compared to those presented in the Draft DCO application, the assessments reported in the Shadow Habitats Regulations Assessment Report [APP-050/051] would remain unchanged.

2.4.7 All other assessments submitted as part of the Wylfa Newydd DCO application (e.g. Welsh Language Impact Assessment, [APP-432]; Equality Impact Assessment [APP-434]; and Water Framework Directive Compliance Assessment [APP-444]) would also remain unaffected by the proposed change and have therefore not been considered further.

2.5 Topic assessments

2.5.1 The effects of the proposed change to the assessments listed in paragraphs 2.4.2 and 2.4.5 above are summarised in Table 2-7, with further discussion provided below where relevant.

Traffic and transport

2.5.2 The effects of the proposed change to shift patterns on the traffic and transport assessment (chapter C2, [APP-089]) and the DCO Transport Assessment [APP-101] are presented below. This includes effects on the road network near the Britannia Bridge and other junctions across Anglesey.

Britannia Bridge and surrounding highway network

2.5.3 The VISSIM model for the Britannia Bridge and surrounding highway network, described in the DCO Transport Assessment [APP-101], assesses the change in journey times in 2023 associated with Wylfa Newydd DCO Project related traffic. Full results of the VISSIM model network are provided in appendix I of the DCO Transport Assessment [APP-110].

2.5.4 The VISSIM was re-run to include the proposed change to shift patterns and incorporate both Wylfa Newydd DCO Project traffic, traffic associated with the National Grid's North West Connection project and minor adjustments to some input parameters. The changes to the DCO Transport Assessment VISSIM

as a result of the proposed change in shift patterns are summarised below in Table 2-3.

Table 2-3 Changes in journey times (seconds per vehicle) across Britannia Bridge due to the proposed change to construction worker shift patterns.

Location	AM Peak			PM Peak		
	06:00-07:00	07:00-08:00	08:00-09:00	15:00-16:00	16:00-17:00	17:00-18:00
Britannia Bridge Westbound						
Journey time with Wylfa Newydd Project traffic (VISSIM + National Grid traffic)	108	114	187	120	135	361
Journey time with Wylfa Newydd Project traffic resulting from the proposed change to shift patterns (VISSIM + National Grid traffic)	108	114	190	120	129	351
Change due to the proposed change to shift patterns	0	0	+3	0	-6	-10
Britannia Bridge Eastbound						
Journey time with Wylfa Newydd Project traffic (VISSIM + National Grid traffic)	124	137	355	124	126	128
Journey time with Wylfa Newydd Project traffic resulting from the proposed change to shift patterns (VISSIM + National Grid traffic)	124	137	366	124	126	130
Change due to the proposed change to shift patterns	0	0	+11	0	0	+2

2.5.5 The proposed changes to shift patterns would result in minor increases in journey times across the bridge in the AM peak compared to the DCO Transport Assessment [APP-101]. This is mainly in the eastbound direction and due to the end of the night shift being closer to the AM peak hour (08:00-09:00); thus, construction worker traffic travelling nearer the start of the AM peak hour has a knock-on effect on background traffic into the AM peak hour.

2.5.6 The proposed changes to shift patterns would decrease journey times across the bridge in the PM peak westbound direction compared to the DCO Transport Assessment [APP-101]. This is due to the start of the night shift being later; thus, construction worker traffic travelling after the PM peak hour has no knock-on effect to background traffic into the PM peak hour.

2.5.7 Overall the potential changes to the shift patterns are modelled to have broadly neutral impact across the peak periods in the peak construction year (2023) compared to the DCO Transport Assessment [APP-101] with some directions and time periods experiencing small increases in delays per vehicle and some directions and time periods experiencing small reductions in delays per vehicle.

2.5.8 Impacts in 2020 are expected to be lower than in 2023 due to the lower background traffic flows and the lower number of construction workers travelling to and from the Wylfa Newydd DCO Project each day.

2.5.9 This analysis shows that the proposed change to worker shift patterns is small and does not affect the outcome of the VISSIM assessment currently presented in the DCO Transport Assessment [APP-101] or the Environmental Statement.

Other Junctions

2.5.10 Thirty-eight junctions were assessed using a Stage 1 assessment as described in the DCO Transport Assessment [APP-101] to examine impacts related to Wylfa Newydd DCO Project traffic during the standard AM (08:00-09:00) and PM (17:00-18:00) peak hours.

2.5.11 Of these 38 junctions, 11 were deemed at or close to capacity, or were entirely new junctions as a result of the development proposals and were thus subject to further detailed assessment referred to as a Stage 2 assessment. This Stage 2 assessment included the use of junction modelling software such as Junctions 9.

2.5.12 Full details of the Stage 1 and Stage 2 assessments undertaken on the 38 junctions are provided in chapter 9, chapter 11 and appendix H of the DCO Transport Assessment [APP-109].

2.5.13 The analysis presented in the Draft DCO application has been reviewed to determine the potential traffic impact of the proposed change to worker shift patterns in 2020 and 2023.

2.5.14 For reference, the locations of the 38 assessed junctions are presented in Figure 2-1. This figure also shows the typical journey time from each junction to the Wylfa Newydd Development Area as this is an important aspect of the assessment.

Figure 2-1 Location of assessed junctions and their journey time from the Wylfa Newydd Development Area

Traffic impact in 2020

2.5.15 The proposed change to shift timings in 2020 from three to two day shift staggers and from three night shift staggers to one night shift will result in higher concentrations of workers travelling in a shorter space of time. The assessment is made in 2020 to reflect the years used in the Draft DCO application as described in paragraph 2.2.1 of this document and in paragraphs 10.1.5 to 10.1.7 of the DCO Transport Assessment [APP-101].

2.5.16 Paragraphs 2.5.17 and 2.5.25 below summarise the traffic impacts of the proposed change to shift patterns for the 2020 day shift and night shift.

2020 Day shift

2.5.17 The main change to the 2020 day shift patterns submitted in the DCO Transport Assessment [APP-101] is that the 08:00-18:00 shift has been removed, meaning that the two remaining shifts will include 50% more workers than the previous three shift stagger scenario.

2.5.18 Allowing one hour for workers to travel across Anglesey to the Wylfa Newydd Development Area before the shift start times means that all traffic would clear the junctions assessed in the DCO Transport Assessment [APP-101] outside of the assessed AM peak hour (08:00-09:00).

2.5.19 Similarly, allowing one hour for workers to travel across Anglesey from the Wylfa Newydd Development Area after the shift end times means that most traffic would pass through junctions assessed in the DCO Transport Assessment [APP-101] after the assessed PM peak hour (17:00-18:00).

2.5.20 The only exception would be workers finishing the 17:30 shift and travelling by car who would leave the Wylfa Newydd Development Area at approximately 17:50 (it is assumed that the time taken for shift sign-out, walk to the daily car park and leave the Wylfa Newydd Development Area is 20 mins) and pass through junctions within a 10-minute drive time of the Wylfa Newydd Development Area before 18:00.

2.5.21 Assessed junctions that fall within a 10-minute drive time of the Wylfa Newydd Development Area are listed in Table 2-4 below. This table also shows whether they were assessed at a Stage 1 or Stage 2 level in the DCO Transport Assessment [APP-101], and the maximum expected ratio of flow to capacity for each junction across each scenario (with or without development) in all years assessed (2016, 2020, 2023) as presented in appendix H of the Transport Assessment [APP-109].

Table 2-4 Junctions within 10-minute drive of the Wylfa Newydd Development Area, assessment level to which they were assessed in the DCO Transport Assessment and the maximum ratio of flow to capacity across each scenario (with or without development) in all years assessed (2016, 2020, 2023)

Junction reference number	Junction description	Stage 1 assessment	Stage 2 assessment	Maximum ratio of flow to capacity
8	Existing Power Station access/A0525	✓	✓	84%
9	Cromlech Terrace/Cemlyn Road/A5025	✓		14%
14	Minor Road Tregele/A5025	✓		2%
15	Ffordd Y Felin/High Street/A5025	✓		16%
16	Road to Rhosgoch/A5025	✓		4%
26	Proposed Wylfa Newydd Development Area access/A5025	✓	✓	63%
27	Proposed MEEG Access	✓	✓	0%
38	Priority Junction west of Rhosgoch	✓		21%

2.5.22 It can be seen from Table 2-4 that apart from the Existing Power Station access/A0525 junction (Junction Reference Number 8), no other junction is approaching capacity in any assessment scenario or year. Therefore, it is not expected that additional traffic related to the proposed change in worker shift patterns passing through the above junctions in the 10-minute period between 17:50-18:00 would make any material difference to the results of the peak hour assessments undertaken in the DCO Transport Assessment [APP-101], with the exception of the Existing Power Station access/A0525. Given this access is used by vehicles travelling to and from the Wylfa Newydd Development Area any potential additional delays would be experienced by workers travelling to and from the Wylfa Newydd Development Area and not by members of the general public and consequently this is considered acceptable.

2020 Night shift

2.5.23 The proposed change to night shift timings in 2020 is from three night shift staggers in the Draft DCO application to one single night shift starting at 19:30 and finishing at 06:00.

2.5.24 Allowing one hour for workers to travel across Anglesey to/from the Wylfa Newydd Development Area before/after the shift start/end time means that all traffic would clear the junctions assessed in the DCO Transport Assessment [APP-101] outside of the assessed AM and PM peak hours (08:00-09:00 and 17:00-18:00).

2.5.25 This offers an improvement on the Draft DCO application in traffic terms as the analysis presented in the DCO Transport Assessment [APP-101] included workers travelling during the peak hour through the junctions assessed on Anglesey before the start of the third stagger of the night shift at 17:30, i.e. they would be on the network between 16:30-17:30.

Traffic impact in 2023

2.5.26 The proposed change for shift timings in 2023 would have no detrimental impacts to the junctions assessed in the DCO Transport Assessment [APP-101]. This is due to the fact that the proposed change would not affect the day shift start times and the day shift end times move further away from the PM peak hour. The night shift start and end times also move further away from the AM and PM peak periods.

2.5.27 This means that impacts are likely to be only positive to the performance of junctions compared to those submitted in the DCO Transport Assessment [APP-101] for the 2023 peak construction year.

Impact on road safety

2.5.28 The proposed change to shift timings helps reduce vehicle movements on the road network during times when pupils are travelling to and from school. In 2020, for the day shift, all workers need to commence work by 07:30 rather than by 08:00 as in the Draft DCO application. For the night shift in 2020 and 2023, shifts start in the early evening (19:30 or 20:00) rather than in late afternoon (16:30 to 17:30) as in the Draft DCO application. This means the potential for conflicts between vehicles travelling to the Wylfa Newydd DCO Project and vehicles associated with travel to and from local schools is reduced.

Summary

2.5.29 The proposed change to worker shift patterns does cause changes with some directions and time periods experiencing small increases in delays per vehicle and some directions and time periods experiencing small reductions in delays per vehicle compared to the DCO Transport Assessment [APP-101].

2.5.30 Overall, the updated traffic assessment of Britannia Bridge shows that the proposed change does not cause any new or different likely significant environmental effects than those reported in the Environmental Statement.

2.5.31 Similarly, the proposed change to worker shift patterns is expected to have no overall detrimental impact on the junctions assessed in the DCO Transport Assessment [APP-101], and in some cases would improve the junction performance at certain junctions at certain times of the day owing to some of the proposed shift start/end times being further away from the AM and PM peak hours of travel on the local highway network when compared to the analysis presented in the Draft DCO application. Overall, the updated traffic assessment of other junctions shows that the proposed change does not cause any new or different likely significant environmental effects than those reported in the Environmental Statement.

Public access and recreation

2.5.32 The proposed change to construction worker shift patterns is not anticipated to lead to any net increase or decrease in the number of vehicles entering or exiting the Park and Ride or using the A5025 to access the Wylfa Newydd Development Area. However, it would lead to minor changes to the peak flows, which would increase as a result of a reduction in the number of shifts.

2.5.33 The potential effects on public access, onshore recreation and active travel have been considered for the following study areas:

- Junction 4 of the A55 to the Park and Ride; and
- Junction 3 of the A55 to the Off-Site Power Station Facilities and the Wylfa Newydd Development Area using the A5 and A5025.

2.5.34 The proposed change in construction worker shift patterns would not result in new or different likely significant environmental effects than those reported in the Environmental Statement.

Air quality

2.5.35 The proposed change to construction worker shift patterns is not anticipated to change the main input parameters to the air quality modelling of road traffic emissions, for example the annual average daily traffic flow (AADT) or proportion of Light Duty Vehicles or Heavy Duty Vehicles. However, it would lead to modifications to the time of day or night upon which vehicles would arrive and depart from the Wylfa Newydd Development Area during construction.

2.5.36 The air quality modelling undertaken for chapter C4 [APP-091] of the Environmental Statement was based on a modelling method which distributed the AADT for each road link equally across each hour of the day and for each day of the week (i.e. the AADT was divided by 24 and the average hourly flow used to represent the traffic flows). Consequently, this approach did not take account of any diurnal variation in flows by hour of the day or day of the week.

2.5.37 In order to assess the effects of the proposed change (i.e. the re-distribution of vehicle movements due to the proposed changes to construction worker shift patterns), diurnal variations in traffic flows need to be considered. Recognising that this approach would deviate from that which was used within the Draft DCO application, a sensitivity analysis has been carried out to understand the following:

- how the model which considers the diurnal variation in vehicle flows compares to the original modelling method used in the Draft DCO application; and
- how the proposed change and resulting variations to the diurnal profile of vehicle flows would affect the assessment conclusions presented in chapter C4 [APP-091] of the Environmental Statement.

Comparison of modelling approaches

2.5.38 A description of the method used to model the vehicle flows using a diurnal approach for the sensitivity analysis is set out in appendix 1-3. This appendix also contains details of the revised verification process and comparison of the modelled results for the two modelling approaches. In summary, the model verification process was repeated using a diurnal profile for one of the verification zones used in the original assessment (RAF Valley verification area). This zone was used as it contained the human receptor for which the greatest changes in nitrogen dioxide (NO_2) concentrations were predicted as a result of the Wylfa Newydd DCO Project (receptor R20, receptor model ID Hum_1964). This verification zone also contained five receptor locations used as the verification points (referred to as receptors B, C, D, E and F in appendix 1-3).

2.5.39 The model verification process detailed in appendix 1-3 showed that using a diurnal profile for modelling road traffic emissions, leads to higher differences between the raw modelled (i.e. before any adjustment) and monitored oxides of nitrogen (NOx) concentrations at the roadside monitoring locations compared to the non-diurnal verification modelling reported in appendix C4-1 [APP-114] of the Environmental Statement. This essentially means that although a more realistic representation of the traffic flows, the model does not perform as well when using a diurnal profile compared to when traffic flows were averaged across a 24-hour period. Consequently, this leads to the application of a higher model adjustment factor to the predicted raw NOx concentrations at receptor locations within 200m of the modelled road links before conversion of the NOx to NO_2.

2.5.40 As shown in appendix 1-3, the final adjusted total modelled NO_2 concentrations at the verification points vary in comparison to those presented in appendix C4-1 [APP-114] of the Environmental Statement. As noted in appendix 1-3, using the diurnal profile leads to some instances where the modelled total NO_2 concentrations are lower and one instance where the total concentrations are higher.

2.5.41 At receptor R20, the modelling using a diurnal profile was undertaken for the future baseline and future with Wylfa Newydd DCO Project scenarios for the 2020 (representative of early years construction) and 2023 (representative of peak construction) assessment years to allow direct comparison to the results presented in chapter C4 [APP-091] of the Environmental Statement. This showed that at receptor R20, the predicted NO_2 concentrations using a diurnal profile were slightly higher for both the future baseline and future with Wylfa Newydd DCO Project scenarios for both assessment years, compared to those presented in chapter C4 [APP-091] of the Environmental Statement.

2.5.42 Initial observations could conclude that for higher concentrations, the diurnal profile method leads to higher total concentrations; however, for some of the verification points, the total concentrations for no diurnal profile are very similar to those for receptor Hum_1964 for the future 2020 and 2023 baseline and yet the diurnal profile method concentration is lower for these receptors and higher for receptor Hum_1964. From the comparison of the modelled concentrations in appendix 1-3, it is concluded that for receptors which are very close to the edge of the modelled road source (i.e. less than 1m from the kerb), the diurnal profile method leads to higher total NOx and NO_2 concentrations (the verification point at A5025 Valley (diffusion tube D) and receptor Hum_1964 are both approximately 0.5m from the edge of the road), and for the other receptors further from the road source the method without diurnal profile leads to higher concentrations (all other verification points, diffusion tubes B, C, E and F range from 1.2m to 1.7m from the kerbside).

2.5.43 On this basis, it is unlikely that use of a diurnal method would change the outcome and conclusions of the air quality assessment presented in chapter C4 [APP-091] of the Environmental Statement.

Assessment of effects of proposed change to air quality

2.5.44 Although the change at the worst-case long-term receptor for annual mean concentrations (i.e. Hum_1964, the human receptor closest to the road source, at 0.5m from the edge of the road, which experiences the highest predicted change in concentrations) is slightly higher for the diurnal method, this would potentially only change the effect descriptor for the 2023 scenario from small adverse to medium adverse for this one receptor. As the vast majority of receptors are more than 1m from the edge of the roads, the total concentrations and change in concentrations due to the proposed change to construction worker shift patterns are unlikely to be any higher than those presented in chapter C4 [APP-091] of the Environmental Statement.

2.5.45 The balance of effects at human receptors would remain predominantly negligible with some beneficial effects due to the A5025 Offline Highway Improvements.

2.5.46 As the distances from the modelled road sources to ecological receptors are generally further than the very close locations (less than 1m) discussed above, using a diurnal profile would be unlikely to alter the assessment of effects at ecological receptors presented in chapter C4 [APP-091] of the Environmental Statement. The total concentrations and deposition rates and change in concentrations or deposition rates due to the proposed change to construction worker shift patterns are unlikely to be any higher than presented in chapter C4 [APP-091] of the Environmental Statement.

2.5.47 Given that there is unlikely to be any significant difference between using a diurnal method and the average hourly flow method used for the Draft DCO application, the proposed change to construction worker shift patterns would not alter the conclusions of the air quality presented in chapter C4 [APP-091] of the Environmental Statement, with the balance of effects at human receptors remaining predominantly negligible and no change to the assessment of effect at ecological receptors also assessed in chapter C4

[APP-091] of the Environmental Statement. Therefore, there would be no new or different likely significant environmental effects than those reported in the Environmental Statement.

Noise and vibration

2.5.48 Chapter C2 [APP-089] of the Environmental Statement presents the results of the traffic modelling undertaken for a Reference Case (without the Wylfa Newydd DCO Project) and for the following scenarios with the Wylfa Newydd DCO Project:

- 2020 with the A5025 Off-line Highway Improvements operational;
- 2020 without the A5025 Off-line Highway Improvements operational;
- 2023 (peak construction); and
- 2033 (peak operation).

2.5.49 Chapter C5 [APP-092] of the Environmental Statement uses the outputs of the traffic modelling presented in chapter C2 [APP-089] of the Environmental Statement to assess the potential effects of day-time and night-time road traffic noise related to the construction phase.

2.5.50 To determine the significance of the proposed change to shift patterns, a sensitivity study has been conducted which compares the road traffic noise emissions of segments of road resulting from the proposed shift patterns to those with the shift patterns as presented in the Draft DCO application. The noise emissions both in the Draft DCO application and in the sensitivity study have been calculated using the mathematical relationships presented within the Department of Transport Welsh Office '*Calculation of Road Traffic Noise*' (CRTN) [RD5] and consider the following variables:

- the traffic flow;
- the speed of the traffic;
- the composition of the traffic; and
- the road surface.

2.5.51 The resulting noise emission applies at a reference distance of 10m from the nearside carriageway edge. The sensitivity study noise emissions at 10m from each road segment have been calculated for the day-time period (06:00-00:00) and also the night-time period (23:00-07:00), which are consistent with the periods adopted in the Draft DCO application.

2.5.52 To fully explore the potential road traffic noise effects arising from the Wylfa Newydd DCO Project, the Draft DCO application considered several scenarios at differing points in time during the construction and operational phases. However, because the proposed changes to shift patterns are related to the construction phase, only the construction scenarios have been considered in the sensitivity study:

- Year 2 (or 2020) – without bypasses;
- Year 2 (or 2020) – with bypasses; and
- Year 5 (or 2023) – peak construction year, with bypasses.

2.5.53 Four road segments (often referred to as 'links' in the context of traffic modelling) have been selected for the sensitivity study as they are deemed representative of three receptor groupings where there were high numbers of adverse significant effects across the entire A5025 route reported in chapter C5 [APP-092] of the Environmental Statement. The road segments that have been considered in this sensitivity study are detailed in Table 2-5 below.

Table 2-5 Road segments selected for the noise sensitivity study which reflects the proposed change to shift patterns

Link ID	Road	Link Description
A5025_90	A5025	Llanfaethlu to Chapel St (Llanfaethlu to Speed Limit Change 1)
A5025_101	A5025	Chapel St to Llanrhyddlad (Speed Limit Change 1 to Llanrhyddlad)
A5025_BY2_20 (for the Without bypasses scenario)	A5025	Llanfachraeth (S) to Llanfachraeth (N) (Via Bypass)
A5025_40 (for the With bypasses scenario)	A5025	Minffordd to Lon Y Felin

2.5.54 The results of the sensitivity study are presented in terms of the change in noise emissions at the reference distance of 10m from the nearside carriageway edge for each road segment in each scenario. As these road segments are the primary source of noise in the locations considered, any increase or decrease in noise emissions from the road traffic will cause a corresponding increase or decrease in road traffic noise level at nearby properties; therefore, this sensitivity study does not assess effects at each individual receptor.

2.5.55 Table 2-6 below shows the road traffic noise emissions at a reference distance of 10m calculated for day-time and night-time for the shift patterns detailed in the Draft DCO application as shown in Table 2-1 and the proposed new shift patterns; the difference in the basic noise levels between the proposed patterns and those submitted in the Draft DCO application is also shown.

2.5.56 Day-time calculations are based on the 18-hour AAWT traffic flows with a correction to account for the percentage of Heavy Goods Vehicle and Public Service Vehicle flows. Night-time calculations are based on the annual average hourly night-time Light Goods Vehicle, Public Service Vehicle and Heavy Goods Vehicle flows.

Table 2-6 Basic noise levels and noise change between the proposed shift patterns and those submitted in the DCO application. dB = decibel;

Scenario	Road Segment	Basic noise levels – Draft DCO application, LAeq,T[1] (dB)		Basic noise levels – Proposed Shift Patterns LAeq,T (dB)		Basic noise levels Difference (dB)	
		Day	Night	Day	Night	Day	Night
2020 - Project (Without Bypasses)	A5025_90	67.2	65.2	67.2	65.6	0.0	0.3
	A5025_101	69.8	68.9	69.8	69.2	0.0	0.3
	A5025_40	67.9	65.8	67.9	66.1	0.0	0.3
2020 - Project (With Bypasses)	A5025_90	67.2	65.2	67.2	65.6	0.0	0.3
	A5025_101	69.8	68.9	69.8	69.2	0.0	0.3
	A5025_BY2_20	69.9	68.5	69.9	68.9	0.0	0.4
2023 - Project (With Bypasses)	A5025_90	67.8	66.0	67.9	66.0	0.0	0.0
	A5025_101	70.5	69.7	70.5	69.7	0.0	0.0
	A5025_BY2_20	70.7	69.3	70.7	69.3	0.0	0.0

2.5.57 As can be seen in Table 2-6 there are no calculated noise changes between the proposed shift patterns and those submitted in the Draft DCO application for any scenario or road segment when considering the day-time assessment period. This suggests that the changes in road traffic flows to the day-time period across all assessment scenarios are likely to be minimal and would not change the conclusions of the noise assessment reported for day-time effects in chapter C5 [APP-092] of the Environmental Statement.

2.5.58 Table 2-6 shows that for the night-time period, the proposed change to shift patterns results in a small increase of between 0.3dB to 0.4dB L_{A10} across the first two assessment scenarios (2020 - both with and without bypasses). For the final assessment scenario (2023 with bypasses), there is no change resulting from the proposed change. The increase in noise level for the first two scenarios can be attributed to small increases in traffic flow during this night-time period.

Summary

2.5.59 Assessment of the proposed change shows a noise change of +0.3dB to +0.4dB during the night-time period with no change to day-time basic noise levels.

[1] The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level. The suffix "T" represents the time period to which the noise level relates. For example, LAeq 1 hr is the LAeq level determined over a period of one hour.

2.5.60 To put a noise change of 0.4dB into context, the minimum change in noise level that a trained ear can detect in controlled listening environments is generally taken to be 1.0dB. For long term changes in noise levels in uncontrolled environments, most people can only distinguish differences of 3dB or more.

2.5.61 As the likely noise change at the road segments assessed would be below 1.0dB, it is considered that any increases in worker traffic noise as a consequence of the proposed change would not be perceptible and the conclusions of the noise assessment in chapter C5 [APP-092] of the Environmental Statement are unlikely to change materially. Therefore, there would be no new or different likely significant environmental effects than those reported in the Environmental Statement.

Health impacts

2.5.62 This section discusses the implications for the Health Impact Assessment Report [APP-429] arising from the proposed change to shift patterns.

Scope of health analysis

2.5.63 The proposed changes to shift patterns discussed here relate only to issues associated with vehicles transporting people on the local road network. The relevant geographical population is predominantly the population near the local road network.

2.5.64 Effects relate to the periods close to the start and end times of shifts, as these are associated with the movement of cars and buses transporting the construction workforce. The intervening period during shifts is not expected to be associated with effects to the road network.

2.5.65 The proposed changes to shift patterns are relevant to the following topics discussed in the Health Impact Assessment Report [APP-429].

- air quality (section C.2 Air quality, emissions from vehicles transporting materials and people on the local road network during construction);
- noise (section C.3 Noise, noise from vehicles transporting materials and people on the local road network during construction);
- traffic (section C.5 Transport, road safety during construction and health trip journey times (e.g. to a hospital) during construction); and
- construction workers (section C.7 Lifestyle and behaviour, healthy and safe communities during construction).

2.5.66 The health assessment presented in the following sections draws on conclusions within other parts of this request for non-material change to shift patterns, including quantitative modelling and sensitivity testing relating to the following assessments: traffic and transport (paragraphs 2.5.2 to 2.5.31); air quality (paragraphs 2.5.35 to 2.5.47); and noise (paragraphs 2.5.48 to 2.5.61). Sensitivity testing for air quality and noise undertaken to assess the impacts of the proposed change to shift patterns and presented in previous sections considers average changes over the relevant 24-hour or night-time periods.

Therefore, the health conclusions presented in the following sections do not consider shorter-term or peak events.

Changes to periods of increased road activity

2.5.67 The shift patterns assumed in the Draft DCO application resulted in three periods of increased road activity. These were associated with:

- the end of night shifts between 03:00 and 04:00 (night-time period);
- the start of day shifts between 07:00 and 08:00 (morning period); and
- the start of night shifts and end of day shifts between 16:30 and 18:00 (afternoon/early evening period).

2.5.68 Within the Health Impact Assessment Report [APP-429] the night-time period was associated with potential for sleep disturbance. The morning and afternoon/early evening periods were associated with potential for travel delays.

2.5.69 The proposed changes to the shift patterns would alter these periods of increased road activity. For the 2020 shift pattern the periods of increased road activity would be associated with:

- the end of the night shift and start of the day shifts between 06:00 and 07:30 (early morning period); and
- the end of the day shifts and start of the night shift between 17:30 and 19:30 (afternoon/early evening period).

2.5.70 For the 2023 shift pattern the periods of increased road activity would be associated with:

- the end of the night shift and start of the day shifts between 05:30 and 08:00 (early morning period); and
- the end of the day shifts and start of the night shift between 17:30 and 20:00 (afternoon/early evening period).

Air quality related health effects

2.5.71 Sensitivity testing of the air quality models presented in the Draft DCO application is discussed above in paragraphs 2.5.35 to 2.5.47. The results indicate that the effect of the proposed changes to shift patterns on average concentrations of air pollutants associated with the Wylfa Newydd DCO Project's vehicle movements along the road network would not alter the conclusions presented in chapter C4 [APP-091] of the Environmental Statement.

2.5.72 On this basis, it is considered that the conclusions reached in the Health Impact Assessment Report [APP-429] in relation to potential air quality effects on population health from vehicles transporting people on the local road network during construction would remain unchanged and there would be no new or different likely significant environmental effects than those reported. As described in paragraphs C.2.22 and C.2.23 of the Health Impact Assessment Report [APP-429] this would be a negligible effect on the health of the general population and up to a minor adverse effect on the health of

particularly sensitive groups. These conclusions continue to take account of the potential for non-threshold effects of some pollutants.

Noise related health effects

2.5.73 Under the proposed 2020 and 2023 shift patterns, traffic noise would be expected to commence earlier in the morning and finish later in the evening (compared to the shift patterns assumed in the Draft DCO application). The earlier starts could cause sleep disturbance from 05:30 or 06:00. However, the 10.5-hour period between 19:30 and 06:00 (proposed 2020 shift pattern) or 9.5-hour period between 20:00 and 05:30 (proposed 2023 shift pattern) would be less disturbed by the proposed shift changes (there being no night-shifts ending between 03:00 and 04:00). This is considered a beneficial change from the health perspective as it reduces the potential for sleep disturbance (a greater length of time available when most people are likely to sleep before any potential of shift change related disturbance).

2.5.74 To assess the effects of the proposed change on noise, sensitivity testing of the noise models presented in chapter C5 [APP-092] of the Environmental Statement was undertaken and discussed above in paragraphs 2.5.48 to 2.5.61. The results indicate that the proposed shift changes to shift patterns would be unlikely to perceptibly change the average levels of noise over the night-time period at representative locations (stretches of roads with dwellings predicted in the Draft DCO application to experience adverse noise effects from road transport).

2.5.75 On this basis, it is considered that the conclusions reached in the Health Impact Assessment Report [APP-429] in relation to potential noise disturbance effects on population health (particularly at night) from vehicles transporting people on the local road network during construction would remain unchanged and there would be no new or different likely significant environmental effects than those reported. As described in paragraphs C.3.20 and C.3.12 of the Health Impact Assessment Report [APP-429] this would be a negligible effect on the health of the general population and up to a minor adverse effect on the health of particularly sensitive groups.

Transport related health effects

2.5.76 The proposed changes to shift patterns are likely to present a slight improvement in terms of road safety for children which, as sensitive road users, are present in greater numbers during the travel to and from school times (as vehicle passengers, cyclists and pedestrians).

2.5.77 For example, the proposed 2020 early morning period of shift change related vehicle movements is likely to be more beneficial for road safety (and journey times) during travel to school. The change being from between 07:00 and 08:00 in the Draft DCO application, to between 06:00 and 07:30 in the proposed 2020 shift pattern.

2.5.78 Similarly, the proposed 2020 and 2023 afternoon/early evening period of shift change related vehicle movements is likely to be more beneficial for road safety (and journey times) during travel from school (and extra-curricular activities). The change being from between 16:30 and 18:00 in the Draft DCO

application, to between 17:30 and 19:30 (proposed 2020 shift pattern) or 17:30 and 20:00 (proposed 2023 shift pattern).

2.5.79 Transport modelling of the proposed shift pattern changes is discussed above in paragraphs 2.5.2 to 2.5.31. The results indicate minor effects on travel times that are considered not significant at Britannia Bridge; no adverse effects (and some improvements) at key junctions; and an overall improvement in traffic impacts for the wider road network.

2.5.80 On this basis, it is considered that the conclusions reached in the Health Impact Assessment Report [APP-429] in relation to road safety associated with vehicles transporting people on the local road network during construction would remain unchanged (the changes being generally beneficial but slight) and there would be no new or different likely significant environmental effects than those reported. As described in paragraphs C.5.13 and C.5.14 of the Health Impact Assessment Report [APP-429] this would be a negligible effect on the health of the general population and up to a minor adverse effect on the health for particularly sensitive groups.

2.5.81 Similarly, the conclusions reached in the Health Impact Assessment Report [APP-429] in relation to health trip journey times (which are sensitive to delays on the local road network) would remain unchanged and there would be no new or different likely significant environmental effects than those reported. As described in paragraphs C.5.35 and C.5.36 of the Health Impact Assessment Report [APP-429] this would be a negligible effect on the health of the general population and up to a minor adverse effect on the health of particularly sensitive groups.

Construction workers

2.5.82 The proposed changes to shift patterns are not expected to affect conclusions within the Health Impact Assessment Report [APP-429] in relation to the potential for community effects associated with the off-shift workforce and there would be no new or different likely significant environmental effects than those reported. The proposed shift patterns would still be expected to stagger leisure time across the week. This would continue to limit the potential for large congregations of off-shift construction workers in a single community location at any one time.

2.5.83 On this basis, it is also considered that the conclusions reached in the Health Impact Assessment Report [APP-429] in relation to healthy and safe communities during construction would be unchanged and there would be no new or different likely significant environmental effects than those reported. As described in paragraphs C.7.26 and C.7.27 of the Health Impact Assessment Report [APP-429] this would be a negligible effect on the health of the general population and up to a minor adverse effect on the health of particularly sensitive groups.

Table 2-7 Likely new or different environmental effects

Document name	Examination Reference Number	Chapter name / section name	New or different likely significant effects	Material change / non-material change / no change
Environmental Statement appendix C2-4	APP-101	DCO Transport Assessment	As outlined in paragraphs 2.5.2 to 2.5.31, the proposed change to shift patterns does cause changes with some directions and time periods experiencing small increases in delays per vehicle and some directions and time periods experiencing small reductions in delays per vehicle compared to the DCO Transport Assessment [APP-101]. Overall, the updated traffic assessment of Britannia Bridge shows that the proposed change does not cause any new or different likely significant environmental effects than those reported in the Environmental Statement. Similarly, the proposed change to worker shift patterns is expected to have no overall detrimental impact on the junctions assessed in the DCO Transport Assessment [APP-101], and in some cases would improve the junction performance at certain junctions at certain times of the day owing to some of the proposed shift start/end times being further away from the AM and PM peak hours of travel on the local highway network when compared to the	Non-material change

Document name	Examination Reference Number	Chapter name / section name	New or different likely significant effects	Material change / non-material change / no change
			analysis presented in the Draft DCO application. Overall, the updated traffic assessment of other junctions shows that the proposed change does not cause any new or different likely significant environmental effects than those reported in the Environmental Statement.	
Environmental Statement chapter C3	APP-090	Public access and recreation effects of traffic	As outlined in paragraphs 2.5.32 to 2.5.34, the proposed change would result in a change to the assumptions regarding shift patterns but would not result in new or different likely significant environmental effects than those reported in the Environmental Statement, and the conclusions of the public access and recreation assessment presented in chapter C3 [APP-090] of the Environmental Statement would remain as reported.	No change
Environmental Statement chapter C4	APP-091	Air quality effects of traffic	As outlined in paragraphs 2.5.35 to 2.5.47, the proposed change would not significantly alter the air quality assessment, in particular effects to human and ecological receptors, due to the proposed change in construction worker shift patterns. Thus, there is considered to be no new or different likely significant environmental effects to the assessment of air quality and the conclusions presented in chapter C4 [APP-	Non-material change

Document name	Examination Reference Number	Chapter name / section name	New or different likely significant effects	Material change / non-material change / no change
			091] of the Environmental Statement remain as reported.	
Environmental Statement chapter C5	APP-092	Noise and vibration effects of traffic	During the construction phase there are unlikely to be any changes for the day-time scenarios from those reported in the Draft DCO application. During the construction phase in 2020 (for both the with and without bypasses scenarios) small increases in night-time noise may occur; such increases would be well below the threshold of human perception and are therefore not considered to result in new or different likely significant effects than those reported in the Environmental Statement. For the peak year of construction traffic in 2023 there are no differences in predicted road traffic noise at night, and therefore this assessment would remain as presented in the Draft DCO application. Thus, there is considered to be no new or different likely significant environmental effects to the assessment of noise and the conclusions presented in chapter C5 [APP-092] of the Environmental Statement remain as reported.	Non-material change.
Environmental Statement chapter C7	APP-094	Combined topic effects	As outlined in the topic assessments, the proposed change is not considered to result in any new or different likely environmental	No change

Document name	Examination Reference Number	Chapter name / section name	New or different likely significant effects	Material change / non-material change / no change
			effects as a result of the proposed change. Consequently, there are not considered to be any receptors subject to new combined topic effects, and therefore the assessment presented in chapter C7 [APP-094] of the Environmental Statement remains as reported.	
Environmental Statement, chapter I4	APP-387	Intra-project cumulative effects	As outlined in section 2.5 and summarised in this table, the proposed change would not significantly alter the conclusions of the public access and recreation, air quality and noise assessments presented in the Draft DCO application. Any small increases in night-time noise would be well below the threshold of human perception and are not considered to result in new or different likely significant environmental effects than those reported in the Environmental Statement.	Non-material change.
Environmental Statement chapter I5	APP-388	Inter-project cumulative effects	As outlined in section 2.5 and summarised in this table, the proposed change would not significantly alter the conclusions of the traffic and transport, public access and recreation, air quality and noise assessments presented in the Draft DCO application.	Non-material change

Document name	Examination Reference Number	Chapter name / section name	New or different likely significant effects	Material change / non-material change / no change
			Any small increases in night-time noise would be well below the threshold of human perception and are therefore not considered to result in new or different likely significant environmental effects than those reported in the Environmental Statement.	
Health Impact Assessment Report	APP-429	Air quality (section C.2) Noise (section C.3 Noise) Traffic (section C.5) Construction workers (section C.7)	As outlined in paragraphs 2.5.62 to 2.5.83, the proposed change to shift patterns does not result in any new or different likely significant environmental effects and does not change the conclusions reached in the Health Impact Assessment Report [APP-429]. The proposed changes relate to vehicle movements associated with the movement of construction workers at times of shift changes. The redistribution of such vehicles over different time periods on the road network is expected to result in only slight changes to emissions, disturbance, journey times, road safety and off-shift worker distribution. There are both beneficial and adverse changes; however, none are expected to be of a magnitude to warrant additional mitigation and all are considered within the bounds of the existing assessment scores.	Non-material change

Document name	Examination Reference Number	Chapter name / section name	New or different likely significant effects	Material change / non-material change / no change
			Thus, there is considered to be no new or different likely significant environmental effects to the assessment of effects to human health and the conclusions of the Health Impact Assessment Report [APP-429] remain as reported.	

2.6 Cumulative assessment for the proposed changes

2.6.1 To assess whether all the proposed non-material changes could interact to result in the Wylfa Newydd DCO Project having a greater cumulative effect to that reported in the Draft DCO application, a cumulative assessment has been carried out, the results of which can be found in appendix 1-1.

2.6.2 Cumulative effects include both intra-project (resulting from the various developments that comprise the Wylfa Newydd DCO Project) and inter-project (resulting from the Wylfa Newydd DCO Project together with external projects) effects; these assessments are reported in volume I (cumulative effects) [APP-384 to APP-388] of the Environmental Statement.

2.6.3 Combined topic effects, also known as intra-development effects, occur when a single receptor is affected in more than one way by the same development. The relevant combined topic assessment (i.e. project-wide effects) is reported in chapter C7 [APP-094] of the Environmental Statement.

2.6.4 As demonstrated in the cumulative assessment report (appendix 1-1), there are considered to be no new or different intra- and inter- project cumulative effects to environmental receptors as a consequence of the proposed change or any other non-material change requests. Furthermore, there are considered to be no new or different combined topic effects as a consequence of the proposed changes.

2.6.5 Consequently, the overall cumulative assessment of the Wylfa Newydd DCO Project remains as reported in the Draft DCO application.

2.7 Schedule of engagements

Table 2-8 Schedule of engagements

Date	Event
17 October 2018	Horizon wrote to PINS, submitting Batch 1 Requests for Non-Material Change (Blasting Strategy and Marine Vessel Movements) and advising of an emerging Batch 2 (Working Hours, Shift Patterns and HGV Deliveries)
23 October 2018	Preliminary Meeting
31 October 2018	Horizon's letter of 17 October 2018 (outlining the three new (Batch 2) proposed changes and advising of the intention to consult on them) accepted at the discretion of the Examining Authority
31 October 2018	First notice advertising consultation on Batch 2 (8 November to 6 December 2018) published in The Daily Post

7 November 2018	Second notice advertising consultation on Batch 2 (8 November to 6 December 2018) published in The Daily Post, and also in the London Gazette
8 November 2018	28-day consultation on Batch 2 begins
19 November 2018, 1-7pm	Horizon Open Surgery at Cemaes Village Hall, attended by Batch 2 consultation team
6 December 2018	28-day consultation on Batch 2 ends
7 December 2018 – 16 January 2019	Horizon reviews representations received and updates proposed change as required to have regard to representations
17 January 2019 (Exam Deadline 4)	Submission of three proposed non-material changes to the Examining Authority for consideration.
23 April 2019	End of Examination

2.7.2 As noted in paragraph 1.4.5, copies of the consultation documents were made available for public viewing at:

- The Anglesey Business Centre, Isle of Anglesey County Council, Bryn Cefni Business Park, Llangefni, Anglesey, LL77 7XA, Monday to Friday 9am to 5pm, and
- Wylfa Newydd Site Office, Cemaes Bay, Anglesey, LL67 0AA, Monday to Friday 9am to 5pm by appointment only, and
- on Horizon's consultation website, www.horizonnuclearpower.com/consultation.

2.7.3 The following specified consultees (prescribed persons under section 42(1)(a)-(d) of the Planning Act 2008) were notified of the proposed change. Those who responded are asterisked.

- Welsh Government *
- Natural Resources Wales *
- Isle of Anglesey Council *
- Gwynedd Council *
- Conwy County Borough Council
- North Wales Economic Ambition Board
- North Wales Wildlife Trust
- RSPB Cymru
- National Trust
- The Crown Estate
- Betsi Cadwaladr University Health Board
- Public Health Wales
- Welsh Ambulance Service Trust

- North Wales Police
- RAF Valley
- North Wales Fire and Rescue Service *
- National Grid
- Welsh Water
- North & Mid Wales Trunk Road Agency
- The Marine Management Organisation
- North West & North Wales Sea Fisheries Committee
- The Maritime & Coastguard Agency
- Marine Conservation Trust
- Royal National Lifeboat Institution
- The Maritime & Coastguard Agency
- SP Manweb plc
- Magnox
- Nuclear Decommissioning Authority
- North Anglesey Partnership
- Destination Anglesey Partnership
- North Wales Economic Ambition Board
- Trinity House *
- Joint Nature Conservation Committee
- Cyngor Tref Amlwch (Town Council)
- Cyngor Cymuned Cylch-Y-Garn (Community Council)
- Cyngor Cymuned Llanbadrig
- Cyngor Cymuned Mechell
- Cyngor Cymuned Llaneilian
- Cyngor Cymuned Rhosybol
- Bodedern Community Council
- Bryngwran Community Council
- Llanfachraeth Community Council
- Llanfaethlu Community Council
- Trearddur Community Council
- Valley Community Council
- Llanfair yn Neubwll Community Council
- Talybolion Local Members
- Twrcelyn Local Members

2.7.4 Targeted mail drops for “Consultation update” newsletter covering all three Batch 2 changes:

- Main Site – regular list of near neighbours, comprising 909 addresses in Cemaes and Tregele
- A5025 corridor – list of addresses (within 1km wide corridor along the A5025 from Main Site to and including Valley) used for on-line road consultations for applications under the Town & Country Planning Act 1990 – 1,679 addresses
- Logistics Centre, Parc Cybi – a new zone of 750m radius from the Centre, comprising 67 residential and business addresses
- Park and Ride, Dalar Hir – a new zone based on a 1,250m radius, with the addition of some further properties close to the zone, comprising a total of 363 addresses
- **TOTAL: 3,018 addresses.**

2.7.5 Site notices:

- 22 locations around Anglesey

2.7.6 As the proposed changes do not require any 'additional land', Horizon did not seek the consent of persons with an interest in the relevant land was required under the Infrastructure Planning (Compulsory Acquisition) Regulations 2010. However, letters providing information about the consultation were sent to persons with an interest in land relating to the Main Site, A5025, Parc Cybi and Dalar Hir, comprising approximately 850 addresses.

2.7.7 Horizon's letter to the Planning Inspectorate of 17 October 2018 (notifying of the emerging second batch of non-material changes) advised that Horizon did not propose to undertake 'roadshow' type events as part of the consultation, but instead to undertake consultation on a written basis only (due to the scheduled hearings and other demands of the examination process on stakeholders). However, Horizon identified an opportunity to send a Batch 2 consultation team to one of the regular 'Open Surgeries' hosted at Cemaes Village Hall, thereby giving stakeholders an opportunity to discuss the Batch 2 changes in person, as noted in the schedule of engagements above. Notification of the event was included in publicity materials.

2.8 Schedule of consequential amendments to application documents

Table 2-9 Schedule of consequential amendments to application documents

Application document name	Examination Reference Number	Section of document	Version to be amended	Description of amendment
DCO Transport Assessment	APP-101	Executive Summary	1.0	Update to shift pattern details in text and table 1-1

Application document name	Examination Reference Number	Section of document	Version to be amended	Description of amendment
DCO Transport Assessment	APP-101	7.3, 11.4, 14.1	1.0	Update to shift pattern details and text relating to VISSIM results
DCO Transport Assessment – appendix I – VISSIM Model Results	APP-110	Throughout	1.0	Update to reflect proposed changes shift patterns and associated results
DCO Transport Assessment – appendix L – Supplementary information	APP-113	4	1.0	Update to shift pattern details
Environmental Statement chapter C3: Public access and recreation effects of traffic	APP-090	3.4, 3.5	1.0	Update to shift pattern details
Environmental Statement appendix C5-1: Operational road traffic input and output	APP-116	1.1, 3, 4	1.0	Update to traffic flows for the 2020 and 2023 scenarios, minor changes to noise levels and small changes to the exact numbers of properties in each category in the night-time columns of tables 4-1 to 4-5
Main Power Station Site sub-CoCP	REP2-032	4.3	2.0	Update to shift pattern details
Logistics Centre sub-CoCP	REP-373	4.4	2.0	Update to shift pattern details
Environmental Statement chapter D1:	APP-120	1.6	1.0	Update to shift pattern details

Application document name	Examination Reference Number	Section of document	Version to be amended	Description of amendment
Proposed development				
Environmental Statement chapter F1: Proposed development	APP-266	1.1	1.0	Update to shift pattern details
Design and Access Statement - Volume 3 – Associated Developments and Off-Site Power Station Facilities	REP2-029	1.6	2.0	Update to shift pattern details

3 References

Table 3-1 Schedule of references

ID	Reference
RD1	The Planning Inspectorate. 2018. Advice Note 16: How to request a change which may be material. [Online]. [Accessed: June 2018]. Available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/07/Advice-note-16.pdf
RD2	Department of Energy and Climate Change. 2011. Overarching National Policy Statement for Energy (EN-1). [Online]. [Accessed: 02 July 2018]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf
RD3	Department of Energy and Climate Change. 2011. National Policy Statement for Nuclear Power Generation (EN-6). [Online]. [Accessed: 02 July 2018]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47859/2009-nps-for-nuclear-volumeI.pdf
RD4	Department for Business, Energy and Industrial Strategy. 2017. Statement on Energy Infrastructure. [Online] [Accessed: 22 October 2018]. Available from: https://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Lords/2017-12-07/HLWS316/
RD5	Department for Transport and the Welsh Office. 1988. *Calculation of Road Traffic Noise* [Online] Available from: http://www.programmeofficers.co.uk/Cuadrilla/CoreDocuments/CD31/CD31.24.pdf

Appendix 1-1: Cumulative Assessment Report

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1 Introduction

1.1.1 Horizon Nuclear Power Wylfa Limited's ("**Horizon**") is currently seeking a Development Consent Order to enable the construction, operation and maintenance of the Wylfa Newydd DCO Project ("**Draft DCO application**"). Horizon is seeking a total of five non-material changes to the Draft DCO application for the Wylfa Newydd DCO Project. Horizon has already submitted the following two non-material change requests, both of which were accepted into examination on 31 October 2018:

- Request for Non-Material Change no.1 – Blasting Strategy [AS-012]; and
- Request for Non-Material Change no.2 – Marine Vessel Movements [AS-013].

1.1.2 Horizon is now making the following three non-material change requests:

- Request for Non-Material Change no.3 – Worker Shift Patterns;
- Request for Non-Material Change no.4 – Working Hours; and
- Request for Non-Material Change no.5 – HGV delivery window.

1.1.3 Further information related to each non-material change is provided in section 1.4 below; detailed assessments can be found in the standalone Request for Non-Material Change documents listed above.

1.1.4 This cumulative effects report considers whether the Requests for Non-Material Change would change the findings of the cumulative effects assessments reported in the Environmental Statement.

1.2 Scope

1.2.1 This appendix (which is attached – in duplicate form – to documents 3, 4 and 5 listed above) sets out an assessment of the effects of all five proposed non-material changes to the cumulative assessment reported in the Draft DCO application. The purpose is to assess whether the proposed changes could interact to result in the Wylfa Newydd DCO Project having a greater cumulative effect to that reported in the Draft DCO application. The effect of each separate request for non-material change on the cumulative assessment reported in the Draft DCO application has been assessed and reported within the standalone candidate for change documents.

1.2.2 The approach to the cumulative assessment of the proposed changes is consistent with the Project Environmental Impact Assessment (EIA); see chapter B1 (introduction to the assessment process), [APP-066] of the Environmental Statement for an overview of this process. There are three components to the assessment of cumulative EIA effects: combined topic effects; intra-project effects; and inter-project effects, and all are described further below.

1.2.3 The methodology used for the cumulative effects assessment has considered all residual effects that are minor adverse or greater.

1.2.4 Combined topic effects (also known as intra-development effects) occur when a single receptor is affected in more than one way by the same development.

Combined topic effects for each development comprising the Wylfa Newydd DCO Project are reported in chapters C7 (Project-wide effects), [APP-094], D16 (WNDA Development), [APP-135], E12 (Off-Site Power Station Facilities: AECC ESL and MEEG), [APP-250], F12 (Park and Ride), [APP-227], G12 (A5025 Off-line Highway Improvements), [APP-315] and H12 (Logistics Centre), [APP-366] of the Environmental Statement.

1.2.5 Intra-project effects result from the various developments that comprise the Wylfa Newydd DCO Project, whilst inter-project effects result from the Wylfa Newydd Project together with external projects. These assessments are reported in volume I (cumulative effects) [APP-384 to APP388] of the Environmental Statement.

1.2.6 Consideration has also been given to the cumulative effects of the proposed changes to the Health Impact Assessment Report [APP-429] and the Shadow Habitats Regulations Assessment Report [APP-050/051] and a conclusion of no new cumulative or in-combination effects has been reached, respectively.

1.2.7 All other assessments submitted as part of the Draft DCO application (e.g. Welsh Language Impact Assessment, [APP-432]; Equality Impact Assessment, [APP-434]; and Water Framework Directive Compliance Assessment, [APP-444] would remain unaffected by the proposed changes and have therefore not been considered further.

1.3 Assessment approach

1.3.1 For the purpose of the assessment and in order to assess a worst case, it is assumed that the proposed changes and the associated construction activities and environmental effects would occur concurrently. This is considered worst case as in reality the proposed changes are unlikely to fully overlap with one another (e.g. blasting activities will occur earlier in the programme than marine vessel movements but are estimated to overlap for approximately 8 months).

Assessment of noise effects

1.3.2 The noise assessments for each of the following requests for non-material change identified the potential for new or different likely significant environmental effects:

- Request for Non-Material Change no.4 – Working Hours; and
- Request for Non-Material Change no.5 – HGV delivery window.

1.3.3 However, implementation of a Local Noise Mitigation Strategy (LNMS) for the Wylfa Newydd DCO Project, as well as other mitigation measures secured in the Wylfa Newydd Code of Construction Practice (CoCP) [APP-414], will reduce the assessment of effects arising from the proposed changes. With the potential for some small increases in the number of adverse effects, including cumulatively, a number of options for new and enhanced mitigation have been proposed. Included in these options is an extension to the commitment made in the LNMS set out in section 8.3 of the Wylfa Newydd CoCP [REP2-031] irrespective of the proposed changes to working hours and the HGV delivery window (Requests for Non-Material Change no. 4 and 5). This extension will on balance mitigate the worst-affected properties and

reduce major significant effects identified in the Draft DCO application and as of the proposed change.

1.3.4 On the basis of this mitigation, the noise and vibration topic assessment for the proposed change to working hours and the HGV delivery window (Requests for Non-Material Change no. 4 and 5) concluded that on balance, there would be no new or different likely significant environmental effects. However, the potential cumulative effect of changes to noise disturbance as a result of the five requests for non-material change to the Draft DCO application has been considered within this appendix (see sections 2 to 4).

Assessment of air quality effects

1.3.5 The air quality dispersion modelling which was undertaken to assess the air quality effects of the proposed change to working hours (Request for Non-Material Change no. 4) took into consideration Horizon's pre-existing commitment within the Draft DCO application to use lower emitting plant, machinery and marine vessels proposed as additional mitigation. It also took account of the proposed change to the marine vessel movements (Request for Non-Material Change no. 2) which has been submitted to the Examining Authority.

1.3.6 Although air quality modelling work was undertaken to assess the proposed change to worker shift patterns and the HGV delivery window (Requests for Non-Material Change no. 3 and 5), there was no requirement to take account of any pre-existing mitigation commitments within the Draft DCO application. The proposed change to the blasting strategy (Request for Non-Material Change no. 1) relates to the timings for carrying out blasting and has no effect on the amount or magnitude of blasting required. Therefore, this proposed change does not affect the assessment of air quality effects reported in the Draft DCO application.

1.3.7 As expected, the lower emitting construction plant, machinery and vessels delivered significant reductions in air quality effects. The effect of the proposed changes to working hours (Request for Non-Material Change no. 4) has therefore been assessed against the quantified residual effects of the two modelling scenarios (for year 2 and year 5) which take account of this mitigation. This is considered to be a more appropriate baseline scenario than the Draft DCO application which does not quantify this mitigation within the modelling assessments (see paragraphs 2.5.2 to 2.5.4 of the request for non-material change to working hours). This forms the basis of the cumulative assessment.

Assessment of human health impacts

1.3.8 The Health Impact Assessment has adopted the same assessment approach to mitigation as the noise and air quality assessments described above. This forms the basis of the cumulative assessment.

1.4 Description of the proposed non-material changes

1.4.1 A detailed description of the five proposed non-material changes being sought by Horizon, including a justification for their requirement and non-materiality can be found in the standalone candidate for change documents.

1.4.2 For reference, a brief description of each proposed non-material change is provided in Table 1-1 below.

Table 1-1 Proposed non-material changes to the Draft DCO application being sought by Horizon

Proposed non-material change	Description
Request for Non-Material Change no.1 – Blasting Strategy [AS-012]	Horizon is seeking an extension to the daily time frame within which blasting for the Main Construction works is permitted, from: Monday to Friday between 10:00 and 16:00, and Saturday between 10:00 and 13:00 (as submitted in the Draft DCO application); to Monday to Friday between 09:00 and 19:00, and Saturday between 08:00 and 13:00 (with no blasting after dusk between March and September). In practice, because of the change in length of day and the change to BST, dusk falls after 19:00 from April until September.
Non-Material Change no.2 – Marine Vessel Movements [AS-013]	Horizon is seeking to increase the upper daily limit from four movements per day (two vessels) to 16 movements per day (eight vessels). These changes fall within the total vessel movements described and assessed in the Draft DCO application.
Request for Non-Material Change no.3 – Worker Shift Patterns	Horizon is also seeking the following changes to shift times and durations: • increase the day shift windows by half hour at the end of each shift; • amend the start of the night shift window by three hours; and • decrease the night shift window by half hour during peak construction (e.g. 2023).
Request for Non-Material Change no.4 – Working Hours	Horizon is seeking to extend the following working hours to include 19:00-07:00 hours (i.e. 24-hours) for: • marine piling (percussion piling to 19:00 only); • MOLF construction • preparation for blasting including rock drilling and packing for blasting;

Proposed non-material change	Description
	• moving/repositioning won rock in the excavations; and • support operations which covers a range of activities required to support the early works and Main Construction As a consequence of the proposed change to working hours and to reduce overall environmental effects from those reported in the Draft DCO application, Horizon is also seeking an extension to the working hours for earthworks and site grading.
Request for Non-Material Change no.5 – HGV delivery window	Horizon is seeking to extend the weekday (Monday to Friday inclusive) delivery window into the evening, to include deliveries between the hours of 19:00 and 23:00 (up to a maximum of 20 HGV movements in each direction). Furthermore, an additional delivery window is proposed on Saturday mornings, between 08:00 and 13:00 (up to a maximum of 50 HGV movements in each direction).

2 Combined topic effects (i.e. intra-development cumulative effects)

2.1.1 The proposed changes to worker shift patterns and the HGV delivery window (Requests for Non-Material Change no. 3 and 5) have potential implications for the assessment of project-wide effects outlined in volume C of the Environmental Statement. The remaining proposed changes to the blasting strategy, marine vessel movements, and working hours (Request for Non-Material Change no. 1, 2 and 4) relate specifically to the WNDA Development which is assessed in volume D of the Environmental Statement (Table 2-1).

2.1.2 Thus, this section examines the potential effect of the proposed changes to the combined topic effects assessments presented within chapter C7 [APP-094] (project-wide effects) and D16 [APP-135] (WNDA Development) of the Environmental Statement.

Table 2-1 Summary matrix of the non-material change requests and the developments effected

Proposed non-material change	Project-wide effect (volume C)	WNDA Development (volume D)
Request for Non-Material Change no.1 – Blasting Strategy [AS-012]		X
Non-Material Change no.2 – Marine Vessel Movements [AS-013]		X
Request for Non-Material Change no.3 – Worker Shift Patterns	X	
Request for Non-Material Change no.4 – Working Hours		X
Request for Non-Material Change no.5 – HGV delivery window	X	

The proposed changes do not affect assessments of combined topic effects relating to the Off-Site Power Station Facilities: AECC ESL and MEEG (volume E), Park and Ride (volume F), A5025 Off-line Highway Improvements (volume G) and the Logistics Centre (volume H) as there is no pathway of effect to receptors considered within these assessments. Therefore, the assessment of combined topic effects for these developments remain as reported in chapters E12 [APP-250], F12 [APP-277], G12 [APP-315] and H12 [APP-366] of the Environmental Statement.

2.2 Project-wide combined topic effects

2.2.1 The project-wide combined topic effects assessment of each of the proposed changes to worker shift patterns and the HGV delivery window (Requests for Non-Material Change no. 3 and 5), concluded no change to the assessment and conclusions presented in chapter C7 [APP-094] of the Environmental Statement.

2.2.2 Considering these proposed changes together, it was identified that there could be effects to the following receptors via the traffic and transport, and public access and recreation project-wide topic assessments (see Table 2-2):

- Motorised and public transport users (traffic and transport);
- Recreational cyclists and walkers (public access and recreation); and
- Active travel cyclists and walkers (public access and recreation).

Table 2-2 Topic assessments and receptors potentially affected by the proposed changes to worker shift patterns and the HGV delivery window (adapted from appendix C7-1) [APP-118]

	Socio-economics	Traffic and transport	Public access and recreation	Air quality	Noise and vibration	Waster and materials management
Motorised and public transport users		Y				
Recreational cyclists and walkers			Y			
Active travel cyclists and walkers			Y			

2.2.3 As a consequence of the proposed changes to worker shift patterns and HGV delivery windows, no new receptors would be scoped into the project-wide combined topic effects assessment.

Traffic and transport

2.2.4 The proposed changes to worker shift patterns and the HGV delivery window (Requests for Non-Material Change no. 3 and 5) both have the potential to alter traffic flows, and in the case of Saturday morning HGV deliveries, introduce new construction-related traffic from that assessed within the Draft DCO application.

2.2.5 The traffic and transport assessment for the proposed changes to shift patterns (Request for Non-Material Change no. 3) and the HGV delivery window (Request for Non-Material Change no. 5) each concluded that there would be no new or different likely significant combined effects than those reported in chapter C7 [APP-094] of the Environmental Statement.

2.2.6 When considering these two proposed changes in combination, the only potential for a cumulative effect to occur is during the weekday evenings around the commencement of the evening night shift (i.e. 19:00) as HGV deliveries would continue past 19:00. There would be no overlap in the timing of worker shift patterns (which means workers arrive at the Wylfa Newydd Development Area before 08:00) and the HGV delivery window on Saturdays (which ensures there are no HGV movements before 08:00) and so any impacts of these proposed changes are considered independent of one another.

2.2.7 If HGV movements were to be introduced in the evenings, the number of HGV movements in the hour that overlaps with worker traffic movements associated with the proposed change to shift patterns would be small (an average of five HGVs per direction). Lower background traffic flows in the evening period mean that impacts should be less than those assessed during peak hours of traffic on the road network. Furthermore, in practice the proposed change would reduce peak hourly flows during the day as the same number of HGV deliveries would occur over a longer time period. Given the limited temporal overlap of the two proposed changes and the small vehicle numbers involved, there would be no new or different likely cumulative transport impacts.

2.2.8 Consequently, there is considered to be no change to the assessment of combined topic effects to motorised and public transport users presented within chapter C7 [APP-094] of the Environmental Statement. Thus, the conclusions remain as reported in the Draft DCO application.

Public access and recreation

2.2.9 The proposed changes to shift patterns and the HGV delivery window both have the potential to affect recreational amenity value as well as active travel for walkers and cyclists as a result of changes to, or increases in, traffic flows.

2.2.10 The proposed change to construction worker shift patterns (Request for Non-Material Change no. 3) is not anticipated to lead to any net increase or decrease in the number of vehicles entering or exiting the Park and Ride or using the A5025 to access the Wylfa Newydd Development Area. However, it would lead to minor changes to the peak flows, which would increase as a result of a reduction in the number of shifts. The assessment for the proposed change to construction worker shift patterns concluded that the change would not result in new or different likely significant environmental effects than those reported in the Environmental Statement.

2.2.11 The proposed change to the HGV delivery window (Request for Non-Material Change no. 5) found no new or different likely significant effects on public access, onshore recreation or active travel.

2.2.12 Consequently, there is considered to be no change to the assessment of combined topic effects to walkers and cyclists undertaking recreation or active travel presented within chapter C7 [APP-094)] of the Environmental Statement. Thus, the conclusions remain as reported in the Draft DCO application.

2.3 WNDA Development combined topic effects

2.3.1 The WNDA Development combined topic effects assessment for each of the proposed changes to the blasting strategy, marine vessel movements and working hours (Request for Non-Material Change no. 1, 2 and 4), concluded no change to the assessment and conclusions presented in chapter D16 [APP-135] of the Environmental Statement.

2.3.2 Considering these proposed changes together, it was identified that there could be a change to the WNDA Development combined topic assessment for the following receptors (which are already considered in chapter D16 [APP-135] of the Environmental Statement) via the air quality and noise and vibration topic assessments (Table 2-3):

- Human receptors:
  - i) residential receptors within 350m of the Wylfa Newydd Development Area.
- other receptors:
  - ii) bats; and
  - iii) marine mammals (pinnipeds and cetaceans).

2.3.3 As a consequence of the proposed changes to the blasting strategy, marine vessel movements and working hours, no new receptors would be scoped into the WNDA Development combined topic effects assessment.

Table 2-3 Topic assessments and receptors potentially affected by the proposed changes to the blasting strategy, marine vessel movements and working hours (denoted by 'Y') (adapted from appendix D16-1) [APP-236]

	Socio-economics	Public access and recreation	Air quality	Noise and vibration	Soils and geology	Surface water and groundwater	Terrestrial and freshwater ecology	Landscape and visual	Cultural heritage	Coastal processes and coastal geomorphology	Marine environment	Radiological effects	Shipping and navigation
Human receptors													
Residential receptors within 350m of the Wylfa Newydd Development Area			Y										
Other receptors													
Bats							Y						
Marine mammals (pinnipeds and cetaceans)											Y		

Human residential receptors

2.3.4 The proposed change to the blasting strategy, marine vessel movements, and working hours (Requests for Non-Material Change no. 1, 2 and 4) each have the potential to affect human residential receptors due to changes in noise and vibration effects. The proposed change to marine vessel movements and working hours also each have the potential to impact air quality. Those receptors potentially affected are likely to be located within 350m of the Wylfa Newydd Development Area, which includes the majority of Tregele, the western half of Cemaes (i.e. those properties or locations to the west of the High Street) and several other properties located around the Wylfa Newydd Development Area.

2.3.5 The combined topic assessment for each of the proposed changes to the blasting strategy, marine vessel movements and working hours (Requests for Non-Material Change no. 1, 2 and 4) each concluded no change to the assessment and conclusions presented in chapter D16 [APP-135] of the Environmental Statement. However, it is acknowledged that the proposed changes combined could result in an additive or combined effect which could lead to a change in the overall combined topic assessment for the WNDA Development.

2.3.6 The proposed change to marine vessel movements (Request for Non-Material Change no. 2) would result in a small increase in noise levels at 120 properties closest to the Wylda Newydd Development Area which would be undetectable to a person. As the proposed change to the blasting strategy (Request for Non-Material Change no. 1) would be subject to the noise and vibration control measures (including monitoring) set out in section 8 of the Main Power Station Site sub-CoCP and would include strict adherence to BS6472-2 [RD1], there would be no additive effect from these two proposed changes. This conclusion remains valid when the proposed change to working hours is also considered, on the basis that new and enhanced mitigation has been offered to address any new or different likely significant noise disturbance effects associated with this proposed change.

2.3.7 The proposed changes to marine vessel movements and working hours (Requests for Non-Material Change no. 2 and 4) are both predicted to result in small changes in predicted concentrations of pollutants at human receptor locations, with some properties experiencing an additive effect. The changes, however, would be small and are not considered to alter the conclusions of the combined topic effects assessment presented in D16 [APP-135] of the Environmental Statement.

2.3.8 Overall, any changes to noise and air quality effects arising from the proposed changes to the blasting strategy (Request for Non-Material Change no. 1) would not combine to result in a change to the assessment of combined topic effects presented within chapter D16 [APP-135] of the Environmental Statement. Thus, the conclusions remain as reported in the Draft DCO application

Other receptors

Bats

2.3.9 The proposed changes to the blasting strategy and working hours (Requests for Non-Material Change no. 1 and 4) both have the potential to affect bats via visual, noise and air quality disturbance effects as this crepuscular receptor is most active around dusk.

2.3.10 The terrestrial and freshwater ecology assessment for each of the proposed changes to the blasting strategy and working hours (Request for Non-Material Change no. 1 and 4) concluded that there would be no new or different likely significant combined effects than those reported in chapter D16 [APP-135] of the Environmental Statement.

2.3.11 Given the mitigating effects that the lower emitting plant, machinery and marine vessels would have for air quality, the neutral effect of environmental lighting and the very minor changes to peak noise levels predicted as a result of the proposed changes, it is not considered that these effects would combine to alter the assessment of combined topic effects to bats presented within chapter D16 [APP-135] of the Environmental Statement. Thus, the conclusions remain as reported in the Draft DCO application.

Marine mammals (pinnipeds and cetaceans)

2.3.12 The proposed changes to the marine vessel movements and working hours (Requests for Non-Material Change no. 2 and 4) both have the potential to affect marine mammals (pinnipeds and cetaceans) due to increases in underwater noise disturbance and the increased risk of vessel strikes associated with marine vessel movements.

2.3.13 The marine environment assessment for each of the proposed changes to the blasting strategy and working hours (Request for Non-Material Change no. 1 and 4) concluded that there would be no new or different likely significant combined effects than those reported in chapter D16 [APP-135] of the Environmental Statement.

2.3.14 Given that the assessment of underwater noise effects presented in chapter D13 [APP-132] of the Environmental Statement already takes into consideration 24-hr operations for marine dredging and that the overall number of vessel movements associated with the Wylfa Newydd DCO Project would be small, it is not considered that these effects would combine to alter the assessment of combined topic effects to marine mammals presented within chapter D16 [APP-135] of the Environmental Statement. Thus, the conclusions remain as reported in the Draft DCO application.

3 Intra-project cumulative effects

3.1.1 An intra-project cumulative assessment has been undertaken for those topic assessments outlined in the Environmental Statement that would be potentially affected by the non-material changes being sought in relation to the Draft DCO application. The methodology used for the cumulative effects assessment has considered all residual effects that are minor adverse or greater.

Traffic and transport

3.1.2 Of the five requests for non-material change, the proposed change to worker shift patterns and the HGV delivery window (Request for Non-Material Change no. 3 and 5) have implications to the traffic and transport assessment reported in the Draft DCO application. The potential effect of these proposed changes has already been assessed on a project-wide basis and is considered in section 2.2. Thus, there is no requirement to carry out an intra-project cumulative effects assessment for this topic.

Public access and recreation

3.1.3 Of the five requests for non-material change, the proposed changes to worker shift patterns and HGV delivery window (Request for Non-Material Change no. 3 and 5) have implications to the public access and recreation assessment reported in the Draft DCO application. The potential effect of these proposed changes has already been assessed on a project-wide basis and is considered in section 2.2. Thus, there is no requirement to carry out an intra-project cumulative effects assessment for this topic.

Air quality

3.1.4 Of the five requests for non-material change, the proposed changes to marine vessel movements, shift patterns, working hours and the HGV delivery window (Request for Non-Material Change no. 2, 3, 4 and 5) have implications for both the project-wide and WNDA Development assessments of air quality. As such, there is potential for intra-project additive cumulative effects due to emissions to air from sources within the Wylfa Newydd Development Area and emissions from road traffic associated with the Wylfa Newydd Project.

3.1.5 The air quality assessment for the proposed changes associated with the WNDA Development demonstrated that, with the use of newer, lower emitting plant, machinery and marine vessels, the majority of effects at human receptors would be negligible, and air quality effects as a consequence of the proposed change would be not significant.

3.1.6 The project-wide air quality assessments undertaken for the proposed changes to worker shift patterns and HGV delivery window (Request for Non-Material Change no. 3 and 5) stated that there would be no net increase or decrease in the total vehicle flows on the road network. The changes would result in some modifications to the time of day or night at which vehicles would arrive at and depart from the Wylfa Newydd Development Area during construction. The assessments for the proposed changes to worker shift

patterns and HGV delivery window (Request for Non-Material Change no. 3 and 5) indicated that predicted concentrations or deposition rates are unlikely to be any higher than those presented in chapter C4 [APP-091] of the Environmental Statement. The assessments concluded that the balance of air quality effects at human receptors would remain predominantly negligible with some beneficial effects due to the A5025 Offline Highway Improvements.

3.1.7 Consequently, further consideration of the potential additive effects to air quality as a consequence of the proposed changes to worker shift patterns and HGV delivery window individually (Request for Non-Material Change no. 3 and 5) concluded no change to the intra-project cumulative assessment reported in the Draft DCO application.

3.1.8 Air quality effects are local in scale; most air quality assessment methodologies in the UK only consider receptors within 200m of the road network when assessing emissions from road traffic and the largest effects are within very close proximity to the affected roads. Therefore, at most air quality sensitive receptors, the physical distance of the proposed changes listed associated with project-wide activities and those occurring at the WNDA Development would prevent intra-project cumulative air quality effects occurring.

3.1.9 There would be some receptors, particularly those close to the A5025 in the vicinity of the Wylfa Newydd Development Area, where there is the potential for additive effects. The predicted changes in annual mean and short-term (i.e. 99.8th percentile of one-hour mean) concentrations of NO_2 for the year 2 peak earthworks and Marine Works scenario, which includes the proposed changes to marine vessel movements (Request for Non-Material Change no. 2) and working hours (Request for Non-Material Change no. 4), are shown below in Table 3-1 and 0, respectively. The results are presented for those key human receptors which are in close proximity to both the Wylfa Newydd Development Area and the A5025. The predicted changes in annual mean and short-term concentrations of NO_2 for the year 5 peak construction scenario are shown below in Table 3-3 and 0, respectively.

3.1.10 The concentrations of PM_{10} and $PM_{2.5}$ due to the cumulative intra-project effects are not altered from those presented in the Air Quality Mitigation Quantification report submitted to the Examining Authority at Deadline 3 (18 December 2018) [REP3-052] and are not repeated below. The effect descriptors were negligible at all human receptors.

3.1.11 The concentrations of oxides of nitrogen and nitrogen and acid deposition rates at the three ecological receptors (Afon Wygyr Wildlife Site, Ancient Woodland (26051) and Ancient Woodland (26076)) remain well below the criteria for requiring further consideration in the terrestrial and freshwater ecology assessment. The likely additive effects at Afon Wygyr Wildlife Site and Ancient Woodland sites (26051 and 26076) would be negligible and not significant (i.e. no further consideration needs to be given to the significance of in-combination effects at these sites).

3.1.12 The proposed changes are not considered to alter the overall intra-project cumulative effects reported in the Air Quality Mitigation Quantification report submitted to the Examining Authority at Deadline 3 (18 December 2018)

[REP3-052]. Thus, the conclusions remain as reported and the significance of the residual air quality effects at human receptors is concluded to be not significant. For those ecological receptors where an additive cumulative effect is possible, the residual air quality effects are also not significant.

Table 3-1 Peak earthworks and Marine Works (year 2) – predicted intra-project additive annual mean air pollutant concentrations at key human receptors

Receptor	Total concentration for future baseline	Total intra-project additive concentration for future with Wylfa Newydd Project (all proposed changes)	Magnitude of change as percentage of AQO value[1,2]
	NO_2 (µg/m^3)	NO_2 (µg/m^3)	NO_2 (AQO = 40µg/m^3)
R4	10.4	12.7	+6% (s)
R5	7.5	11.0	+9% (s)
R6	8.4	13.4	+13% (m)
R7	6.1	12.0	+15% (m)
R8	5.1	6.7	+4% (n)

Note 1: Impact magnitude rounded to whole numbers and reported as a percentage of the respective AQO value.

Note 2: Descriptors of effects at individual receptors in parentheses as per table B5-15 of chapter B5 [APP-070]: 'n' is negligible, 's' is small, 'm' is medium and 'l' is large.

Table 3-2 Peak earthworks and Marine Works (year 2) – predicted intra-project additive short-term air pollutant concentrations at key human receptors

Receptor	Total concentration for future baseline	Total intra-project additive concentration for future with Wylfa Newydd Project	Magnitude of change as percentage of AQO value[1,2]
	1-hour NO_2 (µg/m^3)	1-hour NO_2 (µg/m^3)	1-hour NO_2 (AQO = 200µg/m^3)
R4	20.7	41.0	+10% (n)
R5	14.9	43.1	+14% (s)
R6	16.7	57.7	+20% (s)
R7	12.2	58.3	+23% (m)
R8	10.3	27.4	+9% (n)

Receptor	Total concentration for future baseline	Total intra-project additive concentration for future with Wylfa Newydd Project	Magnitude of change as percentage of AQO value[1,2]
	1-hour NO_2 ($\mu g/m^3$)	1-hour NO_2 ($\mu g/m^3$)	1-hour NO_2 (AQO = 200$\mu g/m^3$)
Note 1: Impact magnitude rounded to whole numbers and reported as a percentage of the respective AQO value. Note 2: Descriptors of effects at individual receptors in parentheses as per table B5-16 of chapter B5 [APP-070]: 'n' is negligible, 's' is small, 'm' is medium and 'l' is large.			

Table 3-3 Peak construction (year 5) – predicted intra-project additive annual mean air pollutant concentrations at key human receptors

Receptor	Total concentration for future baseline	Total intra-project additive concentration for future with Wylfa Newydd Project (all proposed changes)	Magnitude of change as percentage of AQO value[1,2]
	NO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	NO_2 (AQO = 40$\mu g/m^3$)
R4	9.7	11.4	+4% (n)
R5	7.1	9.1	+5% (n)
R6	7.8	10.9	+8% (s)
R7	5.8	8.6	+7% (s)
R8	5.0	6.2	+3% (n)
Note 1: Impact magnitude rounded to whole numbers and reported as a percentage of the respective AQO value. Note 2: Descriptors of effects at individual receptors in parentheses as per table B5-15 of chapter B5 [APP-070]: 'n' is negligible, 's' is small, 'm' is medium and 'l' is large.			

Table 3-4 Peak construction (year 5) – predicted intra-project additive short-term air pollutant concentrations at key human receptors

Receptor	Total concentration for future baseline	Total intra-project additive concentration for future with Wylfa Newydd Project	Magnitude of change as percentage of AQO value[1,2]
	1-hour NO_2 ($\mu g/m^3$)	1-hour NO_2 ($\mu g/m^3$)	1-hour NO_2 (AQO = 200$\mu g/m^3$)
R4	19.4	28.9	+5% (n)

Receptor	Total concentration for future baseline	Total intra-project additive concentration for future with Wylfa Newydd Project	Magnitude of change as percentage of AQO value[1,2]
	1-hour NO_2 ($\mu g/m^3$)	1-hour NO_2 ($\mu g/m^3$)	1-hour NO_2 (AQO = 200$\mu g/m^3$)
R5	14.1	29.2	+8% (n)
R6	15.6	33.0	+9% (n)
R7	11.6	28.5	+8% (n)
R8	9.9	21.0	+6% (n)
Note 1: Impact magnitude rounded to whole numbers and reported as a percentage of the respective AQO value. Note 2: Descriptors of effects at individual receptors in parentheses as per table B5-16 of chapter B5 [APP-070]: 'n' is negligible, 's' is small, 'm' is medium and 'l' is large.			

Noise and vibration

3.1.13 The proposed changes to the blasting strategy, marine vessel movements and shift patterns (Request for Non-Material Change no. 1, 2 and 3) have been shown not to result in any changes to noise effects, therefore these are not considered further.

3.1.14 The proposed changes to working hours and the HGV delivery window (Request for Non-Material Change no. 4 and 5) have implications for both the project-wide and WNDA Development assessments of noise effects. There is potential for intra-project additive cumulative effects due to increased evening and night-time noise levels from sources within the Wylfa Newydd Development Area and from road traffic associated with the Wylfa Newydd DCO Project.

3.1.15 Considering both 2020 (representative of early construction) and 2023 (representative of peak construction), the proposed change to the HGV delivery window (Request for Non-Material Change no. 5) was found to potentially result in adverse effects at an additional 18 residential properties compared to the Draft DCO application and in the absence of mitigation. These effects are predicted to occur at Cefn Coch, Kingsland, Llanfaethlu, Llangynghenedl as well as outlying receptors at Llanfaethlu and Llanfachraeth.

3.1.16 The proposed change to working hours was also found to potentially result in a small number of additional significant effects at residential receptors located predominately over 1km from the Wylfa Newydd Development Area. A large number of residential receptors with effects assessed as being of major adverse significant effects in the Draft DCO application would be reduced to moderate adverse significant effects. This would be a benefit from the proposed change to working hours; these are located in Cemaes.

3.1.17 There is very little overlap between the residential properties affected by the proposed changes to the HGV delivery window and working hours. This is principally because these two non-material change requests relate to aspects of the Wylfa Newydd DCO Project that are spatially segregated. Noise effects are local in scale; most noise assessment methodologies in the UK only consider receptors within 600m of the development scheme. Therefore, at most noise sensitive receptors, the physical distance of the proposed changes would prevent cumulative noise effects from one group at the other group. However, there is potential for some properties which are both adjacent to the Main Site and adjacent to the A5025, and at which cumulative adverse effects could occur.

3.1.18 With consideration of the enhanced mitigation outlined in paragraph 1.3.3, the proposed changes to working hours and the HGV delivery window are not considered to result in any new intra-project effects with respect to increased noise levels from the effects of traffic and elevated noise levels during construction. Thus, the intra-project cumulative effects for this topic remain as reported in chapter I4 [APP-387] of the Environmental Statement.

Terrestrial and freshwater ecology

3.1.19 The only potential effects considered of minor or greater significance relate to the WNDA Development. As shown in section 2.3, the proposed changes to the blasting strategy, marine vessel movements and working hours (Request for Non-Material Change no. 1, 2 and 4) have no effect on this assessment and therefore there are no changes to the intra-project cumulative effects reported in chapter I4 [APP-387] of the Environmental Statement.

The marine environment

3.1.20 The only potential effects on the marine environment as a result of the proposed change to marine vessel movements and working hours (Request for Non-Material Change no. 2 and 4) relate to the WNDA Development (see section 2.3); hence, there are no intra-project cumulative effects to report for this topic.

4 Inter-project cumulative effects

4.1.1 An inter-project cumulative assessment has been undertaken for those topic assessments outlined in the Environmental Statement which are potentially affected by the non-material changes being sought in relation to the Draft DCO application. These are:

- public access and recreation which is potentially affected by the proposed change to worker shift patterns and the HGV delivery window (Request for Non-Material Change no. 3 and 5);
- air quality which is potentially affected by the proposed change to marine vessel movements and working hours (Request for Non-Material Change no. 2 and 4); and
- noise and vibration which are potentially affected by the proposed change to the blasting strategy, marine vessel movements, working hours and the HGV delivery window (Request for Non-Material Change no. 1, 2, 4 and 5).

4.1.2 For the traffic and transport assessment, projects considered to have cumulative effects have been included in the traffic model for the Wylfa Newydd DCO Project and therefore form part of the assessment of effects that is represented in volume C of the Environmental Statement and considered in section 2.2 of this document.

4.1.3 The list of Reasonably Foreseeable Future Projects (RFFPs) that have been considered within the inter-project cumulative assessment is shown in appendix I2-2 (Matrix of receptors affected by the Wylfa Newydd Project and which short-listed projects could affect them) [APP-390]. There is no requirement to scope in any additional RFFPs as a consequence of the proposed changes.

Public access and recreation

4.1.4 In order for there to be a potential change to the inter-project cumulative effects assessment for this topic, there would need to be a change to at least one of the residual effects of the Wylfa Newydd DCO Project, whether an individual effect, a combined topic effect or an intra-project effect.

Contributing individual effects

4.1.5 As noted in section 2.2 above, the public access and recreation assessment for the proposed changes to worker shift patterns (Request for Non-Material Change no. 3) and the HGV delivery window (Request for Non-Material Change no. 5) each concluded that, with consideration of existing embedded and additional mitigation measures already secured in the Draft DCO application, there would be no new or different likely significant combined effects than those reported in chapter C7 [APP-094] of the Environmental Statement.

Contributing combined topic effects

4.1.6 As also noted in section 2.2 above there is considered to be no change to the assessment of combined topic effects to walkers and cyclists undertaking recreation or active travel presented within chapter C7 [APP-094] of the Environmental Statement.

Contributing intra-project cumulative effects

4.1.7 Also, as noted in section 3 above, the proposed changes would have no effect on the intra-project cumulative effects.

Resulting inter-project cumulative effects

4.1.8 As the residual effects for this topic remain as they were reported in the Environmental Statement, there are no amended effects to input to an updated inter-project cumulative effects assessment. Therefore, for this topic, the inter-project cumulative effects remain as reported in chapter I5 the Environmental Statement.

Air quality

4.1.9 In order for there to be a potential change to the inter-project cumulative effects assessment for this topic, there would need to be a change to at least one of the residual effects of the Wylfa Newydd DCO Project, whether an individual effect, a combined topic effect or an intra-project effect.

Contributing individual effects

4.1.10 As noted in section 2.3 above, the proposed changes to marine vessel movements and working hours (Requests for Non-Material Change no. 2 and 4) are both predicted to result in small changes in predicted concentrations of pollutants at some human receptor locations.

4.1.11 As explained in section 3 above, the majority of effects of the proposed changes associated with the WNDA Development at human receptors would be negligible. Air quality effects as a consequence of the proposed changes would be not significant.

4.1.12 Also noted in section 3 above, the project-wide air quality assessment found that the balance of air quality effects at human receptors would remain predominantly negligible with some beneficial effects due to the A5025 Offline Highway Improvements.

Contributing combined topic effects

4.1.13 As reported in section 2.3 above, the proposed changes are not considered to alter the conclusions of the combined topic effects assessment presented in D16 [APP-135] of the Environmental Statement.

Contributing intra-project cumulative effects

4.1.14 As explained in section 3 above, the proposed changes are not considered to alter the intra-project cumulative effects reported in chapter I4 [APP-387] of

the Environmental Statement. Thus, the conclusions remain as reported in the Draft DCO application.

Resulting inter-project cumulative effects

4.1.15 As the residual effects identified above for this topic would not be significantly different from those reported in the Environmental Statement, the inputs to the inter-project cumulative effects assessment remain unchanged. Therefore, for this topic, the inter-project cumulative effects remain as reported in chapter I5 [APP-388] of the Environmental Statement.

Noise and vibration

4.1.16 In order for there to be a potential change to the inter-project cumulative effects assessment for this topic, there would need to be a change to at least one of the residual effects of the Wylfa Newydd DCO Project, whether an individual effect, a combined topic effect or an intra-project effect.

Contributing individual effects

4.1.17 All blasting would continue to be subject to the noise and vibration control measures (including monitoring) set out in section 8 of the Main Power Station Site sub-CoCP to reduce potential disturbance effects to human and ecological receptors. All blasting methods would therefore be designed to prevent undue disturbance at residential dwellings, education facilities, bat roosts and barn owl roosts.

4.1.18 The proposed change to marine vessel movements would result in a small increase in noise levels at 120 properties closest to the Wylfa Newydd Development Area, which would be undetectable to a person.

4.1.19 The noise and vibration assessment for the proposed change in worker hours concluded there would be no new or different likely significant environmental effects other than those reported in the Environmental Statement, with a greater number of residential receptors benefiting from being eligible for noise insulation.

4.1.20 In relation to the proposed change to the HGV delivery window, the noise and vibration assessment concluded that the proposed change would not introduce any new or different likely significant environmental effects other than those reported in the Environmental Statement and a greater number of residential receptors would benefit from being eligible for noise insulation (an updated LNMS was submitted at Deadline 3 (18 December 2018) [REP3-050]).

Contributing combined topic effects

4.1.21 As none of the changes would lead to significant changes to the individual noise and vibration effects reported in the Environmental Statement, there is no potential for more significant combined topic effects.

Contributing intra-project effects

4.1.22 As explained in Section 3 above, the intra-project cumulative effects for this topic remain as reported in chapter I4 [APP-387] of the Environmental Statement

Resulting inter-project cumulative effects

4.1.23 As the residual effects identified above for this topic would not be significantly different from those reported in the Environmental Statement, the inputs to the inter-project cumulative effects assessment remain unchanged. Therefore, for this topic, the inter-project cumulative effects remain as reported in chapter I5 the Environmental Statement.

5 Health impacts

5.1.1 The Health Impact Assessment Report [APP-429] could potentially be affected by the proposed changes to the blasting strategy, worker shift patterns, working hours and HGV delivery (Request for Non-Material Change no. 1, 3, 4 and 5). The proposed change to the marine vessel movements (Request for Non-Material Change no. 2) will have no impact on human health.

5.1.2 The general influences relevant to population health that arise from the proposed changes are summarised in Table 5-1. The table shows the potential effects against the relevant geographical population groups as used in the Health Impact Assessment Report [APP-429].

5.1.3 The effects are summarised as follows:

- For the population near the Wylfa Newydd Development Area the proposed change to the blasting strategy and workings hours (Request for Non-Material Change no. 1 and 4) are the relevant sources of potential cumulative effects.
- For the population near the local road network (A5025, A55, A5 and A487) the proposed change to the HGV delivery window and worker shift patterns are the relevant sources of potential cumulative effects.

5.1.4 The proposed change to marine vessel movements (Request for Non-Material Change no. 2) is not considered to impact the assessment of effects to human health reported in the Health Impact assessment Report [APP-429].

5.1.5 In both cases similar potentially vulnerable groups are relevant (children and young people; older people; and people with existing poor health). Where groups overlap, there may be increased vulnerability.

5.1.6 For the population near the Wylfa Newydd Development Area, the proposed changes that affect the same determinant of health relate to noise disturbance in the evening period from both blasting and construction related activities (including general earthworks close to communities). Other changes from the effects discussed in the Draft DCO application Health Impact Assessment table I-2 that combine to influence the health of this population include: increased night-time noise and reduced nitrogen dioxide concentrations.

5.1.7 As appropriate new and enhanced mitigation is proposed (see paragraph 1.3.3), the overall effect for population health, taking account of the range of small residual beneficial and adverse changes across vulnerable groups, is not expected to alter the Health Impact Assessment conclusion that near the Wylfa Newydd Development Area the overall residual population health effect is considered to be up to minor adverse for the general population and up to moderate adverse for relevant vulnerable groups. The largest change relates to the air quality commitments to improved emission standards. Whilst beneficial, the change in this one determinant of health is unlikely to change the overall cumulative score, which takes account of a range of other health determinants.

5.1.8 For the population near the local road network (A5025, A55, A5 and A487), the proposed changes that affect the same determinants of health relate to

more noise disturbance in the evening period from both HGVs and from vehicles associated with worker shift changes. The combination of morning noise due to shift changes (06:00 or 05:30) and evening noise due to HGV movements (19:00 to 23:00) would also reduce the period when Project related transport would not contribute to potential sleep disturbance. Changes to the times at which these two categories of Project vehicle would be using the local road network may also contribute to both beneficial and adverse influences on road safety. Other changes from the effects discussed in the Draft DCO application Health Impact Assessment (table I-2) that combine to influence the health of this population include: reduced night-time noise (there being no night-shifts ending between 03:00 and 04:00); reduced potential for health-trip journey time delays (e.g. to a hospital); and the potential for weekend HGV movements to reduce amenity and discourage physical activity.

5.1.9 As appropriate new and enhanced mitigation is proposed, the overall effect for population health, taking account of the range of small residual beneficial and adverse changes across vulnerable groups, is not expected to alter the Health Impact Assessment conclusion that near the local road network the overall residual population health effect is considered to be negligible for the general population and up to minor adverse for relevant vulnerable groups. Thus, the conclusions remain as reported in the Draft DCO application.

Table 5-1 Health analysis cumulative assessment

	Relevant geographical population groups	
	Population near the Wylfa Newydd Development Area	**Population near the local road network**
Changes to working hours		
Air quality	Less potential for adverse effects from air pollution due to commitment to higher emission standards.	N/A
Lighting	No changes to community identity or sleep disturbance expected.	N/A
Changes to the HGV delivery window		
Air quality	N/A	No change to air quality from redistribution of vehicle times.
Traffic	N/A	More potential for accident risk during the weekend, as more pedestrians and cyclists. Less potential for journey delays as more use of off-peak times.
Changes to worker shift patterns		
Air quality	N/A	No change to air quality from redistribution of vehicle times.
Traffic	N/A	Less potential for accident risk as less overlap with school travel. Less potential for journey delays.
Construction workers	N/A	No change to community interaction with workforce.

6 Shadow Habitats Regulations Assessment

6.1.1 It was identified that the Shadow Habitats Regulations Assessment [APP-050/051] could potentially be affected by the proposed changes to the blasting strategy, marine vessel movements and working hours (Request for Non-Material Change no. 1, 2 and 4).

6.1.2 Assessments of each of these proposed changes concluded no new or different likely significant (alone or in-combination) effects to that reported in the Shadow Habitats Regulations Assessment [APP-050/051]. Consequently, there is not considered to be any new or likely significant (alone or in-combination) effects from the three changes being sought in relation to the Wylfa Newydd DCO Project (i.e. blasting strategy, marine vessel movements and working hours, Request for Non-Material Change no. 1, 2 and 4). Thus, the conclusions remain as reported in the Draft DCO application.

7 Schedule of consequential amendments to application documents

Table 7-1 Schedule of consequential amendments to application documents

Application document name	Examination Reference Number	Section of document	Version to be amended	Description of amendment
Environmental Statement chapter I4: Intra-project cumulative effects	APP-387	4.2	1.0	Update to air quality and noise modelling results
Environmental Statement appendix I4-2: Project-wide and WNDA development intra-project air quality assessment	APP-393	5	1.0	Update to air quality modelling results
Environmental statement appendix I4-3: Intra-project cumulative noise effects	APP-394	1.2	1.0	Update to noise modelling results

8 References

Table 8-1 Schedule of references

ID	Reference
RD1	British Standards Institution. 2008. BS 6472-2 Guide to Evaluation of human exposure to vibration in buildings. Blast-induced vibration. London: British Standards Institution.

Appendix 1-2: Effect of shift patterns on travel over Britannia Bridge

Figure 3-2 Shift pattern presented in the Draft DCO application

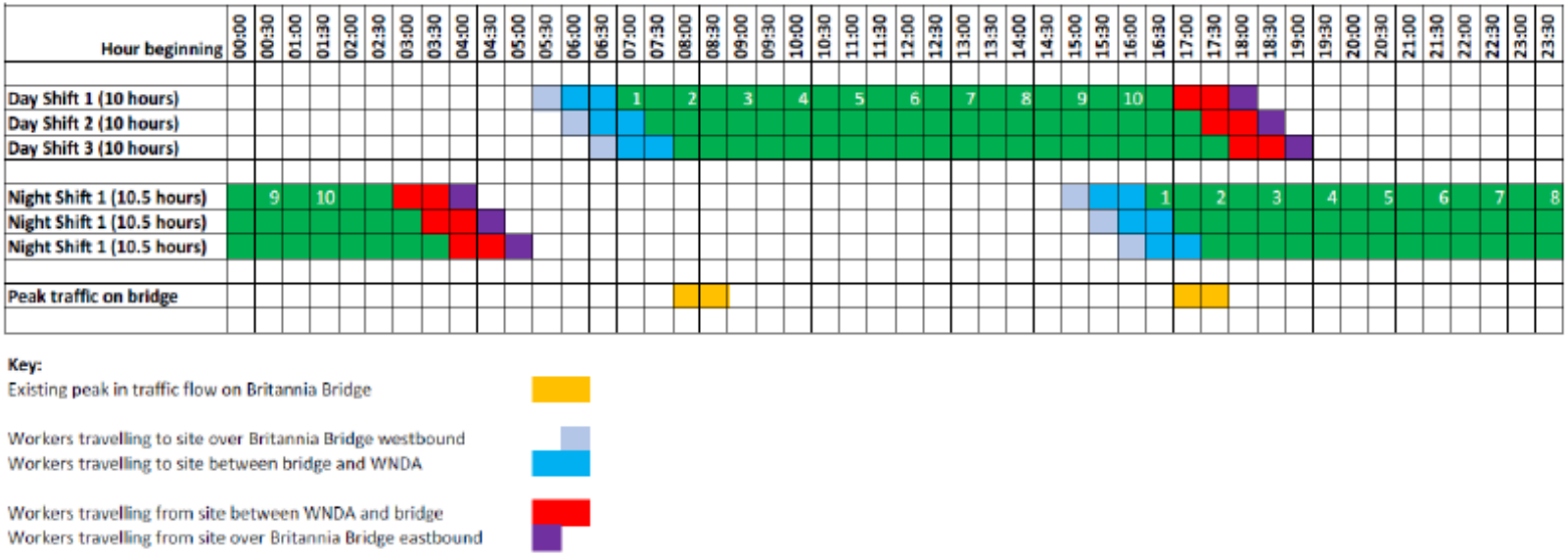


Figure 3-3 Proposed change to shift timings 2020

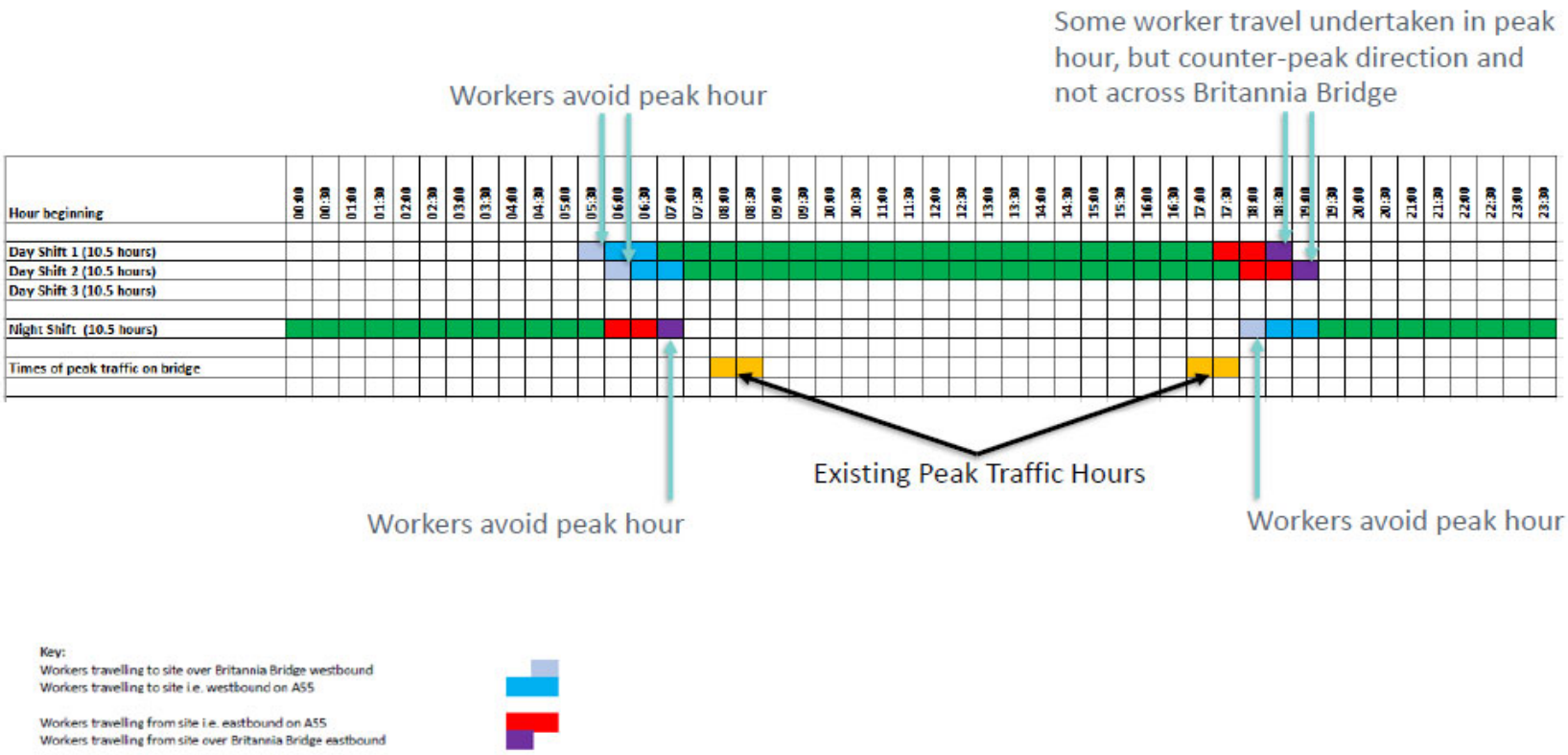
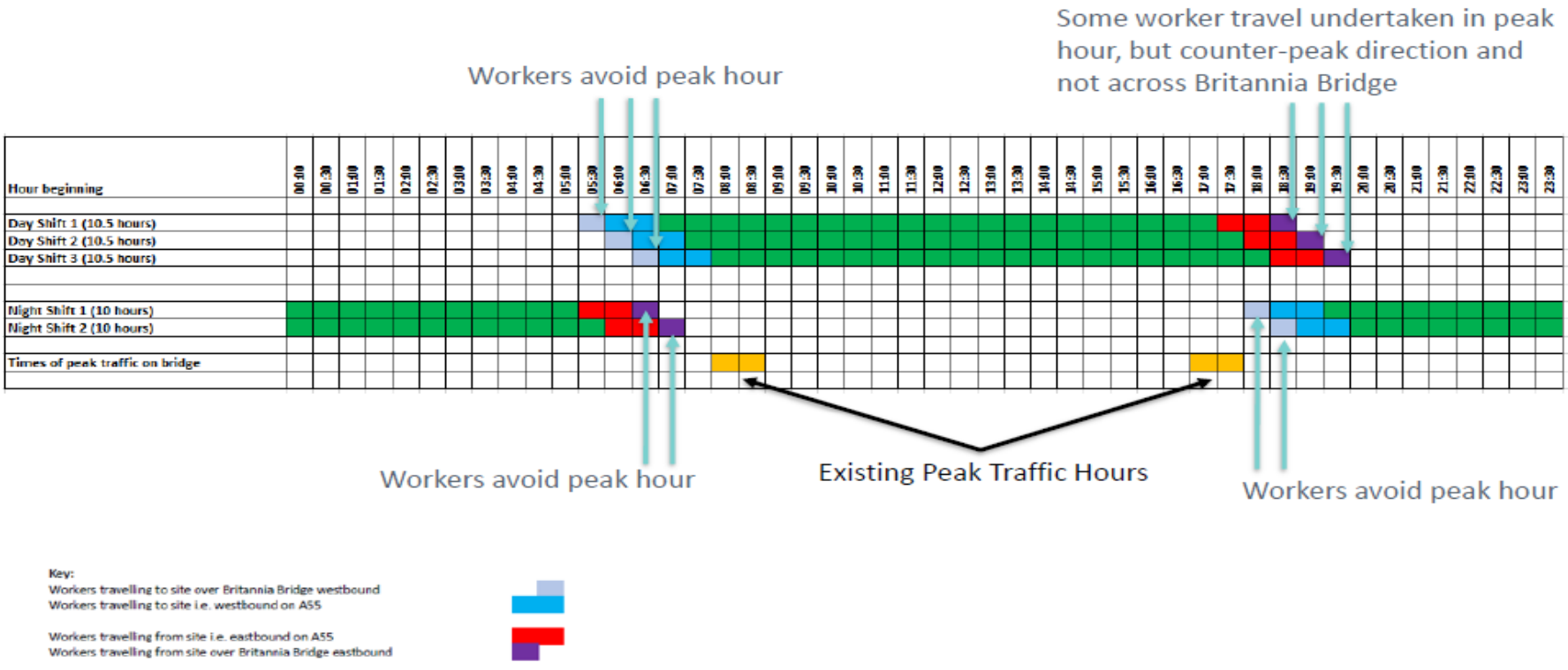


Figure 3-4 Proposed change to shift timings 2023



Key:
Workers travelling to site over Britannia Bridge westbound
Workers travelling to site i.e. westbound on A55

Workers travelling from site i.e. eastbound on A55
Workers travelling from site over Britannia Bridge eastbound

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Appendix 1-3: Modelling of road traffic emissions with diurnal profile

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1 Introduction

1.1 Purpose of this report

1.1.1 As a part of the Non-Material Change assessment of the effects upon air quality, an evaluation has been carried out of the effect of using an hourly diurnal profile of vehicle flows for modelling of dispersion of air pollutants from vehicles on the A55, A5 and A5025, connected with the Wylfa Newydd Project. For the DCO submission, a single, annual average hourly traffic (AAHT) flow was input to the model for each hour of the day, derived from annual average daily traffic (AADT) flows.

1.1.2 The Non-Material Change would re-distribute construction-related traffic on an hourly basis to and from the site within the 24-hour periods of days but would not result in any net increase in daily traffic flows of light duty vehicles (LDV) or heavy duty vehicles (HDV) over and above the DCO submission case.

1.1.3 Initially, further modelling was undertaken for one receptor, Hum_1964, which was identified as the receptor experiencing the largest change in concentrations as a result of project traffic on the A5025. It was then recognised that the use of a diurnal profile would have an effect on the adjustment factors applied to the emissions from road traffic results; therefore, the diurnal profile modelling was expanded to include the diffusion tube locations around the Valley area and an updated adjustment factor was calculated.

1.1.4 This report contains a summary of the modelling methodology adopted in the assessment, the results of the revised modelling and the effect upon the model verification and adjustment procedures. A section of road links comprising the A55, A5 around Valley and the A5025 immediately to the north of Valley has been used as a test case.

2 Methodology

2.1 Background to the proposed methodology

2.1.1 This modelling uses the previous verification model (from Autumn 2017) as a base.

2.1.2 Jacobs was requested to provide Wood with the hourly traffic flows for the relevant road links in the model. This traffic flow profile is consistent with the Strategic Traffic Model (STM) used in the DCO submission. Relevant road links consist of those within 200 m – 250 m of the diffusion tube locations and Hum_1964.

2.1.3 Hourly traffic flows were converted into hourly emission factors for each link, using different profiles for LDV flows and HDV flows.

2.1.4 A fac file was created to incorporate these emission factors into the model. The fac file uses a 3-day diurnal profile, for weekdays, Saturdays and Sundays.

2.1.5 There are two profiles for each road link, as we need an HDV profile and a LDV profile, consistent with the road traffic flow data split.

2.1.6 Since two profiles cannot be applied to one road source, roads sources with profiles applied need to be duplicated. In this case, the following statements are true:

- the locations of duplicated sources remain the same,
- for links where the LDV profile is applied, the HDV flows are set to zero,
- for links where the HDV profile is applied, the LDV flows are set to zero; and
- therefore, the total traffic flows along the links remain the same.

2.1.7 The model included 5 of the diffusion tube locations as receptors and Hum_1964, using RAF Valley meteorological data. This aligns with the previous verification modelling undertaken at the diffusion tube locations. For more details, see Appendix C4.1 in the DCO Environmental Statement. The receptor locations are presented in Table 2.1.

Table 2-1 Receptors included in the modelling

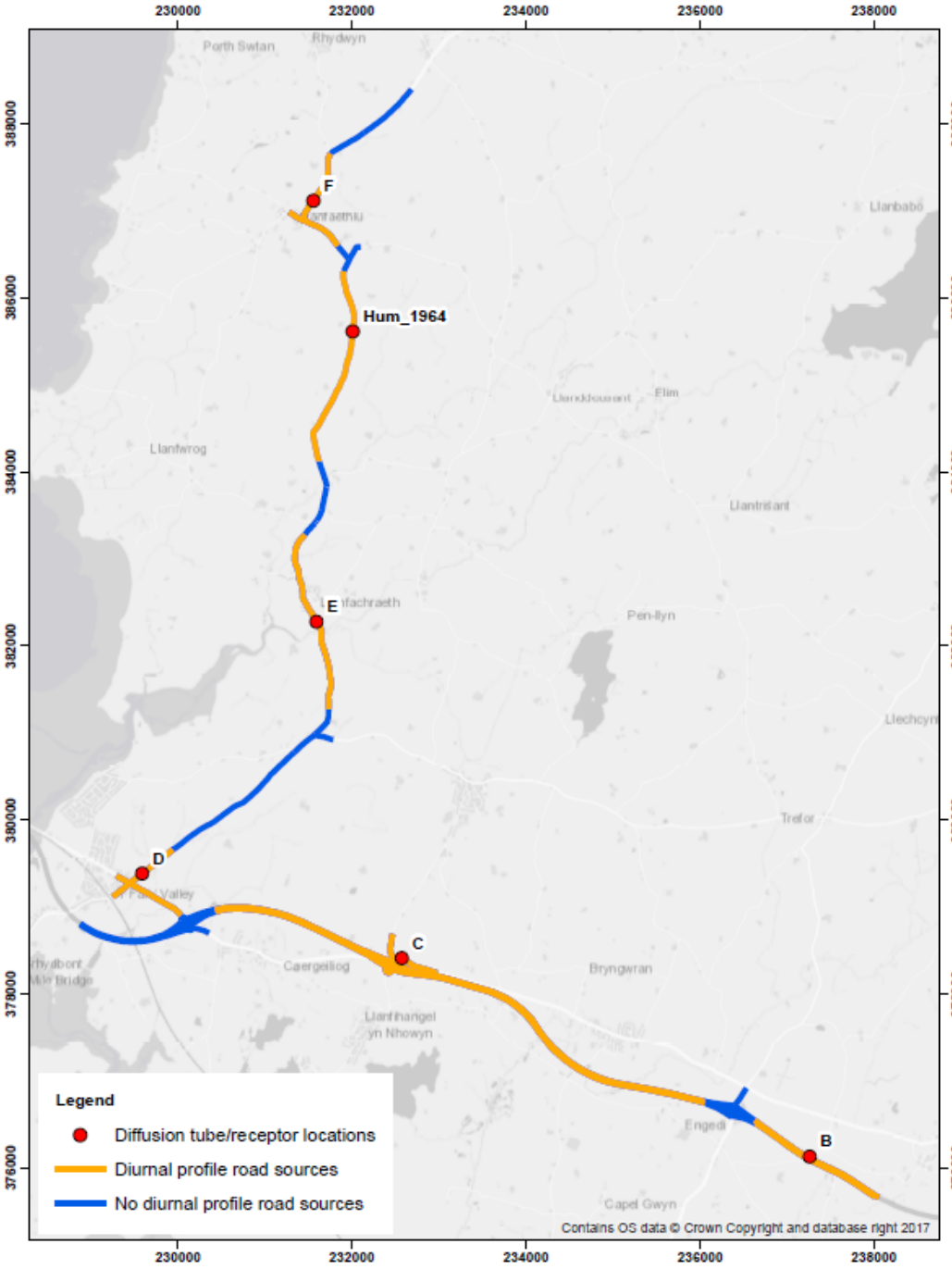
Diffusion tube/receptor ID	Location	X (m)	Y (m)
B	Minor road A55	237267	376129
C	A5 at Dalar Hir	232573	378407
D	A5025 Valley	229588	379382
E	A5025 Llanfacraeth	231593	382274
F	A5025 Llanfaethlu	231555	387112
Hum_1964	A5025 between Llanfacraeth and Llanfaethlu	232008	385608

2.1.8 Figure 2-1 provides a visualisation of the receptor locations and the road sources included in the modelling. The road links included in the modelling which had a diurnal profile applied are also listed below.

- A55_J5_J6_EB,
- A55_J5_J6_WB,
- A5_30,
- A55_J4_ON-SLIP_EB,
- A55_J4_ON-SLIP_WB,
- A55_J4_OFF-SLIP_EB,
- A55_J4_OFF-SLIP_WB,
- A44_J4_THR_JCT_EB,
- A44_J4_THR_JCT_WB,
- A55_J4_J5_EB,
- A55_J4_J5_WB,
- A55_J3_J4_EB,
- A55_J3_J4_WB,
- A55_J4_BRIDGE_NB,
- A55_J4_BRIDGE_SB,
- LOCAL_10; and
- A5025_71 (applied to all relevant A5025 links i.e. the profile was assumed to be the same along the entirety of the A5025).

2.1.9 Note that there are road links included in the model that did not have a profile applied. Where this occurred, it was because the road link is more than 250 m from the relevant receptor location and was left in the model for completion.

Figure 2-1 Road sources and receptor locations included in the modelling



2.1.10 Note: Figure 2.1 shows the road sources without bypasses (i.e. without the A5025 off-line highway improvements) and without the Logistics Centre and Park and Ride. As such, this represents an early project year.

3 Results and Discussion

3.1 Summary

3.1.1 The re-run of the verification with the diurnal profile in place results in lower modelled raw NOx (i.e. unadjusted) concentrations at the diffusion tube locations. This is consistent with the initial modelling completed for receptor Hum_1964.

3.1.2 Overall, this results in a higher model adjustment factor, because the difference between the modelled results and the monitoring data has increased, when compared with the original verification. Using the diurnal profile, therefore, indicates that the model performs less well than without the profile in place:

- The previous Valley adjustment factor, without the diurnal profile applied, was 3.62,
- The Valley adjustment factor, with the diurnal profile applied, is now 4.89; and
- This may bring about increases in modelled NO2 concentrations at receptors where the adjustment factor is applied. However, where the reduction with the profile is large enough to offset the effect of a larger adjustment factor, the overall concentration will decrease.

3.2 Verification calculations

3.2.1 Table 3.1 shows the comparison of the monitored and unadjusted modelled NO2 results at the diffusion tube locations. The comparison indicates that it is appropriate to undertake model verification, as the differences between the modelled and monitored NO2 are greater than 25%.

Table 3-1 Comparison of unadjusted and monitored NO_2 concentrations

Diffusion tube location	Background NO2 (µg m-3)	Monitored total NO2 (µg m-3)	Modelled total NO2 (µg m-3)	% difference (modelled vs. monitored)
B	3.8	9.6	4.98	-48.1%
C	3.9	11.1	5.20	-53.2%
D	4.5	15.1	6.92	-54.2%
E	3.9	9.8	4.97	-49.3%
F	3.8	9.3	4.87	-47.6%

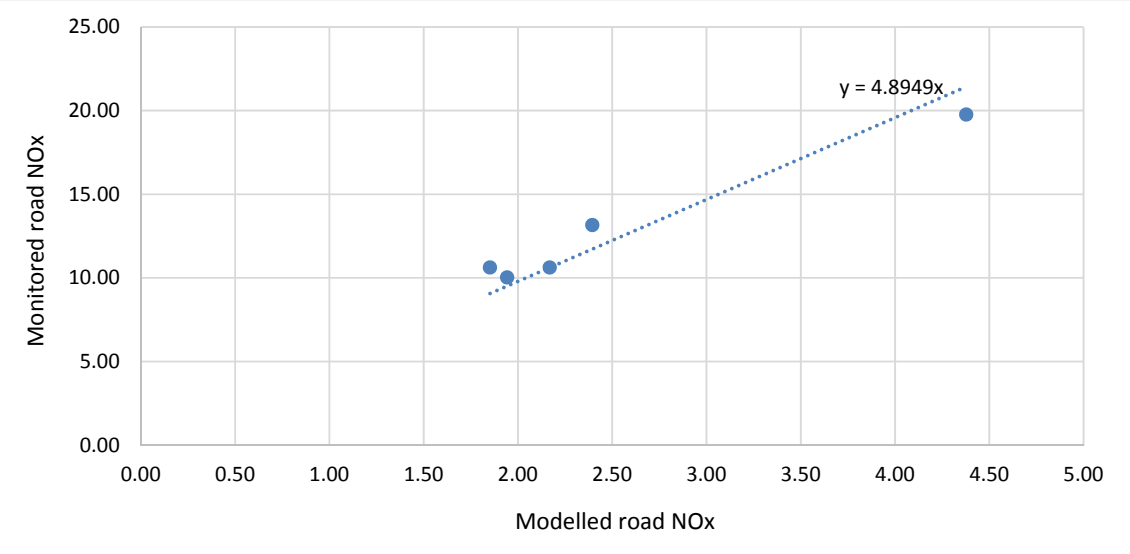
3.2.2 The data required for model adjustment is presented in Table 3.2.

Table 3-2 Model adjustment data

Diffusion tube location	Monitored road contribution NOx (µg m-3)	Modelled road contribution NOx (µg m-3)
B	10.62	2.17
C	13.16	2.40
D	19.76	4.38
E	10.62	1.85
F	10.02	1.94

3.2.3 Figure 3-1 provides a comparison of the modelled road contribution NOx versus modelled road contribution NOx and the equation of the trend line based on linear regression through zero for each of the verification areas. The equation of the trend line gives the adjustment factor which should be applied to the modelled results.

Figure 3-1 Adjustment factor line of regression



3.2.4 The raw results and the verified (adjusted) results for each of the diffusion tube locations are shown in Table 3.3.

Table 3-3 Model results after verification

Diffusion tube location	Monitored total NO2 (µg m-3)	Adjusted modelled total NO2 (µg m-3)	% difference (modelled vs. monitored)	Adjustment factor
B	9.6	9.6	<0.1%	4.89
C	11.1	10.3	-7.4%	4.89
D	15.1	16.0	5.7%	4.89
E	9.8	8.9	-9.0%	4.89
F	9.3	9.0	-2.9%	4.89

3.3 Results at Hum_1964

3.3.1 Using the updated adjustment factor calculated in section 3.2, the results at Hum_1964 with the diurnal profile in place are presented in Table 3.4. 'Baseline' and 'with project' scenarios for 2020 and 2023 have been evaluated.

Table 3-4 Annual mean NO_2 results at Hum_1964 with diurnal profile

Scenario	Raw road NOx concentration (µg m-3)	Adjusted modelled road NO2 (µg m-3)	Adjusted modelled total NO2 (µg m-3)	% PEC of AQS*
2020 base	3.60	9.55	13.68	34.2%
2020 project	4.81	12.59	16.73	41.8%
2023 base	3.36	8.93	13.07	32.7%
2023 project	5.11	13.34	17.47	43.7%

*AQS for annual mean NO2 is 40 µg m-3

3.3.2 The results in Table 3.4 show that, with a diurnal profile and an adjustment factor of 4.89, the results at Hum_1964 are significantly below the air quality standard (AQS) in both the 2020/2023 base and 2020/2023 with project scenarios.

3.4 Results comparison – with and without diurnal profile

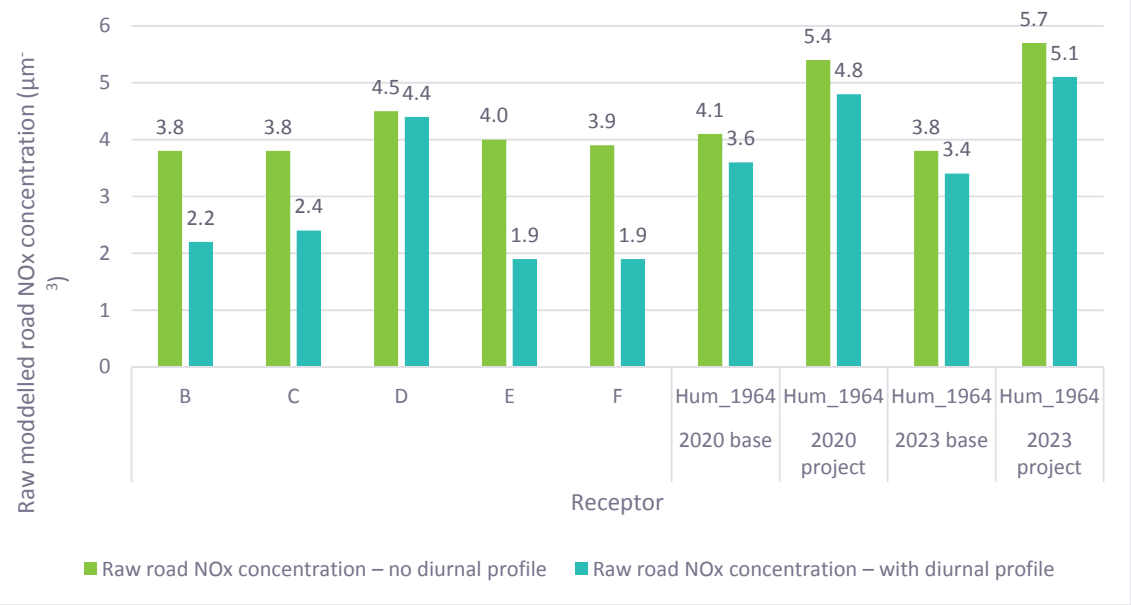
3.4.1 A comparison of the raw road contribution NOx concentrations (unadjusted) and the adjusted total NO2 concentrations at the receptor locations with and without the diurnal profile are presented in Table 3.5 and Figures 3.2 and 3.3. The adjustment factor for the No Profile scenario is 3.62 and the adjustment factor for the With Profile scenario is 4.89.

Table 3-5 Comparison of results with and without diurnal profile (µg m-3)

Scenario	Receptor location	Raw road NOx concentration – no diurnal profile	Raw road NOx concentration – with diurnal profile	Adjusted modelled total NO2 – no diurnal profile	Adjusted modelled total NO2 – with diurnal profile
2016 verification	B	3.8	2.2	11.3	9.6
2016 verification	C	3.8	2.4	11.4	10.3
2016 verification	D	4.5	4.4	13.2	16.0
2016 verification	E	4.0	1.9	11.9	8.9
2016 verification	F	3.9	1.9	11.4	9.0
2020 base	Hum_1964	4.1	3.6	12.3	13.7
2020 project	Hum_1964	5.4	4.8	14.7	16.7
2023 base	Hum_1964	3.8	3.4	11.5	13.1
2023 project	Hum_1964	5.7	5.1	15.0	17.5

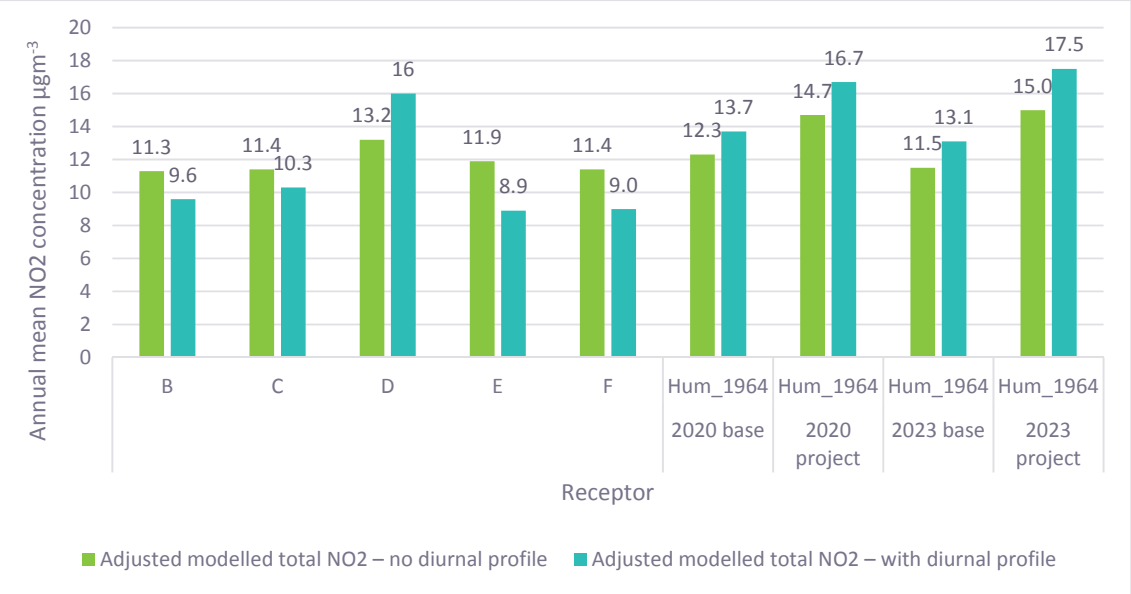
Note: the adjusted results for the No Profile scenario were derived using the same procedure as presented in section 3.2.

Figure 3-2 Comparison of results – raw modelled road NO_x



3.4.2 The data in Figure 3.2 show the comparison between the raw modelled road NOx (i.e. unadjusted) for the No Profile and With Profile scenarios. At all the receptors, the raw modelled road NOx is higher for the No Profile scenario.

Figure 3-3 Comparison of results – adjusted total modelled NO_2

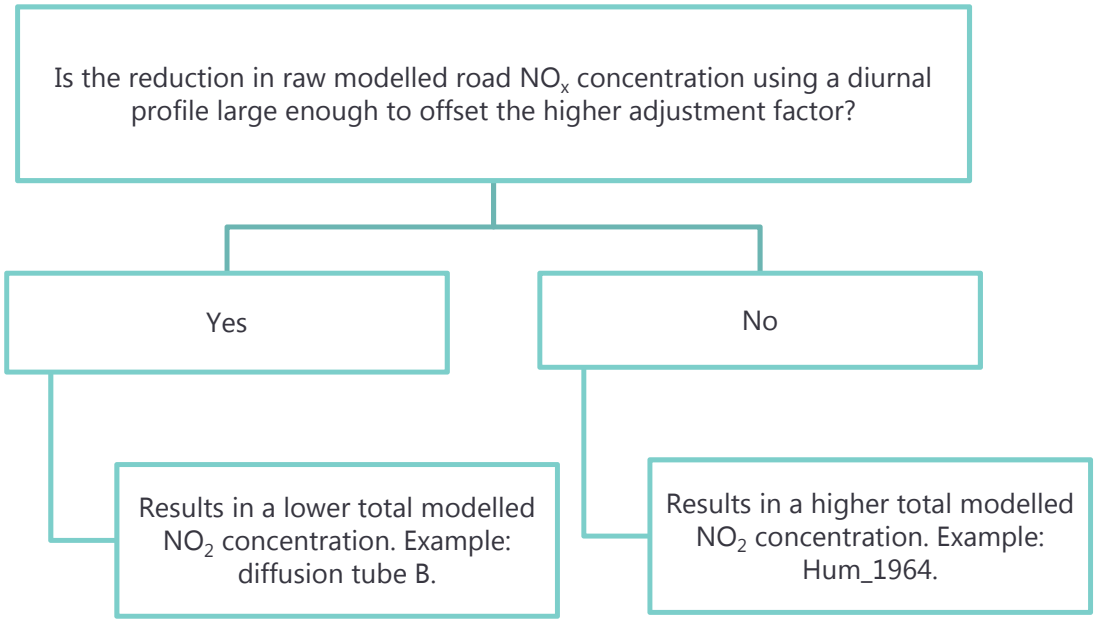


3.4.3 The data in Figure 3.3 compares the adjusted total modelled NO2 results for the No Profile and With Profile scenarios. For diffusion tubes B, C, E and F, using the diurnal profile results in lower total modelled NO2 concentrations. For diffusion tube D and Hum_1964 2020/2023 base/project, using the diurnal profile results in higher total modelled NO2 concentrations.

3.5 Discussion

3.5.1 The data in Table 3.5 and Figures 3.2 and 3.3 show that, for 4 of the receptors in this assessment, raw modelled roads NOx concentrations for the No Profile scenario are higher and therefore adjusted NO2 results at most receptors for the No Profile scenario are also higher, compared with those for the With Profile scenario. This is in spite of the higher adjustment factor derived for the With Profile scenario. At the other 2 receptors, diffusion tube D and Hum_1964, the reduction in raw NOx concentration as a result of using the diurnal profile is not significant enough to counteract the higher adjustment factor. Examples are shown in Figure 3.4 below.

Figure 3-4 Flow chart



3.5.2 The modelling demonstrates, therefore, that the use of a diurnal profile tends to reduce raw modelled road NOx concentrations, when compared with the No Profile scenario. However, the final, adjusted, total modelled NO2 results may increase or decrease, when compared with the No Profile scenario, due to the use of an adjustment factor.

The adjustment factor in the With Profile scenario has increased, because the ratio between the monitored road contribution NOx data and the modelled contribution NOx data has increased. This means that, where the use of a diurnal profile results in a decrease in raw modelled road NOx concentration that is significant enough to offset the increase in the adjustment factor, the overall total modelled NO2 result will be lower. However, the opposite is true if the diurnal profile results in a raw NOx concentration reduction that does not differ by a significant amount.

Appendix 1-1

Issued by **Approved by**

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Appendix 1-4: Copies of "Consultation Update"

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PŴER NIWCLEAR HORIZON NUCLEAR POWER

WYLFA NEWYDD

YNNI YN GWEITHIO I BRYDAIN

Y Diweddaraf am yr Ymgynghoriad

Tachwedd 2018

Ymgynghori ynghylch newidiadau ansylweddol i'n cais am Orchymyn Cydsyniad Datblygu

Ym mis Mehefin 2018, fe wnaethon ni gyflwyno ein cais am Orchymyn Cydsyniad Datblygu i adeiladu a gweithredu Wylfa Newydd, sef gorsaf bŵer niwclear newydd ar Ynys Môn. Ers hynny, rydyn ni wedi dangos y bydd angen diwygio tri gweithgaredd adeiladu, sef patrymau shifftiau gweithwyr, oriau gwaith, a symudiadau Cerbydau Nwyddau Trwm.

Er nad oes disgwyl i'r newidiadau hyn greu unrhyw effeithiau amgylcheddol sylweddol newydd yn wahanol i'r rhai sydd wedi'u cyflwyno yn ein cais am Orchymyn Cydsyniad Datblygu, hoffem glywed eich barn chi amdanynt.

Patrymau shifftiau gweithwyr

Yn ystod y gwaith o adeiladu Gorsaf Bŵer arfaethedig Wylfa Newydd, bydd angen shifftiau dydd a shifftiau nos ar gyfer gweithwyr er mwyn cyflawni rhaglen adeiladu'r Prosiect.

Yn ôl dadansoddiad diweddar, mae'r amseroedd shifftiau yn ein cais yn arwain at orgyffwrdd rhwng shifftiau dydd a shifftiau nos, felly mae rhan o bob shifft yn anghynhyrchiol. Felly rydyn ni'n cynnig rhai newidiadau i'r rhain i wneud y rhaglen yn fwy effeithlon a chydnerth, tra'n parhau i osgoi effeithiau niweidiol ar Bont Britannia a thraffig oriau brig.

Dyma'r patrymau shifftiau newydd arfaethedig:

- ym mlynyddoedd cynnar y gwaith adeiladu, dwy shifft yn dechrau ar amseroedd gwahanol yn y dydd ac un shifft nos.
- dros flynyddoedd y prif waith adeiladu, tair shifft yn dechrau ar amseroedd gwahanol yn y dydd a dwy shifft yn dechrau ar amseroedd gwahanol yn y nos.
- newidiadau i amseroedd cychwyn y shifftiau, ac i'w hyd.

Dweud eich dweud

Mae'n bwysig iawn eich bod yn dweud eich dweud am y newidiadau arfaethedig hyn. Rhowch eich barn drwy anfon neges e-bost neu lythyr **erbyn 6 Rhagfyr 2018** - mae ein manylion ar gefn y cylchlythyr hwn.

I'ch helpu, rydyn ni wedi creu taflenni gwybodaeth sy'n rhoi crynodeb o bob un o'r tri newid arfaethedig. Gallwch ddarllen y rhain, ynghyd â'r dogfennau technegol ar-lein, yn:
www.horizonnuclearpower.com/ymgynghoriad

Bydd tîm technegol bach yn bresennol hefyd yng Nghymhorthfa Agored nesaf Horizon ar 19 Tachwedd yn Neuadd Bentref Cemaes rhwng 1pm a 7pm os hoffech drafod y cynigion hyn ymhellach.

Oriau Gwaith

Mae ein cais am Orchymyn Cydsyniad Datblygu yn nodi'r dyddiau a'r adegau pan fyddai'n bosibl gwneud gweithgareddau ar y safle. Mewn llawer o feysydd gwaith, rhaid gallu gweithio 24 awr 7 diwrnod yr wythnos er mwyn cynnal amserlen adeiladu hyfyw. Nodir yr eithriadau i hyn, a bydd rhai gweithrediadau'n cael eu cynnal rhwng 7am a 7pm yn unig.

Ein cynnig yw newid y rhestr o weithgareddau sy'n cael eu cyflawni rhwng 7pm a 7am, i gynyddu nifer y gweithgareddau a ganiateir bob awr o'r dydd a'r nos.

Er mwyn i ni allu manteisio'n llawn ar y ffenestr waith arfaethedig heb greu effeithiau amgylcheddol tebygol newydd neu wahanol o bwys, bydd angen hefyd inni wneud mân newidiadau i rai o'r dulliau adeiladu, megis cyfyngu ar ba gyfarpar y caniateir ei ddefnyddio, ble a phryd.

Bydd y newidiadau hyn yn rhoi rhagor o hyblygrwydd a chydnerthedd yn y rhaglen, a byddant yn gwella'r diogelwch i weithwyr.

Symudiadau Cerbydau Nwyddau Trwm

Yn ystod y gwaith adeiladu, bydd Cerbydau Nwyddau Trwm yn cael eu defnyddio i gludo rhai deunyddiau ac offer i'r safle. Mae'r Gorchymyn Cydsyniad Datblygu yn cynnig y bydd y rhan fwyaf o'r siwrneiau danfon yn digwydd rhwng 7am a 7pm o ddydd Llun i ddydd Gwener.

Rydyn ni nawr yn cynnig ymestyn y ffenestr ar gyfer siwrneiau danfon gan gerbydau nwyddau trwm i'r adeg rhwng 7am ac 11pm, a chynnwys bore Sul rhwng 8am ac 1pm.

Rydyn ni hefyd yn cynnig peidio â chaniatau mwy nag 20 o siwrneiau danfon gan gerbydau nwyddau trwm rhwng 7pm ac 11 pm o ddydd Llun i ddydd Gwener, a dim mwy na 50 o siwrneiau danfon gan gerbydau nwyddau trwm ar fore Sul.

Byddai'r nifer uchaf o siwrneiau danfon gan gerbydau nwyddau trwm bob dydd yn aros yr un fath â'r hyn a nodir yn ein cais am Orchymyn Cydsyniad Datblygu – dim ond y ffenestr danfon fyddai'n newid. Bydd hyn yn caniatáu inni ymdopi'n well â digwyddiadau annisgwyl fel tywydd garw sy'n effeithio ar ddanfon nwyddau dros y môr, gan wneud yn siŵr nad yw hyn yn effeithio'n ormodol ar gymunedau a llif y traffig yn lleol.

Rheoli unrhyw effeithiau o ganlyniad i'r newidiadau hyn

Yn ein dogfennau technegol, mae mesurau ychwanegol i leihau unrhyw effeithiau o ganlyniad i'r newidiadau. Gyda'r rhain, rydyn ni'n rhagweld na fydd unrhyw effeithiau tebygol newydd neu wahanol o bwys yn digwydd o ganlyniad i'r tri newid yma, boed ar eu pen eu hunain neu gyda'i gilydd. Ni fyddai'r newidiadau arfaethedig yn effeithio ar unrhyw un o'r asesiadau eraill a gyflwynwyd fel rhan o'r cais am Orchymyn Cydsyniad Datblygu.

Caiff y newidiadau arfaethedig eu hegluro'n fanylach yn y dogfennau technegol sydd ar gael fel rhan o'n hymgynghoriad.

Rhowch eich barn ar y cynigion hyn drwy ysgrifennu atom drwy'r cyfeiriad e-bost neu Radbost isod erbyn 6 Rhagfyr. Ac os hoffech chi wybod am unrhyw agwedd arall ar Brosiect Wylfa Newydd, mae croeso i chi anfon neges e-bost atom neu ein ffonio.

[redacted]

Richard Foxhall, Rheolwr Materion Allanol Cymru

Beth yw 'DCO'?

Gelwir prosiectau mawr fel Wylfa Newydd yn Brosiectau Seilwaith o Arwyddocâd Cenedlaethol. Mae angen Gorchymyn Cydsyniad Datblygu, a Llywodraeth y Deyrnas Unedig sy'n penderfynu a ddylid caniatáu'r cais ai peidio. Rydyn ni wedi gwneud cais am Orchymyn Cydsyniad Datblygu i Ysgrifennydd Gwladol y Deyrnas Unedig dros Fusnes, Ynni a Strategaeth Ddiwydiannol.

Mae Arolygwyr Cynllunio penodedig wrthi'n edrych arno.

I gael rhagor o wybodaeth am y broses hon gallwch chi gysylltu â'r Arolygiaeth Gynllunio yn: https://infrastructure.planninginspectorate.gov.uk/, e-bost Wylfa@pins.gsi.gov.uk neu ffonio 0303 444 5000.

Cysylltu â ni

ymholiadauwylfa@horizonnuclearpower.com
0800 954 9516
@HorizonNuclear
www.horizonnuclearpower.com/hafan
Freepost WYLFA NEWYDD
horizonnuclear

PŴER NIWCLEAR
HORIZON
NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Consultation Update

November 2018

Consulting on non-material changes to our DCO application

In June 2018, we submitted our application for a Development Consent Order (DCO) to build and operate Wylfa Newydd, a new nuclear power station on Anglesey. Since then, we've identified a need to amend three construction activities: worker shift patterns, working hours, and Heavy Goods Vehicles (HGV) movements.

While these changes are not expected to create any new significant environmental effects from those presented in our DCO application, we want to hear what you think about them.

Worker shift patterns

During construction of the proposed Wylfa Newydd Power Station, we'll need day and night shifts for workers to meet the Project construction programme.

New analysis has shown that the shift times in our application result in an overlap between day and night shifts, making a part of each shift unproductive. So we are proposing some changes to these to make the programme more efficient and resilient, while continuing to avoid adverse effects on Britannia Bridge and peak time traffic.

The proposed new shift patterns are:

- in the early years of construction, two staggered day shifts and one night shift
- during peak construction years, three staggered day shifts and two staggered night shifts
- changes to shift start times and shift duration.

Have your say

It's really important that you have your say on these proposed changes. Please give us your views by emailing or writing to us **by 6 December 2018,** using the details on the back of this newsletter.

To help you, we've produced information sheets that summarise each of the three proposed changes. You can read these, together with detailed technical documents, online at: www.horizonnuclearpower.com/consultation

A small technical team will also be present at the next Horizon Open Surgery on 19 November at Cemaes Village Hall between 1pm and 7pm if you would like to discuss these proposals further.

Working hours

Our DCO application sets out the days and times when site activities may be undertaken. In many areas of activity, 24-hour 7-days per week working is necessary to maintain a viable construction schedule. Exceptions to this are specified, with certain operations undertaken only from 7am to 7pm.

We are proposing to amend the list of activities carried out from 7pm to 7am, to increase the range of activities allowed on a 24/7 basis.

To allow us to make full use of the proposed extended working window without creating new or different likely significant environmental effects, we will also need to make minor changes to some construction methods, such as constraints on what equipment can be used where and when.

These changes will give greater flexibility and resilience in the programme, as well as improving worker safety.

HGV movements

During construction, Heavy Goods Vehicles (HGVs) will be used to transport some materials and equipment to site. The DCO proposes that the majority of deliveries happen between 7am and 7pm, Monday to Friday.

We are now proposing to extend the weekday HGV delivery window to between 7am and 11pm and to include Saturday mornings between 8am and 1pm.

We're also proposing that no more than 20 HGV deliveries would be allowed between 7pm and 11pm weekdays, and no more than 50 HGV deliveries would be allowed on Saturday mornings.

The peak number of HGV deliveries per day would stay the same as specified in our DCO application – it is only the delivery window that would change. This will allow us to better manage unexpected events, such as bad weather affecting delivery by sea, while making sure that local traffic flows and communities are not unduly affected.

Managing any effects of these changes

Additional measures to reduce any effects of these changes are set out in our technical documents. With these, we predict that no new or different likely significant environmental effects will occur as a result of these three changes, alone or in combination. All other assessments submitted as part of the DCO application would remain unaffected by the proposed changes.

The proposed changes are explained in more detail in the technical documents available as part of our consultation.

Please let us know your views on these proposals by writing to us via our Freepost or email addresses below by 6 December.

And if you'd like to know about any other aspect of the Wylfa Newydd Project, please feel free to contact us.

[redacted]

Richard Foxhall, External Affairs Manager Wales

What is a 'DCO'?

Large projects such as Wylfa Newydd are known as Nationally Significant Infrastructure Projects (NSIPs).

They require a Development Consent Order (DCO) that is determined by UK Government. We have applied for a DCO from the UK Secretary of State for Business, Energy and Industrial Strategy.

This is now being examined by appointed Planning Inspectors.

For more information on this process you can contact the Planning Inspectorate at: https://infrastructure.planninginspectorate.gov.uk/, email Wylfa@pins.gsi.gov.uk or call 0303 444 5000.

Getting in touch

wylfaenquiries@horizonnuclearpower.com
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Horizon Nuclear Power Wylfa Limited – Hysbysiad Cyhoeddus

DEDDF CYNLLUNIO 2008

RHEOLIADAU CYNLLUNIO SEILWAITH (ASESU EFFAITH AMGYLCHEDDOL) 2009

GORCHYMYN WYLFA NEWYDD (GORSAF CYNHYRCHU NIWCLEAR) ARFAETHEDIG

CYFEIRNOD Y CAIS: EN010007

HYSBYSIAD O GYFLE I GYFLWYNO SYLWADAU MEWN PERTHYNAS Â THRI NEWID ARFAETHEDIG I GAIS GORCHYMYN CYDSYNIAD DATBLYGU (DCO) WYLFA NEWYDD

1. Ar 1 Mehefin 2018 gwnaeth Horizon Nuclear Power Wylfa Limited ('Ymgeisydd') o Sunrise House, 1420 Charlton Court, Parc Busnes Caerloyw, Caerloyw, GL3 4AE gais i'r Ysgrifennydd Gwladol, d/o Yr Arolygiaeth Gynllunio ('PINS'), am orchymyn cydsyniad datblygu ('DCO') o dan Ddeddf Cynllunio 2008 (y 'Cais'). Byddai'r DCO yn awdurdodi'r gwaith o adeiladu a gweithredu Wylfa Newydd, gorsaf bŵer niwclear newydd ar Ynys Môn gyda chapasiti o hyd at 3100 megawat, a datblygiadau cysylltiedig ('Prosiect DCO Wylfa Newydd'). Cafodd y Cais ei dderbyn ar gyfer archwiliad ar 28 Mehefin 2018.
2. Hysbysir trwy hyn bod Horizon Nuclear Power Wylfa Limited ("Ymgeisydd") yn bwriadu gwneud cais am dri newid ("newidiadau arfaethedig") i'r Cais, y mae'r Ymgeisydd yn eu hystyried yn ansylweddol o ran natur. Disgrifir y newidiadau arfaethedig ym mharagraff 6.
3. Mae'r Ymgeisydd yn hysbysebu'r newidiadau arfaethedig i'r Cais mewn papurau newydd, ar sail anstatudol.

Crynodeb o'r prosiect

4. Dyma brif elfennau Prosiect DCO Wylfa Newydd:
   a. Yr Orsaf Bŵer, sy'n cynnwys dau Adweithydd Dŵr Berwedig Uwch y DU, y System Dŵr Oeri, cyfleusterau, adeiladau, strwythurau ac offer cefnogol, adeiladau i storio tanwydd sydd wedi cael ei ddefnyddio a gwastraff ymbelydrol a chysylltiad â'r grid cenedlaethol.
   b. Datblygiadau eraill ar y safle, gan gynnwys gwaith tirweddu a phlannu, draeniau, systemau rheoli dŵr wyneb, gwaith mynediad i'r cyhoedd gan gynnwys cau a dargyfeirio hawliau tramwy cyhoeddus dros dro ac yn barhaol, Ffordd Fynediad newydd i'r Orsaf Bŵer a ffyrdd mewnol y safle, meysydd parcio, gwaith a gweithgareddau adeiladu gan gynnwys compowndiau adeiladu ac ardaloedd parcio dros dro, ardaloedd gosod, ardaloedd gweithio a gwaith a strwythurau dros dro, ardal dros dro i wylio'r gwaith adeiladu, dargyfeirio cyfleustodau, ffens y ffin a ffensys adeiladu a chysylltiadau trydan.
   c. Gwaith Morol sy'n cynnwys:
   - Gwaith Morol parhaol, gan gynnwys y System Dŵr Oeri, y Cyfleuster Dadlwytho Morol, strwythurau morglawdd, gwaith i ddiogelu'r lan, mannau gollwng draeniau dŵr wyneb, man gollwng carthffrwd dŵr gwastraff (a draeniau cysylltiedig dŵr wyneb a charthffrwd dŵr gwastraff i'r môr), system achub a dychwelyd pysgod, system atal pysgod, cymhorthion mordwyo a charthu; a
   - Gwaith Morol dros dro, gan gynnwys argaeau coffr dros dro, ramp mynediad dros dro, cymhorthion mordwyo dros dro, mannau gollwng dros dro ac angorfa dros dro i gychod camlas.

   d. Cyfleusterau Oddi ar Safle'r Orsaf Bŵer: sy'n cynnwys y Ganolfan Rheoli Argyfwng Amgen, y Labordy Arolygon Amgylcheddol a'r Garej Offer Argyfwng Symudol.
   e. Datblygiadau Cysylltiedig sy'n cynnwys:
   - Campws y Safle at gyfer llety gweithwyr yn Ardal Datblygu Wylfa Newydd;
   - cyfleuster Parcio a Theithio dros dro yn Dalar Hir ar gyfer gweithwyr adeiladu;
   - Canolfan Logisteg dros dro ym Mharc Cybi;
   - y Newidiadau i Briffordd yr A5025; a
   - gwaith creu a gwella cynefinoedd gwlyptir yn Nhŷ Du, Cors Gwawr a Chae Canol-dydd.
5. Mae'r cais DCO hefyd yn ceisio pwerau amrywiol eraill, gan gynnwys darpariaethau sy'n caniatáu caffael buddiannau a hawliau mewn tir drwy orfodaeth, defnyddio tir dros dro, ymyrryd â hawliau a chau neu ddargyfeirio strydoedd a hawliau tramwy cyhoeddus eraill gan gynnwys cau Ffordd Cemlyn yn barhaol.

Ceisiadau am newid

6. Byddai'r newidiadau arfaethedig yn cynnwys y canlynol:
   a. diwygio patrymau shifft gweithwyr fel a ganlyn:
   i. ym mlynyddoedd cynnar yr adeiladu, newid o dair shifft ddydd gyfnodol a thair shifft nos gyfnodol, i ddwy shifft ddydd gyfnodol ac un shifft nos;
   ii. ym mlynyddoedd y gwaith adeiladu mwyaf, newid o dair shifft ddydd gyfnodol a thair shifft nos gyfnodol, i dair shifft ddydd gyfnodol a dwy shifft nos gyfnodol; a.
   iii. newidiadau i amseroedd dechrau shifftiau a hyd shifftiau.
   b. diwygio cyfnodau dosbarthu'r Cerbydau Nwyddau Trwm ("HGV") i:
   i. ymestyn cyfnod dosbarthu dyddiau'r wythnos (o ddydd Llun i ddydd Gwener yn gynwysedig) i'r gyda'r nos, i gynnwys dosbarthu rhwng 19:00 a 23:00 (cyfyngedig i uchafswm o 20 o symudiadau HGV); ac
   ii. ychwanegu cyfnod dosbarthu ychwanegol ar foreau Sadwrn rhwng 08:00 a 13:00 (cyfyngedig i uchafswm o 50 o symudiadau HGV).
   c. ymestyn yr oriau gwaith ar y prif safle i gynnwys y canlynol:
   i. 19:00 i 07:00 (h.y. ymestyn i 24 awr y dydd) ar gyfer rhai gweithgareddau a gwaith adeiladu cyffredinol a nodir; a
   ii. mân fesurau o ganlyniad i ddefnyddio'r oriau gwaith estynedig.
7. Mae'r Ymgeisydd wedi paratoi dogfennau ymgynghori ar bob un o'r newidiadau arfaethedig sy'n darparu manylion llawn am y newidiadau. Mae'r dogfennau ymgynghori'n cadarnhau nad oes unrhyw fuddiannau newydd mewn tir, neu barseli tir newydd, yn cael eu heffeithio gan y newidiadau arfaethedig ac nad oes disgwyl unrhyw effeithiau amgylcheddol arwyddocaol tebygol newydd neu wahanol o ganlyniad i'r newidiadau arfaethedig.
8. Mae'r newidiadau arfaethedig yn ychwanegol at ddau newid blaenorol yr ymgynghorwyd yn eu cylch ac a gyflwynwyd i'r Awdurdod Archwilio.

Ymgynghori

9. Mae Horizon yn cynnal ymgynghoriad cyhoeddus ar y newidiadau arfaethedig **rhwng 8 Tachwedd a 6 Rhagfyr 2018**, i ofyn am safbwyntiau rhanddeiliaid ac unigolion cyn iddo gyflwyno ei newidiadau arfaethedig terfynol i'r Arolygiaeth Gynllunio ar gyfer eu hystyried.
10. Os ydych chi eisiau cyflwyno sylwadau ar y newidiadau arfaethedig neu unrhyw un ohonynt, gellir darparu unrhyw sylwadau yn ysgrifenedig i:
    - e-bost i ymholiadauwylfa@horizonnuclearpower.com; neu
    - llythyr at Freepost WYLFA NEWYDD (dim angen stamp)
11. Gellir gweld copïau o'r dogfennau ymgynghori sy'n manylu ar y newidiadau arfaethedig ar-lein yn www.horizonnuclearpower.com/ymgynghoriad ac yn y lleoliadau cyhoeddus a restrir isod yn ystod yr ymgynghoriad.

    Canolfan Fusnes Môn
    Cyngor Sir Ynys Môn
    Parc Busnes Bryn Cefni
    Llangefni, Ynys Môn, LL77 7XA
    Dydd Llun i ddydd Gwener 9am – 5pm

    A

    Swyddfa Safle Wylfa Newydd
    Cemaes, Ynys Môn, LL67 0AA
    Dydd Llun i ddydd Gwener 9am – 5pm drwy apwyntiad yn unig
    Cysylltwch â ni ar ymholiadauwylfa@horizonnuclearpower.com neu 0800 954 9516 i drefnu ymweliad â swyddfa'r safle.
12. Gellir darparu copïau o'r dogfennau ymgynghori ar gais hefyd, drwy gysylltu ag ymholiadauwylfa@horizonnuclearpower.com neu drwy ffonio 0800 954 9516.
13. Mae Horizon yn gofyn i unrhyw adborth am y cynigion nodi'r ymgynghoriad yn glir a hefyd dylid cynnwys manylion cysylltu ar gyfer anfon unrhyw ohebiaeth yn ymwneud â'r sylwadau. Efallai y bydd rhaid i Horizon sicrhau bod copïau o'r holl sylwadau a dderbynnir ar gael i PINS. Cofiwch y bydd yr holl ymatebion yn cael eu cyhoeddi. Fodd bynnag, bydd Horizon yn gofyn i fanylion personol beidio â chael eu nodi yn y cofnod cyhoeddus. Bydd manylion personol yn cael eu cadw'n ddiogel yn unol â Deddf Diogelu Data 1998 ac yn cael eu defnyddio mewn perthynas ag archwilio'r Cais yn unig.

Gallwch chi gysylltu â Horizon unrhyw bryd.

Dros e-bost: **ymholiadauwylfa@horizonnuclearpower.com**

Dros y ffôn: **0800 954 9516**

Gwefan:
www.horizonnuclearpower.com/hafan

Cyfeiriad rhadbost:
Freepost WYLFA NEWYDD

Horizon Nuclear Power Wylfa Limited – Public Notice

PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2009

PROPOSED WYLFA NEWYDD (NUCLEAR GENERATING STATION) ORDER

APPLICATION REFERENCE: EN010007

NOTICE OF OPPORTUNITY TO COMMENT IN RELATION TO THREE PROPOSED CHANGES TO THE WYLFA NEWYDD DCO APPLICATION

1. On 1 June 2018 Horizon Nuclear Power Wylfa Limited ('Applicant') of Sunrise House, 1420 Charlton Court, Gloucester Business Park, Gloucester, GL3 4AE applied to the Secretary of State, c/o The Planning Inspectorate ('PINS') for a development consent order ('DCO') under the Planning Act 2008 (the 'Application'). The DCO would authorise the construction and operation of Wylfa Newydd, a new nuclear power station on Anglesey with a capacity of up to 3100 megawatts, and associated development ('Wylfa Newydd DCO Project'). The Application was accepted for examination on 28 June 2018.
2. Notice is hereby given that Horizon Nuclear Power Wylfa Limited ("Applicant") is proposing to apply for three changes ("proposed changes") to the Application, which the Applicant considers are non-material in nature. The proposed changes are described in paragraph 6.
3. The Applicant is advertising the proposed changes to the Application in newspapers, on a non-statutory basis.

Summary of the project

4. The principal components of the Wylfa Newydd DCO Project are:
   a. The Power Station which includes two UK Advanced Boiling Water Reactors, the Cooling Water System, supporting facilities, buildings, plant and structures, radioactive waste and spent fuel storage buildings and a connection to the national grid.
   b. Other on-site development including landscape works and planting, drainage, surface water management systems, public access works including temporary and permanent closures and diversions of public rights of way, new Power Station Access Road and internal site roads, car parking, construction works and activities including construction compounds and temporary parking areas, laydown areas, working areas and temporary works and structures, temporary construction viewing area, diversion of utilities, perimeter and construction fencing, and electricity connections.
   c. Marine Works comprising:
   - permanent Marine Works including the Cooling Water System, the Marine Off-loading Facility, breakwater structures, shore protection works, surface water drainage outfalls, waste water effluent outfall (and associated drainage of surface water and waste water effluent to the sea), fish recovery and return system, fish deterrent system, navigation aids and dredging; and
   - temporary Marine Works including temporary cofferdams, a temporary access ramp, temporary navigation aids, temporary outfalls and a temporary barge berth.

   d. Off-site Power Station Facilities: comprising the Alternative Emergency Control Centre, Environmental Survey Laboratory and a Mobile Emergency Equipment Garage.
   e. Associated Development comprising:
   - the Site Campus for worker accommodation within the Wylfa Newydd Development Area;
   - temporary Park and Ride facility at Dalar Hir for construction workers;
   - temporary Logistics Centre at Parc Cybi;
   - the A5025 Off-line Highway Improvements; and
   - wetland habitat creation and enhancement works at Tŷ Du, Cors Gwawr and Cae Canol-dydd.
5. The DCO application also seeks various other powers including provisions permitting the compulsory acquisition of interests and rights in land, the temporary use of land, interference with rights and the closure or diversion of streets and other public rights of way including the permanent closure of Cemlyn Road.

Requests for change

6. The proposed changes would:
   a. amend workers' shift patterns as follows:
   i. in the early years of construction, changing from three staggered day shifts and three staggered night shifts, to two staggered day shifts and one night shift;
   ii. during the peak construction years, changing from three staggered day shifts and three staggered night shifts, to three staggered day shifts and two staggered night shifts; and
   iii. changes to shift start times and shift duration.
   b. amend the Heavy Goods Vehicle ("HGV") delivery windows to:
   i. extend the weekday (Monday to Friday inclusive) delivery window into the evening, to include deliveries between the hours of 19:00 and 23:00 (limited to a maximum of 20 HGV movements); and
   ii. add an additional delivery window on Saturday mornings between 08:00 and 13:00 (limited to a maximum of 50 HGV movements).
   c. extending the working hours on the main site to include:
   i. 19:00 to 07:00 hours (i.e. extending to 24 hours a day) for some additional prescribed general building and activities; and
   ii. consequential minor measures to utilise the extended working hours.
7. The Applicant has prepared consultation documents on each of the proposed changes which provide full details of the changes. The consultation documents confirm that no new interests in land or new land parcels are affected by the proposed changes and that no new or different likely significant environmental effects are predicted as a consequence of the proposed changes.
8. The proposed changes are in addition to two previous changes consulated on and submitted to the Examining Authority.

Consultation

9. Horizon is holding a public consultation on the proposed changes between **8 November and 6 December 2018**, to seek the views of stakeholders and individuals before it submits its final proposed changes to the Planning Inspectorate for consideration.
10. Should you wish to comment on the proposed changes or any one of them, any comments may be provided in writing to:
    - email to wylfaenquiries@horizonnuclearpower.com
    - letter to Freepost WYLFA NEWYDD (no stamp required)
11. Copies of the consultation documents detailing the proposed changes can be viewed online at www.horizonnuclearpower.com/consultation and at the public locations listed below during the consultation.

    The Anglesey Business Centre
    Isle of Anglesey County Council
    Bryn Cefni Business Park
    Llangefni, Anglesey, LL77 7XA
    Monday to Friday 9am - 5pm

    AND

    Wylfa Newydd Site Office
    Cemaes Bay, Anglesey, LL67 0AA
    Monday to Friday 9am – 5pm by appointment only
    Please contact us at wylfaenquiries@horizonnuclearpower.com or 0800 954 9516 to arrange a visit to the site office.
12. Copies of the consultation documents can also be provided on request from wylfaenquiries@horizonnuclearpower.com or by telephone 0800 954 9516.
13. Horizon requests that any feedback relating to the proposals clearly identifies the consultation and that contact details are provided to which any correspondence relating to the comments may be sent. Horizon may be required to make copies of all comments received available to PINS. Please note all comments will be made public. Horizon will, however, request that personal details are not placed on the public record. Personal details will be held securely in accordance with the Data Protection Act 1998 and will be used solely in connection with the examination of the Application.

You can contact Horizon at any time.

By email: **wylfaenquiries@horizonnuclearpower.com**

By phone: **0800 954 9516**

Website: **www.horizonnuclearpower.com**

Freepost address: **Freepost WYLFA NEWYDD**

Appendix 1-5: Maps of mailing zones

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Overview (909 addresses)

Map one


Craig yr Iwrch
Cemlyn Bay
Llanddaueint
Cemlyn
Cemlyn
A5025
Tregele
A5025

Map two


Cemlyn
Cemlyn
Tregele
A5025
A5025
A5025
A5025
A5025
Llanfechell
Llanrhwydrus

Map three


Llanddausaint
Cemaes Bay
Cemaes
Neuadd
A5025
A5025
A5025
A5025
A5025
A5025
A5025
A5025
Ffordd Caergybi
Ffordd Yr Felin
Ffordd Yr Felin
Tregele
Afon Wygyr

Map four


Llanbadrig
Cemaes Bay
Llanddausaint
Cemaes Bay
Neuadd
A5025
A5025
A5025
A5025
Cemaes
A5025
Ffordd Caergybi
A5025
Ffordd Y Felin
A5025

Dala Hir 1250m area exact map (228 addresses)

Dalar Hir – defined area at roughly 1250m (363 addresses)

Logistics Center Mailing Zone – 67 commercial and residential properties

Online Roads TCPA – Mailing Zone 2 (1679 addresses)

Overview

Image 1


Llanddausaint
Cemaes Bay
Cemaes
Neuadd
A5025
A5025
A5025
Ffordd Y Felin
Tregele
Cemlyn
A5025
A5025
Llanfechell
Llanfairynghornwy
Llanrhwydrus
Google
Map data ©2016 Google Imagery ©2016 Bluesky, Infoterra Ltd & COWI A/S, DigitalGlobe, Getmapping plc, Landsat
200 m
Terms of Use
Report a map error

Image 2


Llanfairynghornwy
Llanrhwydrus
A5025
Mynydd Mechell
Llanfflewyn
Llanrhyddlad
A5025
Rhyd-wyn
Lon Las
A5025
Google
Map data ©2016 Google Imagery ©2016 , Bluesky, Infoterra Ltd & COWI A/S, DigitalGlobe, Getmapping plc, Landsat
200 m
Terms of Use
Report a map error

Image 3


Llanfaethlu
A5025
A5025
A5025
Llanddeusant
Elim
Google
Map data ©2016 Google Imagery ©2016 , Bluesky, Infoterra Ltd & COWI A/S, DigitalGlobe, Getmapping plc, Landsat
200 m
Terms of Use
Report a map error

Image 4


Llanfwrog
A5025
Stryd y Facsen
Llanfigael
Llanfachraeth
Google
Map data ©2016 Google Imagery ©2016 , Bluesky, Infoterra Ltd & COWI A/S, DigitalGlobe, Getmapping plc, Landsat
200 m
Terms of Use
Report a map error

Image 5


Llanfachraeth
A5025
Llanynghenedl
A5025
B5109
Bodedern
B5109
B5109
A5
Wales Expy
A55
A5
A5025
A5025
Cymyran Strait
Valley
Station Rd
N Wales Expy
B4545
N Wales Expy
A5
N Wales Expy
Google
Map data ©2016 Google Imagery ©2016 , Bluesky, Infoterra Ltd & COWI A/S, DigitalGlobe, Getmapping plc, Landsat
200 m
Terms of Use
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Appendix 1-6: Horizon's responses to consultation responses received

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Ref	Comment	Horizon's Response
Local Resident LR1-01	The proposal for 2020 shows that the 10.5 hour shift remains but shows a commencement time of 19.30 hours and a finish time of 06.00 hours effectively working three hours later into the following morning. It also appears that there is no overlap between the day time and night time shifts but a break of 90 minutes between the 18.00 day time finish and the 19.30 night time start. The proposals for 2023 cover the same hours as 2020 but two ten hour shifts rather than one 10.5 hour shift. The increase in the overall working hours and the later finishing times would lead to an increase in the volume of traffic using the roads at times when the majority of people are sleeping. Such an increase in traffic volumes would increase noise levels for local residents causing disturbance to sleep and sleep deprivation.	The first paragraph is correct, but the second is incorrect. Table 2-2 of the Request for a Non-Material Change No 3 Worker Shift Patterns presents the proposed changes to shift timings. Shift working hour durations have broadly stayed the same i.e. 10 hours or 10.5 hours. The proposed changed is for the start and finish times. The shift patterns change is proposed to reduce the traffic impact at peak travel times at the Britannia bridge and is considered to greatly reduce the disturbance to local communities. Buses will be used to reduce the traffic along the A5025. The current shift pattern included in the Draft DCO application had night shifts workers leaving site in the early hours pf the morning (i.e. 0300 hrs). The new shift times would result in the workers now leaving the site between 0500 and 0600hrs which is considered to significantly reduce the impact on local communities.
LR1-02	We believe that Horizon are now failing to consider the wellbeing and lifestyle of the local residents and such failings will definitely interfere with the quiet, peaceful enjoyment of residents lives and their properties.	Horizon will take all reasonable steps to limit the adverse effects of the Wylfa Newydd DCO Project as far as possible. Mitigation and good practice measures are proposed in order to avoid, reduce or compensate for adverse impacts where possible. These measures are set out in the Mitigation Route Map [APP-422], including measures relating to monitoring health and well-being.

Ref	Comment	Horizon's Response
		Horizon takes it responsibilities to the people and communities that neighbour the Wylfa Newydd Development Area and the Associated Development sites very seriously. The various mitigation strategies that form part of this application have been considered and designed with the interests of local people in mind. Where possible Horizon has sought to reduce the impacts on the surrounding properties and residents. Each of the RfNMCs has included a consideration of the potential population health effects. Such analysis has concluded that the proposed changes would not alter the conclusions reached in the Wylfa Newydd DCO Project's Health Impact Assessment (HIA) Report [APP-429]. The HIA Report acknowledges that there would be a range of beneficial and adverse effects across vulnerable groups and geographic levels. This encompasses minor to major beneficial effects and minor to moderate adverse effects. In relation to "*the quiet, peaceful enjoyment of residents lives and their properties*", Horizon acknowledges that there would be some adverse effects of the Wylfa Newydd DCO Project. However, the RfNMC sets out additional and enhanced noise mitigation (in the Wylfa Newydd Code of Construction Practice [APP-414]), which would reduce the effects when compared to the Draft DCO application. Such measures are specifically intended to benefit the wellbeing and lifestyles of local residents. Horizon has undertaken extensive noise modelling to predict the

Ref	Comment	Horizon's Response
		likely significant effects of the Wylfa Newydd DCO Project. Where the modelling shows it to be appropriate, Horizon has committed to providing mitigation in the form of the Local Noise Mitigation Strategy (LNMS) as set out and submitted into examination at Deadline 3 (18 December 2018) (see REP3-050 and REP3-051) Horizon is also committed to working with the Isle of Anglesey County Council in relation to appropriate monitoring and mechanisms for responding to any complaints received. Whilst the Wylfa Newydd DCO Project will, in common with any national infrastructure project, result in residual adverse effects on the local community these (considered individually or collectively) must, for a balanced approach, be considered in the context of the important benefits. These benefits would be delivered for the UK as a whole, including a vital role in the provision of safe and secure low carbon electricity, as well as significant local benefits including jobs creation, investment in the local economy and provision of skills for the local workforce. Together these benefits have the potential to create a significant lasting positive legacy for Anglesey, north Wales and the UK.
WG-01	Shift Patterns - • Has the TA accounted for the overlap in shifts in assessing traffic movements and capacity at Junction 4 of the A55 in the AM? In particular the off slip westbound and off slip eastbound? • Has this proposed change in timing taken into account the overlap in construction worker	**Shift overlap:** Table 2-2 of the Request for a Non-Material Change No 3 Worker Shift Patterns presents the proposed changes to shift timings. For the day shift no changes are proposed for shift start timings in 2023 and in 2020 the proposed change removes a start time of 08:00. The Junction 4 off-slips in the westbound and eastbound direction would be used by workers travelling to and from the Park and Ride facility at Dalar Hir. Given the time taken to travel from the Park and Ride facility

Ref	Comment	Horizon's Response
	traffic movements against the 05:45 ferry arrival into Holyhead Port?	to the WNDA this means workers will arrive at the Park and Ride facility at least 30 minutes in advance of their shift start time. This means vehicle movements through Junction 4 associated with workers arriving for the day shift will occur in the period 06:00 to 07:30 which is away from the busiest AM peak hour on the network (see Figure 4-7 of the Draft DCO Transport Assessment [APP-101] which shows the daily profile on the A55 at Britannia Bridge which will be similar to the flow profile at Junction 4). Traffic movements associated with workers returning from the night shift could overlap with workers departing from the day shift. This could occur around 07:00. However, the junction modelling assessment presented in Table 11-6 of the Draft DCO Transport Assessment shows that Junction 4 has substantial amounts of spare capacity in the AM peak hour and it will have additional capacity earlier in the morning e.g. around 07:00. This means that there is expected to be sufficient capacity to accommodate vehicle movements to and from the Park and Ride facility following the proposed changes to shift timings. **Ferry arrivals**: The potential effects of ferry arrivals on traffic flows is considered in paragraph 4.3.6 of the Draft DCO Transport Assessment [APP-101]: "The arrival of a ferry will typically result in an intense but short-lived traffic peak, travelling south-east along the A55. This effect is less pronounced for departures as vehicles will arrive over a longer period in advance of a ferry leaving." Figure 4-7 of the Draft DCO Transport Assessment [APP-101] shows the traffic flow profile for eastbound traffic over the

Ref	Comment	Horizon's Response
		Britannia Bridge. This figure shows that traffic flows are very low before 07:00 when traffic being discharged from the 05:45 ferry arrival would use the A55 and then cross Britannia Bridge. In addition, construction traffic travelling to the Wylfa Newydd DCO Project would be travelling in the westbound direction in the early morning to reach the Wylfa Newydd DCO Project by 07:00 (the earliest time deliveries can be made). These movements are in the opposite direction to the eastbound traffic flows associated with the 05:45 ferry arrival. This analysis shows that the traffic associated with the 05:45 ferry arrival would not affect construction vehicle movements to the Wylfa Newydd DCO Project as there is sufficient capacity on the road network and vehicle movements are in opposite directions.
GCC-01	Horizon are proposing changes to the currently proposed current worker shift patterns, during the construction phase. They are proposing to reduce the number of shifts in the early years (2020) to two staggered days shifts and one night shift. During peak construction (2023) they are proposing three staggered day shifts (as per the DCO application) but a reduction in night shifts from three to two. They conclude that no new or different likely significant environmental effects are predicted to occur as a consequence of this proposed change. There are also proposed changes in hours, which are set out in the next section of this technical note. GC have previously expressed concerns	Horizon acknowledges these concerns and they relate to the examination of the Draft DCO application itself and its assessments rather than the proposed change. Full details of the transport impacts of the Draft DCO application are provided in the Draft DCO Transport Assessment [APP-101] and a further response to the issues raised by Gwynedd County Council in their Written Representation has been provided by Horizon at Deadline 3 (18 December 2018) and further information is provided at Deadline 4 (17 January 2019).

Ref	Comment	Horizon's Response
	around the shift patterns and the transport analysis and modelling work undertaken. With these proposed changes GC are not raising any new concerns, but the previous concerns remain. GC set out below these points and their observations with respect to the most recent information provided within the three reports provided on the Horizon website (detailed above).	
GCC-02	GCC appreciate that Horizon have stated that the shift timings were set originally to avoid increased traffic flows across Britannia Bridge during the morning and evening peak periods (0800-0900 and 1700-1800). However, there is concern that due to the nature of the traffic flows there will be peak spreading. The construction traffic flows are anticipated to be at the Britannia Bridge very close to these peaks and the traffic flow totals become very similar (to the peak), therefore not providing much spare capacity or contingency should there be events that cause delays on here and elsewhere on the road network. GCC concerns focused around whether the detailed traffic surveys and modelling had included sensitivity testing around the peaks, to test mitigation	A VISSIM traffic model of the operation of the Britannia Bridge and the nearby road network has been prepared and used to assess the impact of the Wylfa Newydd DCO Project. This model is described in section 9.5 of the Draft DCO Transport Assessment [APP-101] with results provided in section 11.4. Details of sensitivity tests concerning peak conditions and the potential effects of the North Wales Connection project are considered in paragraphs 11.4.7 and 11.4.8. Since the submission of the Draft DCO application further sensitivity tests have been prepared which examine the effects of an increase in construction workers living on the mainland. This technical note has been provided to GCC as part of the SoCG engagement.

Ref	Comment	Horizon's Response
	measures if unforeseen circumstances occurred.	
GCC-03	At paragraph 2.3.7 of the Horizon report dated November 2018, Request for Non-Material Change no.3 Worker Shift Patterns, it states that as with the original shift pattern, the proposed change has been designed to ensure that the construction shift traffic avoids creating adverse impacts on Britannia Bridge. They state that this is because under the proposed change. By the morning rush hour peak period of 0800 and 0900. Day shift workers would have crossed Britannia Bridge (westbound) between 0500 and 0700; and. Night shift workers would have crossed Britannia bridge (eastbound) between 0630 and 0730; and. By the evening rush hour peak period between 1700 and 1800. Day shift workers will still be travelling eastbound on the A55 from the site to cross the Britannia Bridge (eastbound)	These comments are noted. In terms of impact in 2020, it should be noted that Figure 7-8 of the DCO Transport Assessment [APP-101] shows total vehicle movements across the Wylfa Newydd DCO Project and it can be seen that the vehicle movements are lower in the early years of the Wylfa Newydd DCO Project (e.g. 2020). In terms of an assessment of Saturdays, Figure 5-1 of Appendix L Supplementary Information [APP-113] shows that flows on the A55 at Britannia Bridge are lower on a Saturday than on weekdays indicating that potential traffic impacts would be lower as well.

Ref	Comment	Horizon's Response
	between 1830 to 2000; and. Night shift workers to the site will still be in the mainland to cross the Britannia Bridge (westbound) between 1800 and 1900. These assumptions above by Horizon assume a variety of timings for workers leaving/arriving at the construction site and travelling between circa 1 to 2 hours to depart there and get to the bridge or arrive from the bridge. Paragraphs 2.5.18 and 2.5.24 of the Horizon report dated November 2018, Request for Non-Material Change no.3 Worker Shift Patterns, state that one hour has been allowed for workers to travel across Anglesey before/after shift(s) starts/ends, therefore these movements are outside the peaks of when the junctions are assessed (0800-0900 and 1700-1800), therefore offering an improvement on the DCO application in traffic terms.. However, the changes in journey times, shown in the "journey times across the Britannia Bridge" (Table 2-3 of the Horizon report dated November 2018, Request for Non-Material Change no.3 Worker Shift Patterns), shows that, in summary. Proposed changes to shift patterns would result in minor increases in journey times across the bridge on the AM peak, compared to the DCO Transport Assessment (APP-101) (Mainly eastbound);	

Ref	Comment	Horizon's Response
	and. Proposed changes to shift patterns would result in minor decreases in journey times across the bridge in the PM peak (westbound), compared to the DCO Transport Assessment (APP-101); and Overall Horizon consider changes in shifts to be broadly neutral. Horizon consider that impacts in 2020 are expected to be lower than in 2023 due to the lower background traffic flows and lower volume of worker trips (para 2.5.8 Horizon report dated November 2018, Request for Non Material Change no.3 Worker Shift Patterns). Although at para 2.5.15 it is stated by Horizon that in 2020 the proposed change from three to two, day shifts, and three to one night shift(s), will result in higher concentrations of workers travelling in a shorter space of time. In conclusion, GC have concerns, as previously, that. The periods of traffic movements are still relatively close to peak periods, and increases in delays at some of the time periods considered do cause additional delays to traffic flows. No assessments have been made outside of any of the peak periods, as delays are considered to be lesser, although impacts could actually be relatively higher. No assessments have been done for the changes in the 2020 year, as impacts are considered to	

Ref	Comment	Horizon's Response
	be lower, due to lower background traffic levels, even though impacts could actually be relatively higher; and. No consideration of traffic flows on Saturday mornings appears to have been undertaken.	
GCC-04	Horizon are also proposing Saturday morning working. However, there does not appear to have been any assessment of potential impacts from this in the documents reviewed (Horizon report dated November 2018, Request for Non-Material Change no.3 Worker Shift Patterns. There are general comments made around the overall vehicle impacts are expected to be lower due to the lower background traffic flows and lower volume of trips. This may well be true in terms of traffic volumes, delays and congestion; however, impacts could actually be relatively higher.	The proposed changes to shift timings do not affect the days of the week when workers are expected to be working. As described in section 7.4 of the Draft DCO Transport Assessment [APP-101] workers are expected to work a shift pattern of 11 days on, 3 days off which means that workers will be travelling to and from work during the weekend. These arrangements are not proposed to be altered as part of the changes presented in Request for Non-Material Change No. 3 Worker Shift Patterns.
GCC-05	Horizon are proposing changes to worker shift patterns and the HGV delivery window (Requests for Non-Material Change no. 3 and 5) which both have the potential to alter traffic flows, and in the case of Saturday morning	Horizon acknowledges that the control documents that set out and secure mitigation in the Draft DCO application may be further refined during the Examination period. Recent meetings with the IACC and Welsh Government (Dec 2018) have updated issues such as limits on vehicle movements, traffic monitoring and

Ref	Comment	Horizon's Response
	HGV deliveries, introduce new construction-related traffic from that assessed within the DCO application. GCC, accept that whilst these changes individually do not affect significantly the outcomes of any previous modelling work undertaken and are not adding large amounts of traffic movements, but moving traffic flows around, the previous reservation still stand around sensitivities with the congestion on areas of the network such as Britannia Bridge. GC also welcome the consideration of further details to cover additional vehicle movements when items such as bridge closures and road congestion threaten the construction programme. However, GC would still request that the following elements are set out and are committed to in the DCO control documents, e.g. the Code of Construction Practice (CoCP), as follows: limits on all vehicular traffic in terms of volumes, timings, restricted hours and duration of movements. detailed Phasing Strategy of the project. traffic monitoring and management details, with penalties and mitigation set out for exceeding limits. travel planning details to manage traffic and set out measures of control. The CoCP is currently lacking in a lot of detail that would be expected	enforcement. Horizon has already submitted revisions of the Wylfa Newydd CoCP [REP2-031] and relevant sub-CoCPs [REP2-032 to REF2-036] at Deadline 2 (4 December 2018). Horizon will provide the next updated revisions of the Wylfa Newydd CoCP [REP2-031] and relevant sub-CoCPs [REP2-032 to REF2-036] at Deadline 5 (12 February 2019) as well as an updated Phasing Strategy [APP-447]. Horizon will include the following items at the next update, confirming mitigation discussed with the IACC and Welsh Government (Dec 2018): - HGV limits, including limits that will apply in advance of the A5025 Off-line Highway Improvement Works opening; - traffic management monitoring and reporting; - delivery management systems; and - enforcement.

Ref	Comment	Horizon's Response
	for a project of this type. GC set out further details within their Local Impact Report.	
NRW-01	2. WORKER SHIFT PATTERNS (CHANGE NO. 3). 2.1. Table 2-2 presents the primary shift patterns as submitted in the DCO application and the proposed changes to these shift patterns. 2.2. NRW advises that the proposed changes are not likely to result in new or different likely significant environmental effects.	Horizon agrees with NRW's assessment on materiality.
IACC-01	This letter constitutes the Isle of Anglesey County Council's (IACC) response to Horizon's consultation on the 'non-material changes' as outlined above. The IACC does not agree that the changes are 'nonmaterial'. This letter will outline the IACC's position as to why these changes are material and how these changes (individually and cumulatively) will materially change the impacts of the project and the DCO Application. As set out in advice note 16, a series of incremental changes can cumulatively amount to a material change to the application. IACC consider that the proposed changes when taken together have the potential to materially change the impacts and are cumulatively a Material Change to the	Horizon has provided an assessment of the cumulative impacts from all the Request for Non-Material Changes in the appendix. The appendix (which is attached – in duplicate form – to RfNMC docs 3, 4 and 5) sets out an assessment of the effects of all proposed non-material changes to the cumulative assessment reported in the Draft DCO application. The purpose is to assess whether the proposed changes could interact to result in the Wylfa Newydd DCO Project having a greater cumulative effect to that reported in the DCO application. The effect of each separate request for non-material change on the cumulative assessment reported in the DCO application has been assessed and reported within the standalone candidate for change documents. The details of the proposed changes have been carefully considered in isolation to ensure that the change can be undertaken with minimal environmental effects resulting in no new

Ref	Comment	Horizon's Response
	DCO Application. The IACC accepts that the changes proposed do not fundamentally alter the substance of the proposal in the terms of advice note 16. However, IACC considers that these changes will result in a material change to the impacts assessed in the ES and require not only full assessment of the impacts by Horizon, including the provision of other environmental information considering all of the changes together, but also the opportunity for IACC to assess and respond to these as this proposal will change the basis on which the LIR was prepared.	or different likely significant environmental effects. Where there is considered potential for new or different effects to occur as a consequence of the proposed change, new and/or enhanced mitigation has been proposed to enable an overall conclusion of no new or different likely significant environmental effects to be reached. The cumulative effects have also been considered in detail from each change and Horizon also concludes 'no new or different likely significant environmental effects' as a result of all three proposed changes.
IACC-02	IACC consider that insufficient information on the impacts of the proposed changes to working hours and shift patterns is provided to allow the IACC to accept the assessments of impacts presented.	Horizon has undertaken modelling activities to inform impact assessments to determine any potential changes to the Draft DCO application. The modelling and assessment work for the candidate changes has followed the same approach taken in the Draft DCO application and Horizon considers that sufficient information has been provided to determine if any new or different likely significant environmental effects are generated. As a result of this feedback, Horizon has provided noise propagation figures in Appendix 1-7 of the Working Hours RfNMC No.4.

Ref	Comment	Horizon's Response
IACC-03	IACC objects to the changes to the working hours. IACC believes the proposed changes to the working hours constitutes a significant increase in construction activities over a 24-hour period which will have an unacceptable adverse impact on both environmental and human receptors. The proposed working hours conflict with construction times as recommended within British Standard's such as BS6472-2:2008 Guide to evaluation of human exposure to vibration and BS 5228-1:2009 Code of practice for noise and vibration control on construction and open sites. The change to working hours would result in the intensification of works on site which would constitute an unacceptable adverse impact on residential amenity of the local population in terms of noise and vibration.	In respect of the proposed changes to working hours, this doesn't represent a significant increase for construction activities over a 24 hour period from those presented in the Draft DCO application. BS5228-1:2009+A1:2014 does not set out recommended construction periods for activities on site. Instead the standard notes that for any NSP [Noise Sensitive Premises], some periods of the day will be more sensitive than others. For dwellings, times of site activity outside normal weekday and Saturday morning working hours will need special consideration. Correspondingly, the standard recommends lower noise limits for evening and night-time works, with both Table E.1 and Table E.2 of the standard setting out suites of noise levels covering the whole day/week period taking into account the varying sensitivities through these periods. The magnitude scale for long-term construction plant and machinery noise adopted by Horizon for the ES and in the request for change noise assessments reflects this advice; for example, the threshold between negligible and small magnitude of change at night is 13 dB lower than the equivalent threshold during the day. In respect of the noise impacts of the proposed extended working hours, noise modelling indicates that there will be a greater number of beneficial changes than adverse changes as a result of the proposed extension to working hours: • There will be a net increase of four residential receptors at which a large magnitude of change (major adverse effects) is

Ref	Comment	Horizon's Response
		predicted (an adverse change compared to the Draft DCO application). • There will be a net reduction of 79 residential receptors for which a medium magnitude of change (major adverse significance) is predicted (a beneficial change compared to the Draft DCO application). • There will be a net increase of 28 residential receptors for which a small magnitude of change (moderate significance) is predicted (an adverse change compared to the Draft DCO application). To mitigate the effects of increased construction noise during the evening and night, Horizon has lowered the eligibility criteria and extended the mitigation measures that may be provided by the Local Noise Mitigation Strategy (LNMS). Further information on the improvements to this scheme are set out in the Local Noise Mitigation Strategy Update [REP3-050] submitted at Deadline 3 (18 December 2018), and it is recommended also to read the LNMS Companion Guide [REP3-051] (also submitted at Deadline 3, 18 December 2018) which provides additional information on how the strategy will be operated. In respect of blasting (and the recommendations in BS6472-2:2008), Horizon has considered feedback from IACC during the consultation process, and in response will commit to achieving a vibration level of 4.5mm/s PPV outside residences for 95% of blasts during the period 18.00-19.00. This change has been made

Ref	Comment	Horizon's Response
		in the request for non-material change submitted at Deadline 4 (17 January 2019).
IACC-04	The change to these aspects have the potential to have impacts on key project impacts, including worker accommodation and the impact on housing stock in North Anglesey. The impacts of these have not been properly assessed. The number of workers working longer shifts is not detailed and the potential risk to their well-being as well as the community is not properly considered. IACC objects to the changes to shift patterns on the basis of lack of full assessment of the potential impacts.	Horizon considered whether the proposed changes could have implications for all chapters of the ES and concluded that there is no impact on worker accommodation and off-site housing. IACC has not stated the reasons or provided evidence for why it believes a change in working hours for specified tasks within the WNDA may impact on worker accommodation and housing stock in North Anglesey. Furthermore, community safety / worker safety / shift length will be unaffected because there is no change in the total number of hours that any worker will be expected to work. The proposed change simply allows more efficient use of resource deployed to activities being undertaken on a 24/7 basis. This change results in a simple reallocation of resources from day to night shift and maintains the 70/30 split in day/night shift working covered in the Draft DCO. Horizon will ensure all shift working will be managed to ensure compliance with UK Working Time Regulations. Horizon considers that the assessment of impacts is therefore comprehensive and accurate as submitted.

Ref	Comment	Horizon's Response
IACC-05	Horizon has proposed a change relating to revised shift patterns and shift start and end times with respect to those presented in the DCO Application at Appendix C2-4 (DCO Transport Assessment) of the Environmental Statement (APP-101), table 1-1. The revised proposals are justified by Horizon on the basis of a required increase in efficiency and resilience of the construction programme and a need to avoid overlapping of the start and end of shift times. Horizon indicates that the revised shift patterns and working hours take account of the need to minimise travel delays and congestion at the Britannia Bridge crossing. In assessing the effects of the proposed changes to shift patterns and start and end times, Horizon has assumed a worst case that all workers will adopt them whereas in reality a proportion of the workforce will not be required to work in accordance with them. IACC considers this to be a reasonable worst case position with respect to traffic modelling and wider environmental effects assessment.	Horizon notes IACC comment and has no further comment

Ref	Comment	Horizon's Response
IACC-06	Horizon concludes that the effects on journey time delay across the modelled highway network (the extent of which has been agreed with the relevant stakeholders) will be broadly neutral with some sections experiencing minor increases and some experiencing minor decreases in journey times. IACC notes however that traffic movements (both construction worker vehicles and shuttle buses) will be concentrated over a single or double shift, rather than spread over three shifts.	The potential effects of a concentration of traffic flows is considered in section 2.5 of the Request for Non-Material Change No. 3 Worker Shift Patterns. To examine this effect the VISSIM model of the Britannia Bridge and surrounding road network has been re-run together with a further analysis of junctions which operate with demand close to capacity. The results of this process are provided in Table 2-4 with a conclusion that the proposed change for the day shift will not affect the use of the highway network by the general public and that for the night shift there could be an improvement on the results provided in the Draft DCO application as construction worker traffic flows will shift to periods further from the PM peak hour of general traffic flows.
IACC-07	Horizon concludes that no new junctions within a 10 minute journey time of the Wylfa Newydd Development Area (WNDA) will exceed capacity relative to the DCO Application Transport Assessment. The Existing Power Station access/A0525 junction (Junction Reference Number 8) exceeds capacity for the revised shift patterns/times as it did for the DCO Application Transport Assessment (see Table 2-4 and Paragraph 2.5.22 of the technical note).	The Existing Power Station access / A5025 junction is forecast to operate in capacity with the maximum demand being 84% of capacity (see Table 2-4 of Request for Non-Material Change No. 3 Worker Shift Patterns). This result shows that the junction does have some space capacity (16%) and it should be noted that any delays will occur for construction workers on the minor arm of the junction and hence delays would not be experienced by members of the general public.
IACC-08	With respect to air quality, noise and health Horizon concludes that there would be no new effects and no change to the significance ratings of predicted effects relating to the	Horizon acknowledges IACCs view that conclusions for shift patterns and working hours are rational with respect to air quality, noise and health.

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	revised shift patterns and working hours. The same conclusions are reached with respect to potential for and scope of cumulative effects. IACC concludes that these findings are rational given that they are based largely on the outcome of the updated traffic modelling. However, IACC seeks clarification regarding para 2.5.56 and whether the alterations proposed within Non-Material Change No 5: HGV Delivery Window, have indeed been factored into / accounted for in the revised Calculation of Road Traffic Noise due to the changes in timings and vehicle movements as proposed.	The Request for Non-Material Change No. 5 HGV movements only seeks to amend the delivery window of HGV movements to allow the same number of HGVs to be spread over a greater timeframe. It does not increase the number of HGVs compared to the number presented in the Draft DCO application (Non-Material Change No 5: HGV Delivery Window does not seek an increase in HGV numbers, only wider delivery windows during the daytime). Non-Material Change No 5: HGV Delivery Window does not propose any changes at night. The CRTN noise predictions for the daytime which are undertaken in support of Non-Material Change No 3: Worker Shift Pattern are based on the 18-hour AAWT traffic flows from 06.00-00.00 hrs, from which both LA10,18hr (the traditional metric for describing road traffic noise in the UK) and LAeq,16hr (a contemporary metric describing noise over the period 07.00-23.00 hrs which is used in many international noise dose-effect health studies) are derived. The total number of HGV movements within the 06.00-00.00 hrs period will remain the same regardless of whether they are distributed between 07.00-19.00 hrs, or 07.00-23.00 hrs, and therefore Non-Material Change No 5: HGV Delivery Window does not affect the number of HGV movements assumed in Non-Material Change No 3: Worker Shift Pattern.

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IACC-09	IACC considers that the proposed working hours (10.5 for the day shifts and 10 hours for the night shifts) are long. IACC understand that similar working hours are currently applied for a proportion of the workforce which is currently engaged on the construction of the Hinkley Point C nuclear new build project. In accordance with the Working Time Regulations, workers would have to opt out of the standard requirement which restricts the normal working week to 48 hours.	Horizon intends to ensure that all Contractors employed on the Wylfa Newydd DCO Project shall comply with the Working Time Regulations 1998 using a reference period of successive 52 weekly period as per the NAECI and CIJC agreements. Shift working will be controlled to ensure that no individual worker will work more that an average of 48 hours in the 52-week control period. The duration of each shift is typical for construction works and would operate within Regulations. Not all resource will be employed on a shift basis, facilitating the opportunity to rest elements of the workforce through careful workforce management planning. Shift working is essential to support planned progress on critical path activities however this will be carefully managed and controlled to ensure the health of the workforce is not impacted by any requirement to work shifts.
IACC-10	IACC understands that travel to and from a fixed place of work is not typically included as working time. IACC requires clarification from Horizon as to whether the Wylfa Newydd Development Area (WNDA) would be considered to be a fixed place of work in which case travel to and from it would not be included within the working day for the construction workforce. This issue is considered to be of importance because it may be a key driver for workers to seek the closest accommodation possible to the WNDA in order to minimise	The NAECI and CIJC agreements specifically cover the points raised by IACC. It is expected that the Wylfa Newydd DCO Project will develop a Supplementary Project Agreement (as per the NAECI Agreement) that will set out any specific project requirements. The WNDA will be a fixed place of works and anyone employed on the Wylfa Newydd DCO Project. It will be expected to comply with the agreement. It will be down to individuals to ensure that they make the appropriate choice on the location of the accommodation based on a number of factors important to them. Workers remain responsible for getting themselves to work and from work, therefore some may want a shorter travel time, others may prefer to travel longer if they find

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	their overall travel time to and from work which may be uncompensated in financial terms. Horizon's own estimate indicates that workers travelling across the Britannia Bridge to and from the WNDA will take approximately 1 hour to traverse across Anglesey before and after their shifts. IACC considers that this is a further reason why workers will choose to take up accommodation as close as possible to the Power Station Site. Anecdotal evidence as well as evidence from the Accommodation Monitoring Reports from the Hinkley Point C project, indicates that the number of workers taking up local accommodation has been substantially higher than predicted. Should this situation occur for the Wylfa Newydd DCO Project there are likely to be adverse effects on the availability of accommodation within Anglesey and adverse effects on existing communities which have not been considered fully by Horizon to date. IACC also has concerns regarding the safety and welfare of individual workers that work long hours and also have significant journey times to and from the WNDA. Driver fatigue could be an issue with respect to the safety of other road users and pedestrians and this does not appear to have been taken into account by Horizon.	accommodation that meets their requirement. Any worker in receipt of the relevant accommodation allowance may not automatically be eligible for any radius allowance hence it may be in the best interest of the worker to live closer to site. Radius allowance payments are in the main intended to compensate those workers who chose to live at home and commute daily to the works (the local worker). These payments fall into two categories. A payment aimed at compensating the worker for travel time and a second element covering travel cost. Where the employer provides transport only the travel time element would normally be paid. IACC is correct to assume that the NAECI/CIJC arrangement may encourage workers to live as close to site as possible. However, it is important to note that Horizon is providing onsite accommodation comprising 4,000 bed spaces, meaning only 3,000 workers will be located in the local community. Furthermore, occupancy of the Site Campus will be incentivised via various means. For further information on these matters, see Horizon's response to the Examining Authority's FWQ.4.0.107 [REP2-375] and Horizon's response to IACC's Written Representation [REP3-019].

Ref	Comment	Horizon's Response
	IACC considers that Horizon should address the issues identified above and refer to relevant evidence with respect to the behaviours exhibited by the Hinkley Point C workforce as an indication of how the WNP workforce can be expected to respond to the shift patterns and working hours that are proposed.	
IACC-11	For the reasons outlined above, the IACC consider the proposed changes to the DCO application as being material as they will change the impacts of the project (individually and cumulatively). The impacts have not been adequately assessed as part of the DCO application process. Given the materiality of these changes, presenting these changes as 'non-material' is unacceptable.	Horizon considers that the assessment of impacts of the proposed changes is comprehensive, and the proposed changes have been shown to be non-material both individually and cumulatively. IACC has offered no evidence to the contrary.