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Attachments:	8.8 Marine Works sub-CoCP.PDF 8.7 Main Power Station Site sub-CoCP.PDF 8.9 Off-Site Power Station Facilities sub-CoCP .pdf 8.10 Park and Ride sub-CoCP.PDF 8.13 Wylfa Newydd Code of Operational Practice.pdf

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Good Evening

Please find attached Horizon's Deadline 2 submissions relating to :

- Marine Works sub-CoCP
- Main Power Station Site sub-CoCP
- Off-site Power Station Facilities sub-CoCP
- Park and Ride sub-CoCP
- Wylfa Newydd Code of Operational Practice

Kind Regards

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WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project
8.8 Marine Works sub-CoCP

PINS Reference Number: EN010007

Application Reference Number: 8.8

4 December 2018

Revision 2.0
Examination Deadline 2

Regulation Number: 5(2)(q)

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Horizon Internal DCRM Number: WN0902-JAC-PAC-REP-00020

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Executive Summary

This document forms the Marine Works sub-CoCP for the Wylfa Newydd DCO Project. It covers the marine aspects of the construction of the Main Power Station Site, i.e. those related to the intake and outfall of the Cooling Water System, Marine Off-Loading Facility (MOLF) and breakwater structures. It also covers operation of the MOLF during construction of the Main Power Station Site.

1 Introduction

1.1.1 As the Wylfa Newydd DCO Project covers a number of discrete locations, the overarching Wylfa Newydd Code of Construction Practice (CoCP) (APP-414) covers project-wide aspects of the Wylfa Newydd DCO Project regardless of site/location. Sub-CoCPs are provided for each location and underpin the Wylfa Newydd CoCP (APP-414). Sub-CoCPs provide only the controls relevant to that location.

1.1.2 This document forms the Marine Works sub-CoCP for the Wylfa Newydd DCO Project. It covers the marine aspects of the construction of the Main Power Station Site, i.e. those related to the intake and outfall of the Cooling Water System, Marine Off-Loading Facility (MOLF) and breakwater structures. It also covers operation of the MOLF during construction of the Main Power Station Site. The Main Power Station Site sub-CoCP (APP-415) covers the onshore/terrestrial aspects of the construction of the Main Power Station Site, including the terrestrial parts of the MOLF.

1.1.3 Figure 1-1 shows the area of works covered by this sub-CoCP. The delineation between the area of works covered by the Main Power Station Site (APP-415) and this sub-CoCP has been defined as the mean high water mark (at the time the works are undertaken). Where Marine Works span this line (such as blasting of the rock outcrop that will take place as part of the Marine Works), then the Marine Works sub-CoCP will apply.

1.1.4 The principal works associated with this sub-CoCP are as follows:

- removal of rock outcrop(s);
- construction and use of a temporary access ramp;
- construction of the Cooling Water System intake and outfall, breakwaters, temporary causeway and MOLF (bulk material and Roll-on Roll-off);
- dry marine excavation, including blasting;
- wet marine excavation, including dredging;
- installation (and removal) of cofferdams for Cooling Water intake and outfall construction;
- excavation and construction of Cooling Water intake and outfall including tunnelling;
- construction of temporary berth, layby berth and pontoon;
- operation of the MOLF; and
- disposal of material (rock and sediment) from marine excavation.

1.1.5 Site-specific controls that would mitigate the effects of the construction works are detailed within this sub-CoCP. Where the controls of construction practice are covered adequately by the Wylfa Newydd CoCP (APP-414), those controls are not repeated in this sub-CoCP. Therefore, where no site-specific controls are specified here, reference should be made to the Wylfa Newydd

CoCP (APP-414). In the event of a conflict between the Wylfa Newydd CoCP (APP-414) and this sub-CoCP, the commitments in this sub-CoCP prevail.

1.1.6 This sub-CoCP sets out the site-specific controls to be complied with, covering the following aspects of the Wylfa Newydd DCO Project construction:

- communications and community and stakeholder liaison;
- general site management;
- traffic and transport;
- public access management;
- air quality;
- noise and vibration;
- waste and materials management (including soils and land contamination);
- water management;
- ecology and landscape management; and
- cultural heritage.

1.1.7 Both the Main Power Station Site sub-CoCP (APP-415) and this Marine Works sub-CoCP should be read together along with the Wylfa Newydd CoCP (APP-414) to understand the full suite of controls for the entirety of the Wylfa Newydd Development Area.

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Figure 1-1 Area covered by the Marine Works sub-CoCP. The Marine Works sub-CoCP also includes the Disposal Site at Holyhead North.

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2 Approach to environmental management

2.1 General

2.1.1 This section is included here to maintain the structure of this sub-CoCP in accordance with the Wylfa Newydd CoCP (APP-414), in order to enable easier cross-referencing between the two documents and other sub-CoCPs. Refer to section 2 of the Wylfa Newydd CoCP (APP-414) for full information on Horizon's approach to environmental management, which is consistent across the Wylfa Newydd DCO Project.

3 Communications and community/stakeholder liaison management strategy

3.1 General

3.1.1 Horizon's communications and community/stakeholder liaison management is based on the controls set out in the Wylfa Newydd CoCP (APP-414) and any further controls set out in this sub-CoCP.

3.1.2 The general mitigation controls to be implemented for communications and community/stakeholder liaison are described in section 3 of the Wylfa Newydd CoCP (APP-414).

3.1.3 There are no further site-specific controls in relation to communications and community/stakeholder liaison for this sub-CoCP.

4 General site management strategy

4.1 General

4.1.1 Horizon's general site management strategy is based on the controls set out in the Wylfa Newydd CoCP (APP-414) and any further controls set out in this sub-CoCP.

4.1.2 The general mitigation controls to be implemented for site management are described in section 4 of the Wylfa Newydd CoCP (APP-414).

4.1.3 In addition, the below outlines specific measures to be implemented during the construction of the marine aspects of the Main Power Station Site.

4.2 Working hours

4.2.1 As stated in the Wylfa Newydd CoCP (APP-414), the working hours and shift patterns for the various parts of the Wylfa Newydd DCO Project are contained in sub-CoCPs.

4.2.2 The working hours required for the Marine Works will be similar to the Main Construction works; multiple shift working will be required, with 24-hours-per-day, seven-days-per-week working in order to deliver a viable construction schedule in the marine environment.

4.2.3 However, blasting in the dry behind the cofferdam will only be undertaken Monday to Friday between 10:00 and 16:00 hours, and Saturday between 10:00 and 13:00 hours, while drilling and packing for the blasting would occur between 07:00 and 19:00.

4.2.4 If construction work is required at these sites outside these hours, this will be identified by Horizon and justified in a Section 61 Control of Pollution Act 1974 application, which will be made to the Isle of Anglesey County Council (IACC) in advance of the works.

4.3 Site lighting

4.3.1 Construction lighting will be designed to reduce light spill onto sensitive receptors to below thresholds where significant effects are predicted, where practicable.

5 Traffic and transport management strategy

5.1 General

5.1.1 Horizon's traffic and transport management is based on the controls set out in the Wylfa Newydd CoCP (APP-414) and any further controls set out in this sub-CoCP.

5.1.2 The general mitigation controls to be implemented for traffic and transport are described in section 5 of the Wylfa Newydd CoCP (APP-414).

5.1.3 In addition, the measures below outline specific measures to be implemented during the construction of the marine aspects of the Main Power Station Site.

5.2 Site-specific controls

5.2.1 Horizon will comply with the established industry practice and legislative controls as detailed in table-5-1 and expanded upon in sections 5.3 to 5.9 below.

Table 5-1 Standard controls

Requirement	Description
Communications equipment	Appropriate use of communications equipment between the port area and incoming/outgoing vessels.
Notice to mariners	Issued weekly by the Admiralty to advise mariners of important matters affecting navigational safety.
Safe systems of work	Safe working methods to be established at the port to eliminate or reduce risks associated with the identified hazards.
International COLREGS [RD1]	Adherence to the international COLREGS, which set out the navigation rules to be followed by ships and other vessels at sea to prevent collisions between two or more vessels.
Emergency services equipment	To be provided shoreside for immediate use by emergency services in the event of a marine incident.
Safety operating procedures	A set of written instructions that document a routine activity, intended to reduce risk and assist with staff training.
Visual observation	Crew on board vessels to be aware of other vessels in their path to allow deviation if required.

Shoreside signage	Provide individuals who are unfamiliar with methods and regulations with information, to reduce risk of marine incidents.
Tidal levels	Tide level observed on-site and made available to vessels to inform navigation.
Vessel safety procedures	Vessels to have their own safety procedures on-board to manage marine incidents, should they occur.
Standards of Training, Certification and Watchkeeping for Seafarers [RD2]	Sets qualification standards for masters, officers and watch personnel on seagoing merchant ships to ensure suitably qualified personnel in vessel operation.
Passage planning	Plan of a vessel's voyage from start to finish to prepare for hazards that may be encountered and reduce impacts associated with these hazards.
Inspections and surveys	Port and flag state inspections and surveys of vessels to ensure they are fit for use, reducing chances of vessel-related marine incidents.
Notification of vessel defects	Requirement for vessels to notify the port of any vessel defects, allowing for appropriate accommodation of the vessel.
Weather forecasting	Advance warning and weather forecasts gained from available internet resources and MetOcean forecasts.
Notice of hazardous cargo	Advance warning of hazardous cargo to ensure appropriate measures are put in place for its handling.
Tug/workboat certification	Ensures that tugs/workboats are fit for purpose.
Tow survey	Carried out by classification society to set maximum limits for wind and wave heights.

5.3 Legal duty

Harbour Authority powers

5.3.1 Various Acts will be incorporated by the Development Consent Order (DCO) to become the Special Act for Wylfa Newydd, as defined in the Harbours, Docks and Piers Clauses Act 1847. National legislation will be incorporated in the Special Act for Wylfa Newydd, including:

- the Merchant Shipping Act 1995;

- the Harbours, Docks and Piers Clauses Act 1847;
- the Harbours Act 1964; and
- the Dangerous Vessels Act 1985.

5.3.2 Directions (General) will be issued by the Harbour Authority as a set of instructions and general rules that all users of the harbour area must follow. This power will be obtained through the DCO.

5.3.3 Directions (Special) will be issued by the Harbour Master (or equivalent). This power provides a key control for directing traffic and controlling marine situations within the harbour.

5.3.4 Once Horizon achieve Statutory Harbour Authority status, the following legislation will provide further duties and powers.

- the Railways and Transport Safety Act 2003; and
- the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012.

Contingency planning

5.3.5 Horizon, as the Harbour Authority, will create or provide detailed plans and procedures to follow in the event of an emergency in the form of a Port Emergency Plan. The Port Emergency Plan would include measures that the Harbour Authority would need to have in place to accommodate the controls of the emergency services in the event of an emergency.

5.3.6 The Maritime and Coastguard Agency require an OPRC ((International Convention on) Oil pollution Preparedness, Response and Co-operation) Plan [RD3] to be in place and approved by them prior to the commencement of Marine Works at the site. An oil spill contingency plan will detail actions to be taken in the event of oil spill.

5.3.7 Contingency plan exercises will be carried out, as appropriate, to test the Harbour Authority's (marine facing) emergency plan.

5.3.8 Port marine personnel will be trained to use contingency plans and associated equipment.

Competent Harbour Authority

5.3.9 Following a review of the need for pilotage, Horizon will establish a pilotage service, including pilotage directions.

5.4 Port Marine Safety Code compliance

5.4.1 Horizon will develop a Marine Safety Management System to provide guidance and procedures to allow safe operations within the harbour. This will be established prior to operations and based on risk assessments.

5.4.2 The Marine Safety Management System is a requirement of the Port Marine Safety Code [RD4] set out by the UK Government and provides:

- the management system for hazards and risks, and preparations for emergencies for a port;
- the mechanism by which port-specific customs and practices are formalised and documented, to ensure continuity with staff changes;
- safety policies and procedures specific to the port and confirms roles and responsibilities; and
- regular reviews and performance monitoring of the safety of the port.

5.4.3 Regular scheduled hydrographic surveys will be undertaken in line with Port Marine Safety Code controls.

5.4.4 The dredging programme will be informed by the results of the hydrographic surveys.

5.5 Port services and vessel traffic monitoring

5.5.1 A Local Port Service will be established to provide a command and control centre for marine operations relating to vessel activity and on-the-water activity, in line with the guidance in the Maritime and Coastal Agency's Marine Guidance Note [RD5]. It will be staffed by trained operatives using a range of sensor equipment, including an Automatic Identification System receiver to inform and update vessel masters of the prevalent conditions. Its responsibilities could potentially include coordination of marine responses, coordination of emergency responses, closed-circuit television monitoring of the harbour area and being a point of contact for all harbour operations. The Local Port Service will also include a broadcast of detailed movement information within the harbour, including information on local weather conditions and any safety-related issues.

5.5.2 All dredge/construction vessels involved in the Wylfa Newydd DCO Project, including barges, will carry an Automatic Identification System (A or B), which will be monitored by Local Port Service marine personnel.

5.5.3 The sea state model will be used throughout the construction phase of the MOLF to predict weather conditions and downtime.

5.5.4 Horizon will obtain a licence for a dedicated Very High Frequency channel from the Office of Communications, with information updated in the Admiralty List of Radio Signals.

5.5.5 Horizon will ensure the availability of appropriate harbour tugs to escort vessels through the breakwaters to the berth.

5.5.6 Horizon will ensure an appropriate safety boat capable of recovering a man overboard is on call to be available in the event of emergency.

5.6 Publication of marine safety information

5.6.1 Harbour Authority information will be published in notices to mariners, which will detail ongoing safety and awareness information to harbour users and to local vessels navigating within the area.

5.6.2 Large-scale electronic navigational charts will be provided by the UK Hydrographic Office for vessels using the harbour area.

5.6.3 Guidance for small craft will be provided in the form of informative management of leisure traffic by the liaison team, written information to the Royal Yachting Association and local yacht clubs, and as a web-based resource.

5.7 Safety zone

5.7.1 A safety zone will be determined and set by the Harbour Authority within its jurisdiction to restrict or manage access to parts of the harbour for safety reasons.

5.8 Protective fendering

5.8.1 Protective fendering suitable for the vessels used will be in place on temporary berths, jetties and quays, and at breakwaters to stop vessels making contact with the structure and rock armour.

5.9 Aids to navigation

5.9.1 Horizon will ensure appropriate aids to navigation are provided to light the works appropriately. The location and type of aid will be determined after consultation with Trinity House.

6 Public access management strategy

6.1 General

6.1.1 Horizon's public access management strategy is based on the controls set out in the Wylfa Newydd CoCP (APP-414) and any further controls set out in this sub-CoCP.

6.1.2 No public access will be permitted to the Marine Works construction area.

7 Air quality management strategy

7.1 General

7.1.1 Horizon's air quality management is based on the controls set out in the Wylfa Newydd CoCP (APP-414) and any further controls set out in this sub-CoCP.

7.1.2 The general mitigation controls to be implemented for air quality are described in section 7 of the Wylfa Newydd CoCP (APP-414).

7.1.3 Dust management and construction plant emissions management for the Marine Works will be parallel to that detailed in section 7 of the Main Power Station Site sub-CoCP (APP-415).

7.2 Dust emissions

7.2.1 In addition to the measures set out in section 7.3 of the Wylfa Newydd CoCP, the following site-specific measures are also required.

- On-site haul routes will be inspected for integrity, and any necessary repairs to the surface will be instigated as soon as reasonably practicable.
- Hard surfaced haul routes will be installed, where practicable.
- Hard surfaced haul routes will be damped down with fixed or mobile sprinkler systems, or mobile water bowsers, and cleaned regularly.
- A maximum speed limit will be set for vehicles on surfaced and unsurfaced roads to secure health and safety of workers and keep airborne dusts within acceptable limits for sensitive receptors.
- Haul roads will be capped with suitable materials and techniques, which will have a lower potential for emitting dust than unsurfaced haul roads.
- For use of on-site crushing equipment required during demolition activities, all crushing equipment will be designed and operated in accordance with the most recent version of the Process Guidance Note 3/16 for mobile crushing and screening [RD6], where relevant.
- For smaller supplies of fine powder materials, containers will be sealed after use and stored to prevent dust generation.

7.3 Emissions from plant and machinery

7.3.1 Site power to support construction is scheduled to be available nine months after granting of the DCO and is a predecessor for the establishment of site compounds and accommodation. The installation of the site power will reduce the need to use diesel generators to power the site compounds.

7.3.2 Oxides of nitrogen/nitrogen dioxide (NOx/NO_2) emissions management monitoring and reporting will be implemented during construction. This includes a number of measures (in addition to those set out in the Wylfa

Newydd CoCP [APP-414]) to achieve compliance with the appropriate environmental standards set out in table 7-4. The measures are:

- A Non-Road Mobile Machinery (NRMM) fleet mix that will include newer plant complying with the EU Stage IV emissions standards for NRMM (EC Directive 97/68/EC) (i.e. plant generally manufactured after 2014), which emit 80% less NOx than Stage IIIB plant. Horizon will implement a minimum of 90% of NRMM to meet the EU Stage IV emission standards.
- Relevant marine vessels undertaking the Marine Works to comply with the International Maritime Organisation MARPOL Annex VI Tier III NOx emission limits.
- Use of continuous NOx and NO_2 monitoring to track compliance against the Air Quality Objectives (AQOs) and critical levels. Monitoring to include appropriate feedback mechanisms (i.e. monitoring thresholds to act as trigger levels and subsequent responses to trigger exceedances) to ensure the construction activities and site operations can be adapted to respond to measured exceedances or elevated concentrations. The continuous NOx and NO_2 monitoring, access to monitoring data, monitoring thresholds and responses to trigger exceedances are described in detail in section 7.6 of this document.
- The continuous monitoring will be supplemented with passive NO_2 diffusion tube monitoring at a number of locations to track the changes in annual mean NO_2 concentrations – locations to be agreed with the IACC.

7.3.3 With regard to human receptors, the main achievement criterion for the NOx/NO_2 emissions management, monitoring and reporting scheme is to prevent an exceedance of the NO_2 AQOs (further details of the compliance targets and reporting are provided in section 7.4 of this document).

7.3.4 With regard to ecological receptors, the aim of the NOx/NO_2 emissions management, monitoring and reporting is to reduce the potential for NOx emissions (and associated deposition of nitrogen and acid) to cause adverse effects at Tre'r Gof SSSI and Cae Gwyn SSSI (and other relevant ecological receptors). This is primarily driven by the reduction of NOx emissions at source as described in paragraph 7.3.2.

7.3.5 The NOx/NO_2 emissions management, monitoring and reporting scheme set out here is the same as that described in the Main Power Station Site sub-CoCP (APP-415).

7.4 Dust and air quality monitoring

7.4.1 The dust and air quality monitoring set out here are the same as that described in the Main Power Station Site sub-CoCP (APP-415).

Number, location and type of monitoring stations

7.4.2 Horizon will undertake monitoring at six locations on or close to the boundary of the Wylfa Newydd Development Area. These are shown on figure 7-1 and are located at:

- Cemaes (A);
- Tregele (B);
- adjacent to Cae Gwyn Site of Special Scientific Interest (SSSI) (C);
- western boundary (south of Cemlyn Bay) (D);
- near or at Felin Cafnan (E); and
- Tre'r Gof SSSI (F).

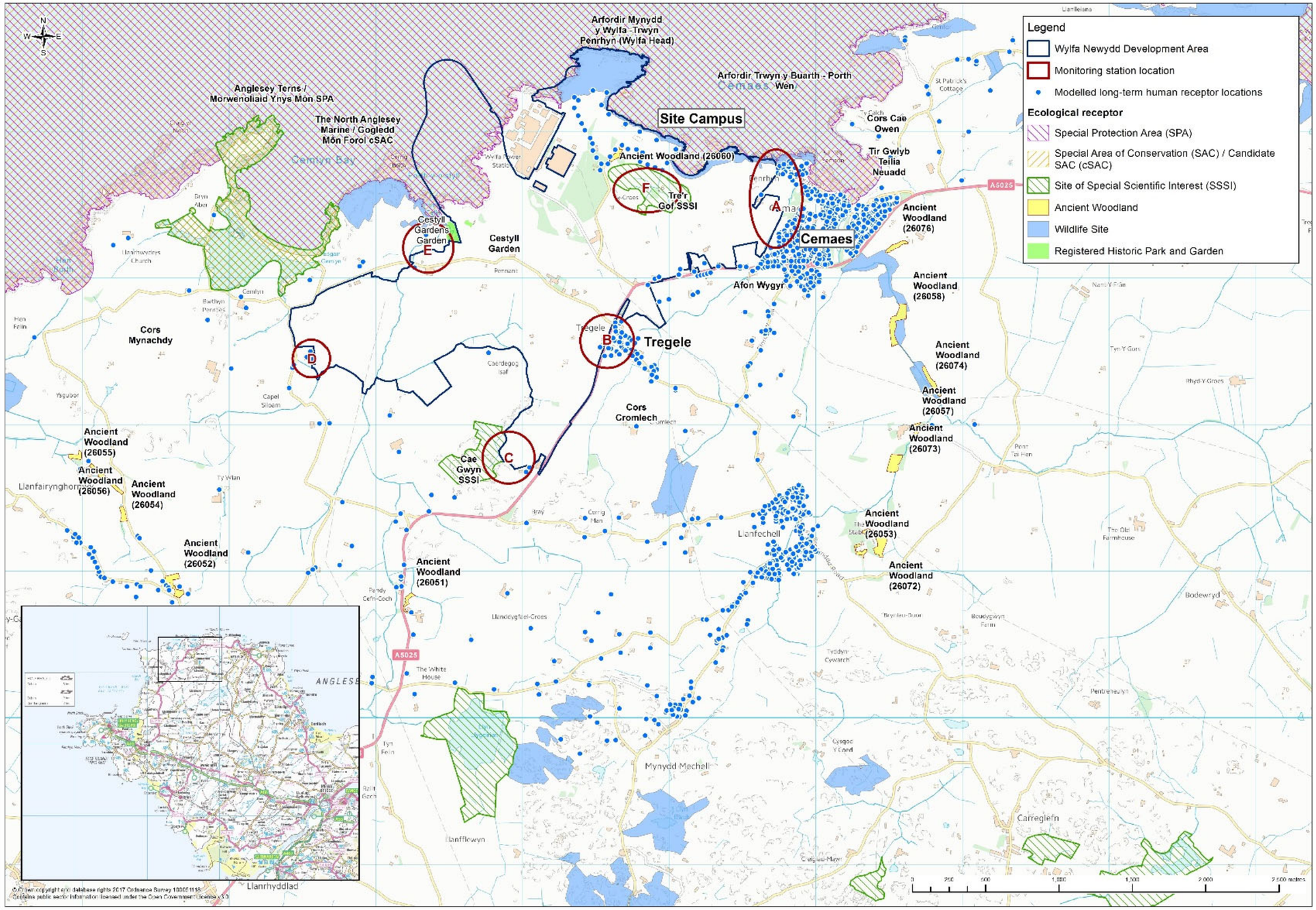
7.4.3 The monitoring is proposed to be at locations close to the site boundary that are close to key human or ecological receptor locations. Off-site locations (e.g. locating a monitoring station within the garden of a residential property or on a public footpath) are not considered to be required as the boundary locations are close to the nearest human or ecological receptors and would be considered to represent relevant exposure locations. This avoids or reduces issues with security, access, risk of tampering or damage and other localised sources affecting the monitoring should it be located in the middle of a residential area (e.g. emissions from barbecues or bonfires etc.). Some exceptions may be possible, such as the Felin Cafnan location, where there is a lower risk of the above issues and where monitoring has been undertaken previously by the IACC.

7.4.4 As Horizon will use six locations distributed around the site boundary (see figure 7-1), an off-site control location is not considered to be necessary as there would always be monitoring locations upwind of the Wylfa Newydd Development Area during any one hour (i.e. to assist with the interpretation of data and identification of site sources should a trigger threshold be exceeded).

7.4.5 To reduce the risk of inconsistencies in the monitoring data between the monitoring locations, it is proposed to install identical monitoring stations at each of the six locations. These would contain monitoring equipment to record the following:

- total particulates, PM_{10} and $PM_{2.5}$ – continuous analyser (Osiris) recording concentrations continuously;
- dust deposition – dust deposition gauge (Frisbee-type dust deposition gauge, monthly sample); and
- NOx/NO_2 – continuous analyser (chemiluminescent analyser recording concentrations continuously).

Figure 7-1 Dust and air quality monitoring locations



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Monitoring data management system and web access to data

7.4.6 Due to the very large scale of the construction site and the number of varied parameters which require to be monitored, recorded and processed, all environmental monitoring data (e.g. air quality, noise, water etc.) will be managed by one central data management and control system.

7.4.7 Horizon will obtain the data from the continuous air quality analysers via a site-wide data link or data cable around the site boundary. The data will be processed by the central data management and control system and subsequently outputted to a separate environmental database. External parties such as the IACC, Natural Resources Wales (NRW) or members of the public will have online access to the environmental database to view the data.

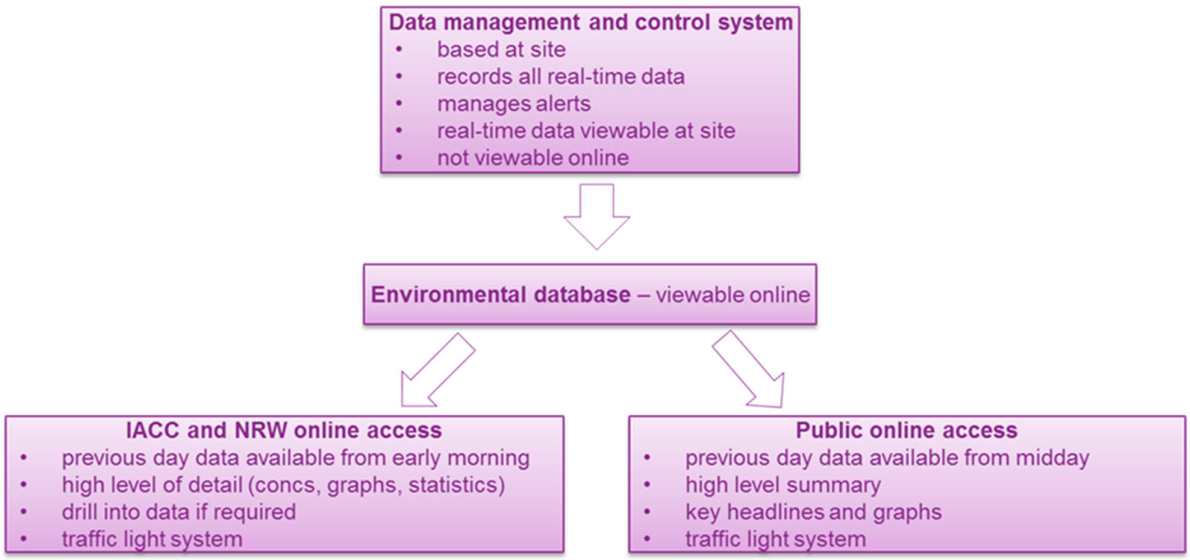
7.4.8 The extent and type of data available to the different external parties would vary depending on the following hierarchy.

- Regulators (IACC and NRW):
  - Previous day data can be accessed the following morning (e.g. from 8am) showing a relatively high level of detail (e.g. key statistics and graphs of each monitoring station, plus traffic light system of status (i.e. green, amber, red and black – see details below regarding monitoring thresholds to act as trigger levels). Ability to drill into the detailed data for each monitoring station.
- Other parties and members of the public:
  - Previous day data can be accessed the following afternoon (e.g. from 12pm) showing a high-level summary (e.g. key headline statistics, key data graphs and traffic light system of status).

7.4.9 Real-time data will be available to be viewed by the IACC or NRW at the Wylfa Newydd Development Area on the central data management and control system or could be discussed remotely with Horizon (e.g. via telephone call or webex/video call communication).

7.4.10 A flow chart is provided in figure 7-2 showing the arrangement discussed above.

Figure 7-2 Flow chart showing management of continuous monitoring data and proposed access arrangements to the online system



Monitoring thresholds to act as trigger levels and responses to trigger exceedances

Total particulates, PM_{10} and $PM_{2.5}$ (continuous real-time monitoring)

Human receptors

7.4.11 Table 7-1 sets out the proposed real-time triggers for PM_{10} concentrations which would be used by Horizon to undertake redress measures. These will be used to control long term increases in particulate concentrations as far as reasonably practicable and prevent exceedances of the relevant AQOs.

Table 7-1 Real time triggers for dust control based on PM_{10} concentrations

Averaging period	Real-time PM_{10} trigger concentration ($\mu g/m^3$)			Notes
	Amber	Red	Black	
One-hour average	100	200	N/A	Used to identify large short-term spikes in particulate concentrations from potential dust emission sources or events on site so that these can be controlled as soon as possible.
24-hour average	30	45	50 (AQO)	Used to track and manage compliance with the 24-hour mean AQO and aid in the identification of ongoing but lower level dust emissions not identified using the one-hour average trigger. Based on the calculation of the average concentration commencing at

Averaging period	Real-time PM_{10} trigger concentration ($\mu g/m^3$)			Notes
	Amber	Red	Black	
				midnight each night and requiring a minimum of six hours (i.e. if the average concentration by 6am or any time after that exceeds 30µg/m³ then an amber alert would be triggered). The calculation of the average concentration would reset at midnight each night (in accordance with the measurement of 24-hour means for compliance with the AQO). Black is used to identify if there has been a measured exceedance of the AQO (i.e. the average concentration calculated for the full 24-hour period starting and ending at midnight was greater than 50µg/m³).

7.4.12 The system will be set up to issue alerts to key staff members should one of the real-time amber or red trigger concentrations be exceeded. An agreed communication protocol will be set up whereby Horizon contacts the IACC once initial investigations have been undertaken to identify if the trigger was exceeded due to site activities or a wider regional issue or other local source.

7.4.13 Should an amber or red PM_{10} real-time trigger level be exceeded, the following initial actions will be implemented by the person or team responsible for the environmental monitoring who receive the alert.

- The concentrations from the monitoring station (and other operating parameters) will be initially reviewed to check that the monitoring station was not malfunctioning, and the recorded concentration was valid. If valid, the investigation will continue as below.
- The concentrations at the other monitoring stations at the Wylfa Newydd Development Area will be compared to determine if the exceedance was caused by a regional increase in PM_{10} concentrations. The data for other monitoring stations on Anglesey and in north Wales would also be reviewed on the Air Quality in Wales website (https://airquality.gov.wales/).
- The meteorological conditions for the preceding hours (e.g. wind speed and direction) will be reviewed to determine if the wind direction is blowing from the Wylfa Newydd Development Area towards the monitoring station or if the wind is blowing from an off-site direction.
- The outcome of the above reviews would be recorded and the next steps would be initiated based on the following outcomes:
    - site activities or sources are the likely cause of the elevated PM_{10} concentrations; or

- it is a wider regional increase in PM_{10} concentrations or another localised source causing the trigger exceedance.

7.4.14 If site activities are identified as the cause of the exceedance of the trigger levels, the following actions will be undertaken.

- The IACC will be informed that a trigger has been exceeded due to site activities and investigative works/corrective actions are underway.
- Wind direction will be reviewed in more detail to identify the likely on-site sources or specific work areas.
- The relevant site team(s) working in the likely work area(s) will be informed and a visual inspection of the activities will be carried out to identify or confirm the source(s) of dust emissions.
- The specific site works and current mitigation measures will be reviewed and further action taken. Depending on the source(s), this would involve:
  - applying additional dust suppression, for example increasing the frequency of water application to the haul roads to damp these down, continuous spraying of water at working areas, aggregate stockpiles or on mounds, using coagulant to bind particles on dirt tracks/roads, setting up additional fixed or mobile water sprays; and
  - altering working methods such as reducing the number of plant or dump trucks working in the area, reducing the speed of vehicles on haul roads or travelling in working areas, temporarily moving working areas to alternative locations e.g. working on a different face of a landscape mound. Implementing lower speed limits for road traffic and wetting of site access roads would also be undertaken where site access roads are identified sources.
- Visual inspection will be undertaken by the site team(s) and the monitoring data will continue to be reviewed to check the effectiveness of the actions.
- Should the concentrations continue to increase and approach the red trigger, or if the red trigger is exceeded, more stringent measures will be considered (i.e. those measures which could have a significant effect on the programme and costs of the construction of the Power Station), including temporary suspension of the specific activity or activities identified as causing the dust emissions.
- The IACC will be kept informed of progress at appropriate intervals as necessary, and dependent on the scale of the trigger exceedance or amber/red status.

7.4.15 The measures set out above would continue until the measured one-hour average concentrations drop to below the one-hour average amber trigger level for two consecutive periods, at which point the issue is considered to be

resolved. On resolution of the issue, a short update can be provided to the IACC in an agreed format summarising the responses and outcome (e.g. in a short email or text message format). For the 24-hour average trigger, the aim of the measures will be to prevent the average concentration continuing to increase towards the AQO value of 50µg/m^3. Once a trigger has been exceeded due to site activities and measures have been implemented, the 24-hour average concentrations will be tracked on an hourly basis to determine the effectiveness of the measures.

7.4.16 The amber and red trigger levels for PM_{10} may be adjusted during the construction works in agreement with the IACC following review of the effectiveness of the thresholds to indicate the potential for adverse effects at off-site locations or if there is a high level of alerts being caused by external sources. The subsequent initial actions, investigative or corrective actions and communication protocols may also be adjusted based on operating experience and effectiveness (in agreement with the IACC).

7.4.17 All exceedances of the PM_{10} trigger levels, responses and outcomes will be recorded.

NOx and NO_2 (continuous real-time monitoring)

Human receptors

7.4.18 In order to prevent exceedances of the one-hour mean AQO value of 200µg/m^3, real-time amber and red triggers for NO_2 concentrations are also proposed as set out in table 7-2.

Table 7-2 Real time triggers for control of NOx emissions based on NO_2 concentrations (human receptors)

Averaging period	Real-time PM_{10} trigger concentration (µg/m^3)			Notes
	Amber	Red	Black	
One-hour average	100	180	200 (AQO)	Used to identify large short-term spikes in NO_2 concentrations from potential emission sources such as plant and machinery so that these can be controlled as soon as possible. The aim is to prevent exceedance of the one-hour mean AQO which permits 18 exceedances of 200µg/m^3 per calendar year

7.4.19 The system will be set up to issue alerts to key staff members should one of the real-time trigger concentrations be exceeded. An agreed communication protocol will be set up whereby Horizon contacts the IACC once initial investigations have been undertaken to identify if the trigger was exceeded due to site activities or a wider regional issue or other local source.

7.4.20 Should an amber or red NO_2 real-time trigger level be exceeded, the same initial actions for exceeding the PM_{10} real-time trigger levels would be

implemented by the person or team responsible for the environmental monitoring who receive the alert.

7.4.21 If site activities are identified as the cause of the exceedance of the trigger levels, the following actions will be undertaken.

- The IACC would be informed so that it is aware a trigger has been exceeded and investigative works/corrective actions are underway.
- Wind direction would be reviewed in detail to identify the likely on-site sources or specific work areas.
- The relevant site team(s) working in the likely work area(s) would be informed.
- A visual inspection would be carried out to identify or confirm the likely sources of NOx emissions.
- The specific site works and current mitigation measures would be reviewed and further action taken, which depending on the source(s) would involve:
    - altering working methods such as reducing the number of plant or dump trucks working in the area(s) likely to be contributing to the elevated concentrations, including shutting down plant, starting with non-critical plant or those with the highest emissions first;
    - reducing the frequency of dump truck or other vehicle trips on the relevant haul roads; and
    - temporarily switching plant to alternative work areas or locations e.g. working on a different face of a landscape mound.
- The monitoring data would continue to be reviewed to check the effectiveness of the actions.
- Should the concentrations continue to increase and approach the red trigger, or if the red trigger is exceeded, more stringent measures would be implemented (i.e. those measures which could have a significant effect on the programme and costs of the construction of the Power Station) including temporary suspension of works in the area(s) identified as causing the elevated NOx emissions. Longer-term solutions would be considered as necessary at a strategic level in consultation with the IACC, including converting plant to be fuelled by liquid petroleum gas (LPG) or converting to electric/battery powered plant.
- The IACC would be kept informed of progress at appropriate intervals as necessary.

7.4.22 The measures set out above would continue until the measured concentrations drop to below the amber trigger level for two consecutive periods, at which point the issue is considered to be resolved. A short update

can be provided to the IACC in an agreed format summarising the responses and outcome (e.g. in a short email or text format).

7.4.23 The amber and red trigger levels for NO_2 may be adjusted during the construction works in agreement with the IACC following review of the effectiveness of the thresholds to indicate the potential for adverse effects at off-site locations or if there is a high level of alerts being caused by external sources. The subsequent initial actions, investigative or corrective actions and communication protocols may also be adjusted based on operating experience and effectiveness (in agreement with the IACC).

7.4.24 All exceedances of the NO_2 trigger levels, responses and outcomes will be recorded.

Ecological receptors

7.4.25 The measurements of NOx recorded at Tre'r Gof SSSI will be used to inform management strategies for Tre'r Gof. The NOx monitoring will also be used to determine the potential for adverse effects to occur at Cae Gwyn SSSI and inform the need for further investigation in conjunction with NRW, and subsequent mitigation, if required.

7.4.26 Data for the 24-hour mean concentrations of NOx at the monitoring locations at or close to Tre'r Gof SSSI and Cae Gwyn SSSI will be provided to the Ecological Clerk of Works (ECoW). This will be used to inform the management of the ecological receptors, including appropriate feedback from the ECoW to the environmental monitoring and site operations teams where NOx has been identified as a potential cause of adverse effects through the botanical monitoring proposed in the Wylfa Newydd CoCP (APP-414) or via surveys undertaken by NRW.

7.4.27 The measured average concentration will also be recorded and tracked against the statutory annual mean critical level of 30µg/m^3 as each calendar year progresses (this will be indicative in the first few months of each calendar year until there are sufficient data to calculate an annual mean equivalent using seasonal adjustment to predict an annual mean). The ECoW will be kept informed of the measured average / annual mean NOx concentrations to inform the need for further investigation.

Dust deposition (monthly samples, non-real-time monitoring)

Human receptors

7.4.28 Being retrospective, the dust deposition monitoring will form a secondary control mechanism to the primary monitoring control mechanisms (i.e. regular on-site and off-site inspection, continuous real-time monitoring of PM_{10} and associated amber and red triggers, recording of dust complaints and the subsequent responses to any issues identified by these processes) and will be used to:

- provide a quantification of the dust deposition to support the primary monitoring controls and good practice dust mitigation and control measures;
- assist in identifying specific work areas or processes where refinements are required to the working practices and dust controls;
- corroborate dust complaints which occurred during the sampling period; and
- understand if there are smaller or more gradual longer-term increases in dust deposition which may lead to loss of amenity and result in complaints.

7.4.29 The following checks and reviews will be implemented by the person or team responsible for the environmental monitoring once the dust deposition data have been received from the laboratory, collated and an exceedance of the amber or red trigger level identified:

- check the observations in the laboratory test report for anything unusual about the sample which indicates it may not be valid;
- review the on-site and off-site visual inspection records to check if these identified any visible dust emissions from site activities or any noticeable dust deposition at off-site locations, and correlate these to the monitoring location(s) with the dust deposition trigger exceedance(s);
- review the log to check if there were any PM_{10} alerts during the sampling period;
- if there were PM_{10} alerts, note at which monitoring stations and if they are the same as the monitoring location(s) with the dust deposition trigger exceedance(s);
- review the complaints log to check if there were complaints of dust during the sampling period and if these are in areas represented by the monitoring location(s) (or downwind of these areas) with the dust deposition trigger exceedance(s);
- review the actions undertaken in response to the visual inspections, PM_{10} alerts and dust complaints and the specific outcomes of those actions;
- if needed, review the meteorological conditions for the sampling period (e.g. wind speed and direction, rainfall and general observations) and if there were weather conditions which could potentially increase dust emissions from the site (e.g. very dry conditions with high wind speeds);
- record the outcome of the above review, for example using the following options (other outcomes are possible):

- another localised or regional source was the likely cause of the elevated dust deposition measurements – no further action;
- site activities or sources were the likely cause of the elevated dust deposition measurements;
- the measured elevated dust deposition rate(s) was likely due to specific site activities or sources which were identified via the primary monitoring control mechanisms (i.e. visual inspections, PM_{10} alerts or dust complaints) and was addressed at the time of occurrence;
- there were no obvious or discernible site activities or sources which were identified via the primary monitoring control mechanisms (i.e. there were no visual inspections, PM_{10} alerts or dust complaints which highlighted the potential for elevated dust deposition rates at or close to the monitoring locations which recorded the elevated dust deposition rates).

7.4.30 The IACC will be informed of the outcome of the review and, if required, further discussions would be arranged with the IACC to review existing and future site operations and agree the extent of further review or actions. This would be informed by consideration of key statistics such as the trend in the measured dust deposition rates, the trend or pattern of complaints in relation to site operations (if any) or other related metrics or information which could inform the review process (e.g. the proposed schedule of works and activity levels in the areas closest to the measured elevated dust deposition rates, the trend in long-term particulate concentrations etc).

Ecological receptors

7.4.31 Ecological inspections will be undertaken at Tre'r Gof SSSI against which any adverse effects resulting from dust deposition during Main Construction can be identified. This will be used to identify if further action is required to prevent further dust deposition or damage to the vegetation. This will be achieved via additional mitigation, management or alteration of the dust causing activities, and through appropriate direct management practices within Tre'r Gof SSSI. These inspections could be extended to the other ecological sites of lower sensitivity as required.

7.4.32 The amber and red trigger levels for dust deposition at ecological receptors are set out in table 7-3. The dust deposition data received from the laboratory will be collated and reviewed and the ECoW informed if there are any valid exceedances of the amber or red trigger values at monitoring locations representative of ecological receptors (i.e. the monitoring locations at Tre'r Gof SSSI and close to Cae Gwyn SSSI).

7.4.33 The measurements of dust deposition will be used to inform management strategies for Tre'r Gof SSSI. The dust deposition data will also be used to determine the potential for adverse effects to occur at Cae Gwyn SSSI and

inform the need for further investigation in conjunction with NRW, and subsequent mitigation, if required.

7.4.34 The ECoW will provide feedback to the environmental monitoring and site operations teams where dust deposition has been identified as a potential cause of adverse effects through the botanical surveys or related investigations.

Table 7-3 Non-real-time triggers for dust control based on monthly dust deposition rates (human receptors)

Averaging period	Dust deposition rate non-real-time trigger ($mg/m^2/day$)			Notes
	Amber	Red	Black	
Approximately one month	150	200	N/A	There is no statutory limit for dust deposition at ecological receptors.

Air quality reporting and compliance

7.4.35 Regular air quality monitoring reports will be made to the IACC and NRW. These reports will contain a summary of the monitoring results and key statistics for the monitoring period, and include a summary of the amber, red or black trigger exceedances during the monitoring period, number and type of complaints received and a summary of actions taken to resolve any issues. The report will also be made available online to be viewed by other parties and members of the public in line with the Wylfa Newydd engagement framework – see the Wylfa Newydd CoCP (APP-414).

7.4.36 The reports will be issued on a monthly basis. The frequency of the reporting will be kept under review with the IACC and NRW and may reduce in frequency based on the potential for adverse air quality effects at later stages of the construction, or if the monitoring data support this. For example, once the bulk earthworks are complete and First Nuclear Concrete is poured when the potential for adverse air quality effects is reduced.

7.4.37 Horizon will adopt the longer-term compliance targets for comparison of the air quality monitoring data. These are separate to the short-term real-time amber and red triggers used to identify site sources, activities or processes and implement further mitigation or measures to reduce emissions. These are based on compliance with the AQOs and are set out in table 7-4.

Table 7-4 Compliance targets

Pollutant	Averaging Period	Compliance target	Notes
PM_{10}	Annual mean	40 (AQO)	
$PM_{2.5}$		25 (AQO)	
NO_2		40 (AQO)	

Pollutant	Averaging Period	Compliance target	Notes
NOx		30 (AQO)	For the protection of vegetation and ecosystems
PM_{10}	24-hour mean	50 (AQO)	The AQO permits 35 exceedances of the 24-hour mean concentration of 50µg/m^3 per calendar year
NO_2	One-hour mean	200 (AQO)	The AQO permits 18 exceedances of the one-hour mean concentration of 200µg/m^3 per calendar year

7.4.38 The measured average concentration would be recorded and tracked against the compliance targets as each calendar year progresses (for the annual mean targets, the calculation of the annual mean would only be valid once sufficient data have been recorded). It is proposed that annualising of the data would be carried out once three months of data have been recorded in each calendar year (i.e. data from 01 January to 31 March) and updated on a monthly basis for the remainder of the year. Annualising of the data to predict the annual mean concentration at each monitoring station would follow the suggested approach set out in relevant guidance [RD7]. Tracking of the annual mean concentrations against the compliance targets would commence from 01 April in each calendar year.

7.4.39 The projected or measured annual mean concentrations and number of exceedances of the 24-hour mean and one-hour mean PM_{10} and NO_2 AQO values, respectively, will be included in the regular air quality monitoring reports which will be made to the IACC and NRW.

8 Noise and vibration management strategy

8.1 General

8.1.1 Horizon's noise and vibration management is based on the controls set out in the Wylfa Newydd CoCP (APP-414) and any further controls set out in this sub-CoCP.

8.1.2 The general mitigation controls to be implemented for noise and vibration are described in section 8 of the Wylfa Newydd CoCP (APP-414).

8.1.3 In addition, the measures below outline specific measures to be implemented during the construction of the marine aspects of the Main Power Station Site.

8.2 Underwater noise

8.2.1 The following construction activities during the Marine Works are considered as sources of underwater noise.

- Dredging – Dredging will be undertaken to prepare the seabed for marine construction and will use either a backhoe dredger or a cutter-suction dredger.
- Rock breaking – Rock within the outer harbour will be fractured and removed using a rock breaker, with work scheduled to extend for up to 16 months.
- Rock cutting – During the construction of the semi-dry cofferdam, a rock cutter will be used to cut a trench along the seabed prior to the placement of rock.
- Drilling – Drilling operations are required to install the pre-bored piles for the MOLF and cofferdam construction.

8.2.2 In undertaking piling activities, best practice guidance will be followed, including guidance for minimising the risk of injury to marine mammals from piling noise detailed by the Joint Nature Conservation Committee's, *Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise* [RD8]. This guidance includes the controls listed below.

- Establishment of a mitigation zone around the construction site.
- Only commence construction operations during the hours of daylight and good visibility (observers should be able to monitor the full extent of the mitigation zone).
- Visual monitoring by Marine Mammal Observer(s) (MMOs).
- Passive Acoustic Monitoring (PAM).
- Pre-construction activity searches for marine mammals.
- Delay if marine mammals detected within the mitigation zone.

- Soft-start of construction activity for a period of not less than 20 minutes.
- Pre-construction activity search and soft-start procedure should be repeated before construction activity recommences, if construction activity operations pause for a period of greater than 10 minutes.
- Clear communication between the MMOs/PAM operators and the construction activity operators.
- Reports detailing the construction activity and marine mammal mitigation, the ‘MMO and PAM reports’, should be sent to the relevant conservation agency after the end of the construction activity.

9 Waste and materials management strategy, including soils and land contamination

9.1 General

9.1.1 Horizon's waste and materials management strategy, including soils and land contamination, is based on the controls set out in the Wylfa Newydd CoCP (APP-414) and any further controls set out in this sub-CoCP.

9.1.2 The general mitigation controls to be implemented for waste and materials are described in section 9 of the Wylfa Newydd CoCP (APP-414).

9.1.3 Horizon will implement its waste management arrangements before the Marine Works begin, in accordance with the controls set out in the Wylfa Newydd CoCP (APP-414).

9.1.4 In addition, the measures below outline specific measures to be implemented during the construction of the marine aspects of the Main Power Station Site.

9.2 Materials management

9.2.1 Any disposal of rock and sediment will be carried out in accordance with the Wylfa Newydd CoCP (APP-414) and the Marine Licence (see section 9.3).

9.2.2 Relevant permits will be in place for the dewatering of dredged materials for reuse onshore within the Wylfa Newydd DCO Project or at a third party site.

9.2.3 Where possible, excavated rock material from marine operations will be used in the construction of marine structures to reduce the volume of material imported to site and the amount requiring marine disposal.

9.3 Disposal of material at the Holyhead North Disposal Site

9.3.1 Disposal of material from the Wylfa Newydd DCO Project will be under a Marine Licence, issued by NRW under the Marine and Coastal Access Act 2009. The Marine Licence application will be supported by an Environmental Impact Assessment carried out in accordance with the Marine Works (Environmental Impact Assessment) Regulations 2007 as amended by the Marine Works (Environmental Impact Assessment) (Amendment) Regulations 2015.

9.3.2 Where practicable, disposal of sediment will take place within the central area of the Disposal Site to mitigate any effects beyond the Disposal Site boundary. Rock material will be deposited within a micro-sited area of the Disposal Site (see figure 1-1).

9.3.3 Management measures with regards to marine archaeological remains at the Disposal Site are detailed in section 12.3.1.

10 Water management strategy

10.1 General

10.1.1 Horizon's water management strategy is based on the controls set out in the Wylfa Newydd CoCP (APP-414) and any further controls set out in this sub-CoCP.

10.1.2 The general mitigation controls to be implemented for water management are described in section 10 of the Wylfa Newydd CoCP (APP-414).

10.1.3 In addition, the measures below outline specific measures to be implemented during the construction of the marine aspects of the Main Power Station Site.

10.2 Drainage of the MOLF

10.2.1 Drainage of the MOLF quay will collect surface water via an oil separator (to remove oily contaminants) and sediment catch-pit (to remove settled solid materials) before discharge to the sea.

10.3 Dredging of soft sediments

10.3.1 Dredging of soft sediments in Porth-y-pistyll will be restricted to the area identified in the dredging plan and the duration will be shortened as far as practicable, in order to reduce suspended solids concentrations and the release of sediment-bound contaminants.

10.4 Dewatering of groundwater and seawater

10.4.1 'Fish-friendly' pumps will be used for dewatering. Eel and fish transfer pumps are used by contractors who have to dewater assets/structures that might contain eels or live fish. The purpose is to transfer/pump fish into other waters without causing damage to the fish.

10.5 Foul water discharge

10.5.1 Foul water discharge will be to existing Dŵr Cymru Welsh Water Sewage Treatment Works and to on-site package treatment plants. Foul water will not be discharged to the surface water environment.

11 Ecology and landscape management strategy

11.1 General

11.1.1 Horizon's ecology and landscape management strategy is based on the controls set out in the Wylfa Newydd CoCP (APP-414) and any further controls set out in this sub-CoCP.

11.1.2 The general mitigation controls to be implemented for ecology and landscape management are described in section 11 of the Wylfa Newydd CoCP (APP-414).

11.1.3 In addition, the measures below outline specific measures to be implemented during the construction of the marine aspects of the Main Power Station Site.

11.1.4 A suitably qualified and experienced person will be employed during the construction phase to monitor environmental aspects of the Wylfa Newydd DCO Project, as set out in section 11 of the Wylfa Newydd CoCP (APP-414). For example, where activities necessitate, an Ecological Clerk of Works will be present to ensure the works proceed in accordance with good practice guidance and adhere to mitigation measures.

11.2 Habitat enhancements

11.2.1 Marine ecological habitat enhancements measures will be provided in suitable locations unconstrained by engineering design and functionality. Measures will include:

- up to ten precast vertical rockpools retrofitted to the MOLF to provide water retaining features on the vertical walls;
- areas of rock armour (including the leeward face of the western breakwater, and the revetment adjacent to the eastern breakwater and southern part of the skimmer wall) seeded with natural rock won from the site where practicable (alternatively, imported material akin to natural rock will be used);
- retaining surface roughness within the dredged area to promote recolonisation;
- a monitoring programme to assess the effectiveness of the enhancement measures against a suite of clearly defined ecological objectives; and
- provision of relevant monitoring data to local schools and universities to promote ecological enhancement of the marine environment.

11.2.2 The purpose of marine ecological enhancement measures would be to increase surface and structural heterogeneity, encouraging the colonisation of native marine species and the establishment of diverse and productive intertidal and subtidal habitats within the footprint of the Marine Works.

11.3 Control and protection from the introduction of non-native species

11.3.1 Horizon will produce and adhere to a Biosecurity Risk Assessment and Method Statement based on industry standards. Measures will be taken for the control and protection from introduced Invasive Non-Native Species (INNS).

11.3.2 To prevent the disturbance and dispersal of INNS during construction activities, INNS monitoring surveys will be undertaken prior to construction to provide information on any new INNS that are presented within the Wylfa Newydd Development Area. If the presence of an INNS of concern (has a high risk of transfer if disturbed) is confirmed, specific management measures will be required.

11.3.3 In addition to this, improving awareness of preventative measures and the identification of key INNS for construction staff including external contractors will be used to help prevent the potential spread of INNS and increase the likelihood of detecting invasive species early. Early detection provides the best opportunity to prevent establishment and transfer.

11.3.4 During construction, to prevent the transfer of INNS through biofouling and ballast water of vessels and construction plant the following approaches will be taken:

- All vessels should adhere to the Ballast Water Management Convention.
- Any vessels using ballast water must comply with the Exchange standards contained in the Ballast Water Management Convention and carry a Ballast Water Management Plan and a Certificate of Compliance.
- Ships must have a Ballast Water Record Book (Regulation B-2) to record when ballast water is taken on board; circulated or treated for Ballast Water Management purposes; and discharged into the sea.
- A record should be kept when Ballast Water is discharged to a reception facility and accidental or other exceptional discharges of Ballast Water.
- Under Regulation B-4 Ballast Water Exchange, all ships using ballast water exchange should, whenever possible, conduct ballast water exchange at least 200 nautical miles from the nearest land and in water at least 200 metres in depth, taking into account guidelines developed by the International Maritime Organisation (IMO).
- In cases where the ship is unable to conduct ballast water exchange as above, this should be as far from the nearest land as possible, and in all cases at least 50 nautical miles from the nearest land and in water at least 200 metres in depth.
- When Regulation B-4 requirements cannot be met, areas may be designated where ships can conduct ballast water exchange.

- All ships shall remove and dispose of sediments from spaces designated to carry ballast water in accordance with the provisions of the ships' ballast water management plan (Regulation B-4).

11.3.5 With regards to biofouling, the IMO 2011 Guidelines for the control and management of ships' biofouling to minimise the transfer of invasive aquatic species (the IMO Biofouling Guidelines) recommend that every ship should implement biofouling management practices, including the use of anti-fouling systems, inspection, cleaning and maintenance of hulls, and other operational management practices to reduce the development of biofouling and the likelihood of transferring invasive aquatic species.

11.3.6 The Merchant Shipping (Anti-Fouling Systems) Regulations 2009 state that ships of 24m or more of length but less than 400 gross tonnage must carry a declaration on anti-fouling systems signed by the owner or authorised agent, accompanied by appropriate documentation for compliance with the UK regulations. Ships 400 gross tonnage and over must be surveyed to enable the endorsement of an anti-fouling system Certificate.

11.3.7 It is recommended in the IMO Biofouling Guidelines that vessels should implement biofouling practices to include inwater inspections and cleaning of hulls, and removal of biofouling (e.g. through dive surveys), ensuring that the biofouling material does not enter the marine environment. According to these Guidelines inspections/cleaning should be undertaken periodically as a means of routine surveillance but may be specifically appropriate before and after any planned period of vessel inactivity.

11.3.8 The following approaches will also be taken:

- Imported materials will be transported to major ports and transferred to holding areas prior to transport onto site. This will reduce the number of vessels entering the development area from international destinations.
- Where possible, vessels should remain on site rather than on/off site between construction stages.
- Use of a number of small vessels is required to transfer workers from land onto marine plant during the two-year period of construction of the MOLF. These vessels will be limited to operating within Porth-y-pistyll and will be subject to strict controls including appropriate speed restrictions.

11.3.9 Corrective actions for vessels will be set out in the event of a biosecurity breach, for example a vessel being allowed to arrive at the MOLF but on arrival found to have significant biofouling or incorrect paperwork. Corrective actions will include:

- informing relevant authorities where appropriate i.e. for non-compliant vessels;
- moving vessel offshore;
- deciding on appropriate action to clean the vessel while minimising any further risks e.g. dry docking for cleaning or returning to port of origin; and

- investigating the cause of the incident and putting measures in place to prevent it happening again e.g. stop using a particular supplier of vessels.

11.3.10 During construction, to prevent increase in artificial hard surfaces available for colonisation by INNS through introduction of man-made structures, anti-fouling coatings will be used where applicable.

11.3.11 Observational surveys will be undertaken on structures that may provide suitable substrate for non-native species. Surveys will record presence/abundance of non-native species with reporting in agreement with NRW. Surveys will begin once construction of the breakwaters and MOLF is completed. The frequency and extent of monitoring will be reduced over time, particularly once the MOLF is no longer operational. The ongoing requirement for monitoring will be regularly reviewed and agreed with NRW.

11.3.12 During construction, it may be necessary to source materials such as rock used in the temporary cofferdams from outside the Wylfa Newydd Development Area. To prevent the transfer of INNS on imported/removed/disposed of materials the following approaches will be taken:

- Where possible, excavated material will be used in the construction of marine structures to reduce the volume of material imported to site and the amount requiring marine disposal. This will reduce the possibility of transmitting invasive non-native species via excavated materials.
- All artificial materials (e.g. sheet piles) used in construction will be new and will therefore be free of biofouling and INNS.
- When rock material from the causeway and cofferdams are removed, this process will require rock to be washed and reused on land. This material will then not be reused outside the Wylfa Newydd Development Area.

11.3.13 As well as the above, due to the construction of the breakwaters and the MOLF requiring dredging of the seabed, any dredged material which cannot be reused will be disposed of offshore under a marine licence. An assessment of the options for disposal location has been undertaken [RD9], recommending Disposal Site IS043, Holyhead North. This site has water depths over 50m for the majority of the site and is situated 18km away. Disposing of materials close to the source and at a greater depth than the source environment will reduce the risk of INNS transfer.

11.4 Shoreline protection and restoration

11.4.1 A method statement will be produced to include measures for the protection of existing rocky shoreline beneath temporary causeway construction. Measures could include:

- provision for limiting the extent of disturbed shoreline;
- placing a protective layer over the shoreline prior to temporary construction; and

- upon removal of the temporary marine structures, restoration of the intertidal and subtidal areas located under the footprint of the temporary causeway and the intertidal area to the east up to the southern end of the skimmer wall will be completed, including restoration of the following features:
  - the topography of the substrate including gradient and structural heterogeneity;
  - the 15 rockpools which are currently known to be present within the area and measure greater than 1m²; and
  - the same or similar rockpool biotopes to those currently known to be present within the area.

11.5 Mitigation of effects on terns

General

11.5.2 Blasting inside the temporary cofferdam will be carried out in the dry for approximately seven months. The number of blasts will likely be three times per day, seven days per week, with blast events scheduled to occur at set times during daylight hours only. Drilling activities prior to blasting will need to be undertaken during both day and night.

11.5.3 Horizon's developed blast noise prediction model predicts that the large majority of rock blasting will result in received noise at the tern colony islands in Cemlyn Lagoon of 60dB or less. This is below the threshold that has been observed to elicit any response.

11.5.4 These noise level commitments will apply from 15 April to 15 August (unless otherwise stated). The 15 April date will be guided by information from the North Wales Wildlife Trust on when the first terns/black-headed gulls typically arrive to set up a colony.

11.5.5 During construction works, noise levels will be measured at the tern colony either through direct monitoring on the island or through calculations from monitoring from adjacent locations.

11.5.6 Where monitored noise levels are found to be above the various committed noise levels (below), the following actions will be undertaken immediately:

- review works in the area likely to be causing the breach and consider any necessary mitigation actions (including, where necessary, temporary suspension of works until the actions set out below have been taken to reduce the noise to acceptable levels);
- confirm that monitored levels are not being impacted by other noise or vibration sources;
- determine whether the exceedance is due to a particular activity or item of equipment, and

  - if so, identify if the equipment can be substituted for an alternative piece of equipment and do so if possible;
  - if not, implement other available measures (which may include modifying the time of works, using an alternative construction methodology, or a combination of these);
- implement other feasible and reasonable measures (which may include modifying time of works, using an alternate construction methodology, or a combination of these); and
- continue monitoring (including additional monitoring, if required) to verify that the control measures have reduced the noise levels to acceptable levels at the relevant receptors.

11.5.7 The mitigation measures to be taken in the case of exceedance of committed levels are designed to succeed due to the redundancy built into the approach and alternatives available (i.e. suspend works, change equipment where possible, alter working methods, modify timing etc.). Monitoring would continue until the measures are shown to be successful.

During main earthworks

11.5.8 During the main earthworks (anticipated to be for the first two years, but to be kept under review), the following criteria will apply:

- Blasting on the site will only be undertaken when, considering wind factors, noise shielding and other mitigation, the predicted blast noise at the colony will be less than 60dB or daily ambient noise at the colony (whichever is higher).
- Daytime construction noise at the colony will not exceed 59dB $L_{Aeq,\ 1\text{-}hour}$. This is based on modelled noise level of 58.6dB $L_{Aeq,\ 1\text{-}hour}$.
- Night-time (19:00 to 07:00) maximum construction noise at the colony will not exceed 43dB $L_{Aeq,\ 1\text{-}hour}$. This is based on a modelled noise level of 42.8dB $L_{Aeq,\ 1\text{-}hour}$.

Subsequent seasons

11.5.9 During the subsequent seasons, anticipated to be year 3 onwards, the following will apply:

- Blasting will only be undertaken when blast noise calculations (including weather conditions) predict noise levels at the colony of less than 54dB $L_{AF,max}$. This is based on the fact that main blasting will be complete and only minor or unforeseen blasting requirements will remain.

Establishment period

11.5.10 During main earthworks, in order to allow for the sensitivity of terns arriving and establishing their nesting colony, additional construction constraints (below) will be applied during the 'establishment period'.

11.5.11 The 'establishment period' is to be defined as follows.

- The tern nesting site will be monitored from 1 April each year (historically only very few terns arrive before early April each year).
- The establishment period will be four weeks, to be taken as starting on 15 April unless significant nest establishment is observed ahead of this date, in which case it will begin earlier.
- The activities that constitute the establishment of nesting territories by any tern species that is a qualifying feature of the Morwenoliaid Ynys Môn/Anglesey Terns Special Protection Area (SPA) are aerial display flights over the nesting islands and/or performing courtship behaviour on the ground by scrape making. In addition to these activities taking place, the frequency of occurrence of such activity is important in defining the establishment period, and Horizon will agree the basis for determining the start of the establishment period (including observed activity and frequency of occurrence) with NRW.
- Trained observers (who will be professional, independent ornithologists with detailed knowledge of terns) will monitor black-headed gull to determine if their nesting behaviour appears to be affected by construction noise. If there is a lack or low numbers (based on black-headed gull status and trends) of recorded black-headed gull nesting attempts at the Cemlyn colony, the mitigation measures defined below will be initiated at an earlier point in time (i.e. prior to 15 April).

11.5.12 The constraint period would be as the 'establishment period' and apply for no more than four weeks but would end earlier if [>c.50%] of the Sandwich terns expected to be present in the colony are considered to have begun egg-laying and be sitting on nests (quantum to be agreed with NRW).

11.5.13 During the establishment period for the first two years of construction, the following criteria will apply:

- Blasting on the site will only be undertaken when, taking into account wind factors, noise shielding and other mitigation, the predicted blast noise at the colony will be less than 55dB $L_{AF,max}$ or the daily ambient noise at the colony (whichever is higher).
- Daytime construction noise at the colony will not exceed 55dB $L_{Aeq,\ 1\text{-hour}}$. During this period, Horizon will only undertake works on the far side of Mound E that are not visible from the colony and minimise reworking of dumped material in this area. Noise modelling of this working pattern predicts 57.5dB $L_{Aeq,\ 1\text{-hour}}$. In order to achieve 55dB $L_{Aeq,\ 1\text{-hour}}$, works will

avoid the most adverse wind conditions (light downwind) for noise transfer to the colony.

- Night-time (19:00 to 07:00) construction noise at the colony will not exceed 43dB $L_{Aeq, 1\text{-hour}}$. This is based on modelled noise level of 42.8dB $L_{Aeq, 1\text{-hour}}$.

Disturbance at the breeding tern colony from visual stimuli

11.5.14 Between 15 April and 15 May, there will be no works undertaken within 500m of the nesting islands and the areas on the shingle ridge that are known to be used occasionally by nesting terns. This period encompasses the main pre-laying and nest establishment period for all three tern species at Cemlyn Bay. Thereafter, there will be no bulk earthworks undertaken within 500m of any known active tern nests within the Morwenoliaid Ynys Môn/Anglesey Terns SPA.

Reactive monitoring

11.5.15 Throughout the nesting periods during the construction phase, if the colony exhibits fly-up disturbance reactions as a direct result of attributable noise events or shows a measurable increase in the incidence of disturbance events above those recorded during baseline observation works (undertaken over the 2017 and 2018 breeding seasons), then alternative methods of working or additional constraints will be applied (including the option of temporary suspension of works following the protocol defined in section **Error! Reference source not found.**).

11.5.16 From the 2017/2018 observational surveys, Horizon have recorded a baseline incidence of *c.* 1.6 fly ups per hour. If the independent observers record more than three fly ups per hour for which there is no obvious non-Horizon cause, they will cease the most obvious disturbing activity. If they record more than two in the next hour, they will stop the next most disturbing activity. The following days' works will be planned based on experiences of this. Ceased activities will start again seven days later, under observation. If any erratic noisy activity causes an obvious fly up disturbance, it will be altered or ceased.

11.5.17 In order to attribute noise events responsible for an observed disturbance reaction of the type defined above to the construction works, Horizon will establish a real-time feedback mechanism between the observers and a nominated, dedicated site manager. The site manager will have full knowledge of all construction activities being undertaken and the authority to instigate the measures necessary on-site to prevent recurrence of the disturbing activity. This feedback mechanism will also allow for consideration of other potentially disturbing factors not related to the construction works (e.g. aircraft noise). If such third-party disturbance is deemed to be responsible in its entirety for the observed disturbance, no action will be taken.

12 Cultural heritage management strategy

12.1 General

12.1.1 Horizon's cultural heritage management strategy is based on the controls set out in the Wylfa Newydd CoCP (APP-414) and this sub-CoCP.

12.1.2 The general mitigation controls to be implemented for cultural heritage are described in section 12 of the Wylfa Newydd CoCP (APP-414).

12.1.3 In addition, the measures below outline specific measures to be implemented during the construction of the marine aspects of the Main Power Station Site.

12.2 Unexpected marine archaeological remains

12.2.1 Horizon will ensure appropriate arrangements for the discovery of unexpected marine archaeological remains, for example a Protocol for Archaeological Discoveries, is a requirement of Horizon's methods of working. This will identify the reporting mechanism and the process for liaison with Cadw, GAPS and the Royal Commission on the Ancient and Historical Monuments of Wales (as required) to determine appropriate mitigation, potentially including temporary cessation of activities in a specified area, in the event of the discovery of unexpected marine archaeological remains.

12.3 Marine archaeological remains specific to the Disposal Site

12.3.1 To avoid effects on Assets WA7000 and WA7001, Horizon will establish a buffer of 50m diameter at the sea surface around these assets, within which rock disposal will not be permitted.

13 References

Table 13-1 Schedule of references

ID	Reference
RD1	International Maritime Organization. 1972. *COLREGS – International Regulations for Preventing Collisions at Sea*. [Online] [Accessed: 21 November 2016] Available from: http://www.mar.ist.utl.pt/mventura/Projecto-Navios-I/IMO-Conventions%20(copies)/COLREG-1972.pdf
RD2	International Maritime Organization. 1978. *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers*. [Online] [Accessed: 21 November 2016] Available from: http://www.imo.org/en/About/conventions/listofconventions/pages/international-convention-on-standards-of-training,-certification-and-watchkeeping-for-seafarers-(stcw).aspx
RD3	International Maritime Organization. 1990. *International Convention on Oil Pollution Preparedness, Response and Co-operation.* [Online] [Accessed: 21 November 2016] Available from: https://treaties.un.org/doc/publication/unts/volume%201891/volume-1891-i-32194-english.pdf
RD4	Department for Transport. 2016. *Port Marine Safety Code*. [Online] [Accessed: 21 November 2016] [Available from:] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/564723/port-marine-safety-code.pdf
RD5	Maritime and Coastguard Agency. 2009. *MGN 401 (M+F) Navigation: Vessel Traffic Services (VTS) and Local Port Services (LPS) in the United Kingdom.* [Online] [Accessed: 21 November 2016] Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/461544/MGN_401.pdf
RD6	Department for Environment, Food and Rural Affairs. 2012. *Process Guidance Note 3/16(12): Statutory guidance for mobile crushing and screening*. London: Department for Environment, Food and Rural Affairs.
RD7	Welsh Government. 2016. *Local Air Quality Management, Technical Guidance (TG16)*. London: Department for Environment, Food and Rural Affairs.
RD8	Joint Nature Conservation Committee. 2010. *Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise*. [Online] [Accessed: 13 July 2017] Available from: http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling%20protocol_August%202010.pdf.
RD9	Atkins. 2016. Wylfa Newydd Disposal of Dredged Material Options Appraisal. Document reference 5150086.301.001

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