HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

8.8 Marine Works sub-CoCP

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This document forms the Marine Works sub-CoCP for the Wylfa Newydd DCO Project. It covers the construction of the Marine Works and the operation of the Marine Off-Loading Facility (MOLF) during construction on the 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) [REP2-031] 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 [REP2-031]. 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 construction of the Marine Works, i.e. those related to the construction of the intake and outfall of the Cooling Water System, Marine Off-Loading Facility (MOLF) and breakwater structures, and related works as described in paragraph 1.1.4. It also covers operation of the MOLF during construction of the Power Station Site. The Main Power Station Site sub-CoCP [REP2-032] 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 seaward extent of works covered by this sub-CoCP. The delineation between the area of works covered by the Main Power Station Site sub-CoCP [REP2-032] and this sub-CoCP is the mean high water mark (at the time the works are undertaken). Where construction of the Marine Works span this line (such as blasting of the rock outcrop), then this 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;
- dry marine excavation, including blasting;
- wet marine excavation, including dredging;
- installation (and removal) of cofferdams for Cooling Water System intake and outfall construction;
- excavation and construction of Cooling Water System intake and outfall including tunnelling;
- construction of temporary berth, layby berth and pontoon;
- operation of the MOLF during the construction of the Power Station Site; 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 [REP2-031], 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 [REP2-031]. In the event of a conflict between the Wylfa Newydd CoCP [REP2-031] 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 [REP2-032] and this Marine Works sub-CoCP should be read together along with the Wylfa Newydd CoCP [REP2-031] to understand the full suite of controls for the entirety of the Wylfa Newydd Development Area.

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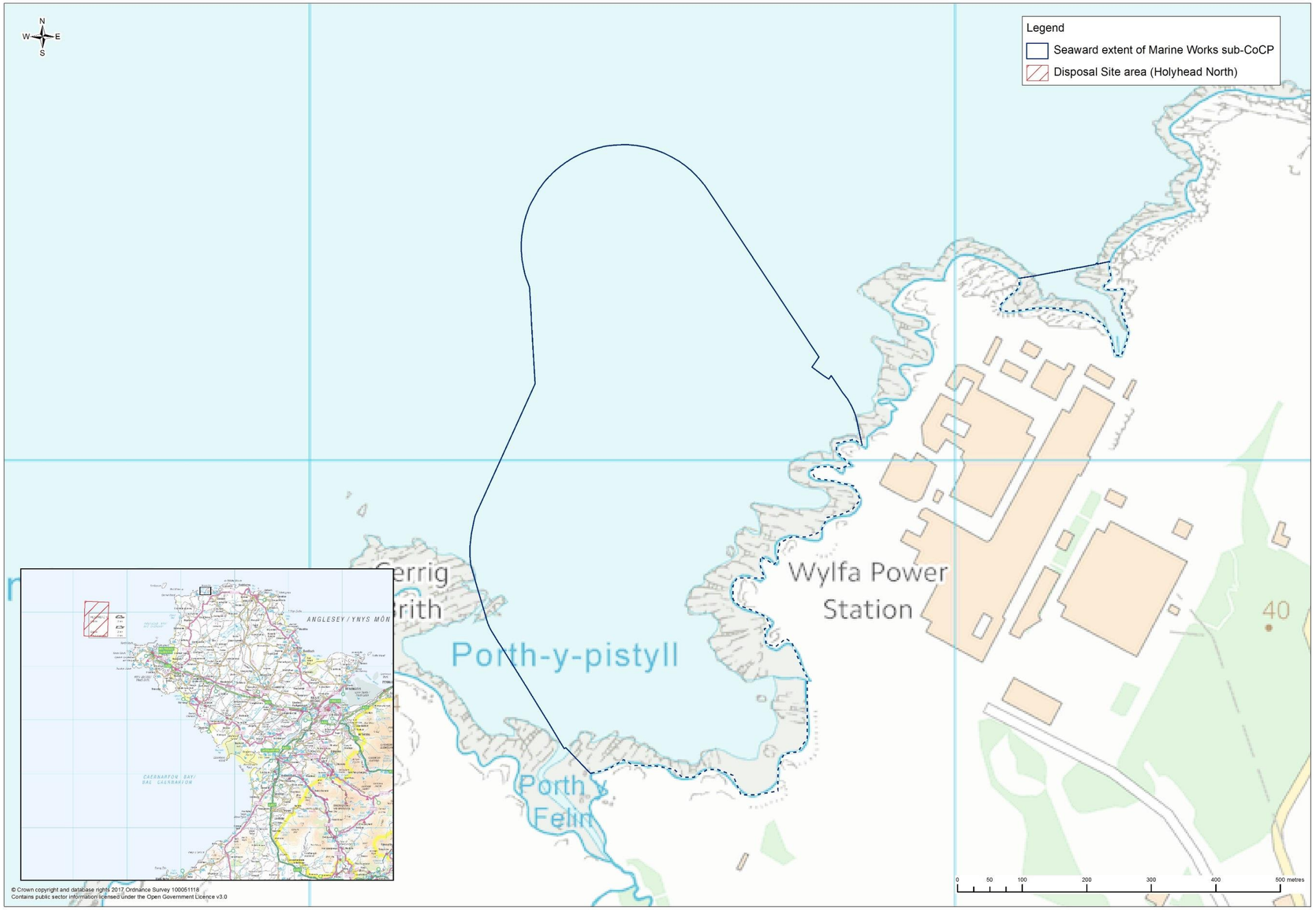
Figure 1-1 Area covered by the Marine Works sub-CoCP inclusive of Holyhead North Disposal Site (as shown in the inset).



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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 [REP2-031], in order to enable easier cross-referencing between the two documents and other sub-CoCPs. Refer to section 2 of the Wylfa Newydd CoCP [REP2-031] 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 [REP2-031] 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 [REP2-031].

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 [REP2-031] 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 [REP2-031].

4.1.3 In addition, the below outlines specific measures to be implemented during the construction of the Marine Works and the operation of the MOLF during construction on the Power Station Site.

4.1.4 As set out in the Wylfa Newydd CoCP [REP2-031], Horizon's Environmental Management Team (which will include the Ecological Clerk of Works and equivalent suitably qualified and experienced persons) will ensure that the environmental quality standards and commitments within the Draft DCO and other consents are adhered to during construction. By way of clarification, the roles will span both terrestrial and marine aspects of the Wylfa Newydd DCO Project.

4.1.5 Specifically, in the marine environment the Environmental Management Team will monitor and record compliance against the environmental controls relating to environmental management and mitigation secured within the Draft DCO, for example the Wylfa Newydd CoCP and sub-CoCPs, and any further controls set and agreed post consent through management schemes, licences and permits. The team will be responsible for ensuring adequate environmental controls and implementing additional controls if necessary, for example managing the risks around marine Invasive Non-Native Species (INNS) or marine mammals as set out in section 11 of this Marine Works sub-CoCP.

4.2 Working hours

4.2.1 As stated in the Wylfa Newydd CoCP [REP2-031], 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 construction of 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 (dependent on activities) in order to deliver a viable construction schedule in the marine environment.

4.2.3 The following construction activities will only be undertaken during Main Construction pursuant to the following site hours and shift patterns:

- marine piling – between 07:00 and 18:00 hours;
- marine dredging – 24 hours a day, seven days a week;

- blasting in the dry behind the cofferdam will only be undertaken Monday to Friday between 09:00 and 19:00 hours, and Saturday between 08:00 and 13:00 hours, while drilling and packing for the blasting would occur between 07:00 and 19:00. Refer to section 8.3 for full blasting controls.
- Marine Off-Loading Facility construction – between 07:00 and 18:00 hours, except cranes, barges and tugs which will continue to operate 24 hours a day, seven days a week; and
- site establishment (facilities/utilities set-up) – between 07:00 and 19:00 hours.

4.2.4 If Horizon identifies that construction works are or are likely to be required at the Off-Site Power Station Facilities site outside of the working hours specified in 4.2.3, Horizon will apply to the IACC for consent under section 61 of the Control of Pollution Act 1974 to undertake those construction works. No such construction works may be undertaken prior to section 61 consent being granted by IACC.

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. Lighting levels would vary based on the construction activity with maximum levels of 200 lux Eav associated with dredging operations. Land based operations would have light levels between 2 lux and 120 lux Eav.

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 [REP2-031] 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 [REP2-031].

5.1.3 In addition, the measures below outline specific measures to be implemented during the construction phase of the Wylfa Newydd DCO Project in relation to marine vessels.

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 **Error! Reference source not found.** 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 The Development Consent Order (DCO) constitutes Horizon as the Statutory Harbour Authority (SHA) in respect of the harbour undertaking for the

purposes of the Harbours Act 1964 and incorporates specified provisions of the Harbours, Docks and Piers Clauses Act 1847. This will provide Horizon with statutory powers and responsibilities under both primary and secondary legislation. With respect to port marine safety, the following are primary duties:

- **Powers of Direction:** the DCO includes a power for General Directions providing Horizon the means to manage vessel traffic within the SHA for the purposes of safe operation of the harbour and the protection of property, flora and fauna.
- **Regulation of dangerous vessels and substances:** Horizon, as SHA, will have a duty to manage dangerous vessels and dangerous substances (including pollution).
- **Civil contingencies duties:** all SHAs have a duty under the Civil Contingencies Act 2004 as a Category 2 responder.
- **Local lighthouse authority (LLA):** by virtue of the Merchant Shipping Act, 1995 (section 193), Horizon will become the LLA for its SHA. This provides Horizon with a duty to mark and maintain aids to navigation within the SHA, under the direction of the General Lighthouse Authority (Trinity House).
- **Conservancy duty:** as the SHA, Horizon will have a duty to conserve the harbour so that it is fit for use. This duty includes providing harbour users with information about conditions in the harbour (including available depth obtained through bathymetric survey).
- **Environmental duty:** all statutory bodies, including SHAs, have a duty to conserve biodiversity in their undertakings. In practice, this relates to harbour authority policy and decision making.

5.3.2 The Draft DCO includes a power for the Harbour Authority to appoint a Harbour Master. The appointed Harbour Master (plus those with delegated powers of the Harbour Master) may use powers of 'Special Direction'. These are specific instructions directed at specific vessels to enable the Harbour Master to direct traffic within the SHA jurisdiction.

Contingency planning

5.3.3 Horizon, as the harbour authority, will prepare a Port Emergency Plan setting out detailed plans and procedures to be followed in the event of an emergency. The Port Emergency Plan will include measures that Horizon would need to have in place to accommodate the controls of the emergency services in the event of an emergency. Horizon will carry out contingency planning exercises to test the Port Emergency Plan and relevant personnel will be appropriately trained.

5.3.4 The Merchant Shipping (Oil Pollution Preparedness Response and Co-operation Convention) Regulations, 1998 requires an Oil Pollution Preparedness, Response and Co-operation Plan (OPRC Plan). [RD3]. This plan must be in place and approved by the Maritime and Coastguard Agency (MCA) prior to the commencement of vessel activity associated with the

Marine Works. The OPRC Plan will set out the actions to be taken in the event of an oil spill affecting the harbour. As part of the MCA approval process, aspects such as training provision for response personnel, equipment available to deal with oil pollution incidents and arrangements for contracted responders will be identified.

Competent harbour authority

5.3.5 The DCO will also constitute Horizon as a Competent Harbour Authority (CHA) within its jurisdiction in respect of the Pilotage Act 1987. This enables pilotage services to be provided in the harbour in accordance with the Pilotage Act 1987.

5.4 Port Marine Safety Code compliance

5.4.1 The Department for Transport (DfT) and MCA 'Port Marine Safety Code' (PMSC) [RD4] sets out the national standard for port marine safety. The Code is supported in its application by the accompanying document 'A Guide to Good Practice on Port Marine Operations' [RDXX].

5.4.2 In its role as SHA, Horizon will operate the port and harbour area in compliance with the requirements of the PMSC [RD4]. The key measures required for compliance with the Code will be met by Horizon in the following way:

- **Duty Holder:** Horizon will formally identify the person, or persons acting as the Duty Holder. The Duty Holder will be provided with training in respect of duties, roles and responsibilities.
- **Designated Person:** Horizon will formally appoint an independent Designated Person following the recommendations in the Guide to Good Practice on Port Marine Operations.
- **Legislation:** Horizon will review and be aware of its powers and duties under primary and secondary legislation. Horizon will also seek new powers, if required, in order to promote safe navigation.
- **Duties and Powers:** Horizon will seek to discharge its duties and powers under existing legislation.
- **Risk assessment:** Horizon will put in place marine/navigational operational risk assessments to manage and reduce to the lowest possible level (so far as it is reasonable and practicable) marine risk within its SHA and approaches. These assessments will be in place prior to marine activity commencement. The scope of the assessments will match the project's development.
- **Marine Safety Management System (MSMS):** Horizon will establish a MSMS to the standard identified within the PMSC [RD4] and its Guide to Good Practice on Port Marine Operations.
- **Review and Audit:** Horizon will put in place an audit and review process, following the requirements of the PMSC [RD4]. This will include annual internal audit and external audit on a frequency of no less than three years.

- **Competence:** Horizon will ensure that the harbour is run and managed by competent people (who are trained, qualified and experienced).
- **Plan:** Horizon will ensure that a 'safety plan for marine operations' is published at least every 3 years, the plan will show how the requirements of the PMSC [RD4] are being met.
- **Aids to Navigation:** Horizon will carry out the role of LLA and will follow the direction of the GLA in supplying information and returns.

5.4.3 Horizon will put in place the required components of the PMSC [RD4] following confirmation of its SHA and CHA status as part of the DCO. Prior to the commencement of Marine Works, Horizon will write to the MCA and provide a compliance statement. Following which, Horizon will report its compliance status on a 3-year cycle along with other SHAs as part of the MCA's Compliance Exercise.

5.5 Port services and vessel traffic monitoring

5.5.1 A 'Local Port Service' (LPS) will be established by Horizon for the purposes of coordinating port services and disseminating port information to vessels and port users. The LPS will be primarily concerned with the monitoring and supply of information including: weather information, tidal and sea state, vessel arrival and departure schedules and pilotage services. The LPS will also act as a control point for the implementation of port emergency response.

5.5.2 The LPS will be staffed by trained personnel and will use a range of sensory equipment, including the ability to receive and display Automatic Identification System (AIS) data on an electronic chart display. Monitoring of the harbour will be achieved through a range of methods including closed-circuit television, on-site personnel and harbour launch craft.

5.5.3 The LPS will also broadcast navigational and safety information providing vessel movement information within the harbour and its approaches, local weather conditions and any safety-related issues. Horizon will obtain a licence for a dedicated Very High Frequency (VHF) channel from the Office of Communications, with relevant contact details provided to UKHO to updated the Admiralty List of Radio Signals.

5.5.4 All dredge/construction vessels involved in the Wylfa Newydd DCO Project, including barges, will carry an AIS Transceiver, which will assist in the monitoring of vessel traffic movements both in the harbour by Horizon's LPS and in the wider sea area by HM Coastguards.

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

5.5.6 Horizon will ensure an appropriate safety boat capable of recovering a man overboard (as an on-call reactive response) in the event of an 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 Horizon will provide hydrographic survey information to the UKHO to allow the production of large scale electronic navigation charts (ENCs) and paper charts. These charting products will be requested by Horizon.

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 provided to the Royal Yachting Association and local yacht clubs, and as a web-based resource.

5.7 Provision of towage

5.7.1 Horizon will ensure the availability of appropriate harbour tugs to escort vessels through the breakwaters. The tugs will also assist with manoeuvring and berthing of vessels. Towage guidelines will be published by Horizon to detail the manner in which towage is deployed within the SHA.

5.8 Safety zone

In its capacity as the harbour authority, Horizon will determine and set temporary safety zones to restrict or manage access to certain parts of the harbour during the construction period for safety reasons. Safety zones will be marked with Special Marker buoyage.

5.9 Vessel Management Plan

5.9.1 Horizon will produce a Vessel Management Plan (VMP) to mitigate the possible risk of collision with marine mammals as a result of harbour operations, in accordance with the Marine Licence to be issued by NRW.

5.9.2 The overall aim of the VMP is to provide detail on vessel activity associated with the Wylfa Newydd DCO Project, and to describe the vessel management measures that will be put in place in respect of disturbance of marine mammals. The plan will cover appropriate measures which may include the following (to be agreed with the relevant authority):

- the location of home/working ports and an indication of how often vessels will transit to and from these ports;
- indicative corridors for vessels transiting to and from the Wylfa Newydd Development Area;
- the number, types and specification of vessels;
- vessel coordination; and

- working practices to minimise interaction with marine mammals including specific measures for vessel management. Specific measures for vessel management will include these principles:
  - Vessels used for the Wylfa Newydd DCO Project will travel to set routes (in accordance with their passage plan) for transit between home ports and their working areas and/or berth point.
  - Vessels used for the works will maintain constant speed and direction when transiting between home ports and their working areas and/or berth point, unless otherwise required for reasons of navigational safety.
  - Vessels used for the works will follow the general principles in the Natural Resources Wales 'Sea Wise Code, 2013' and the IACC 'Anglesey Marine Code'.
  - Monitoring and reporting processes will be implemented in the event of a cetacean collision with a vessel.

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 [REP2-031] and any further controls set out in this sub-CoCP.

6.1.2 No public access will be permitted to the marine environment during construction of the Marine Works.

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 [REP2-031] 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 [REP2-031].

7.1.3 In addition, the measures below outline specific requirements to be implemented during the Main Construction works.

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.
- On-site crushing equipment required during demolition activities 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 commencement of the DCO. 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 [REP2-031]) 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 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 set out here is the same as that described in the Main Power Station Site sub-CoCP [REP2-032].

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 [REP2-032].

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).

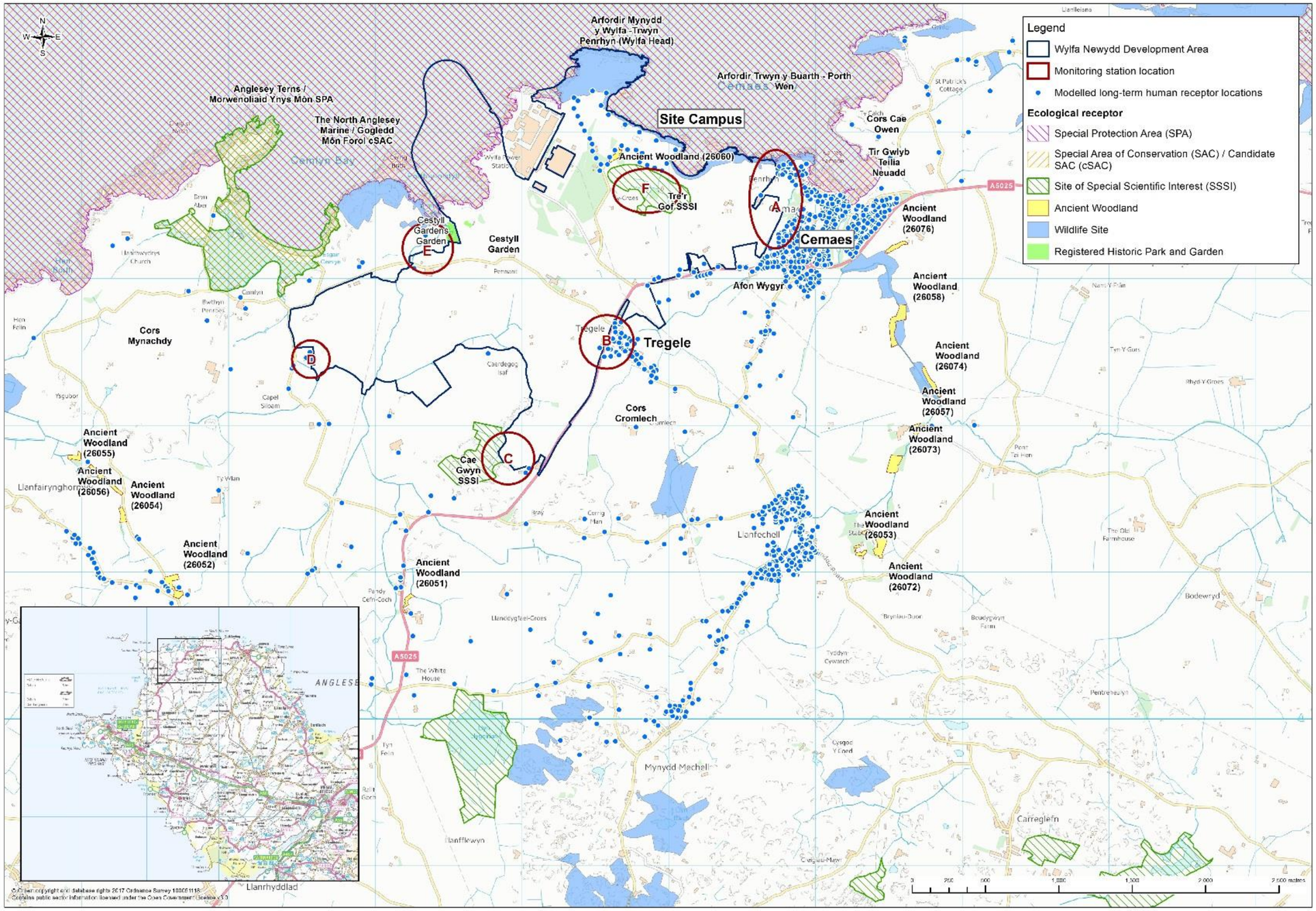
7.4.3 The monitoring is proposed to be at locations close to the site boundary that are close to key human or ecological receptor locations. Off-site locations (e.g. locating a monitoring station within the garden of a residential property or on a public footpath) are not considered to be required as 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.

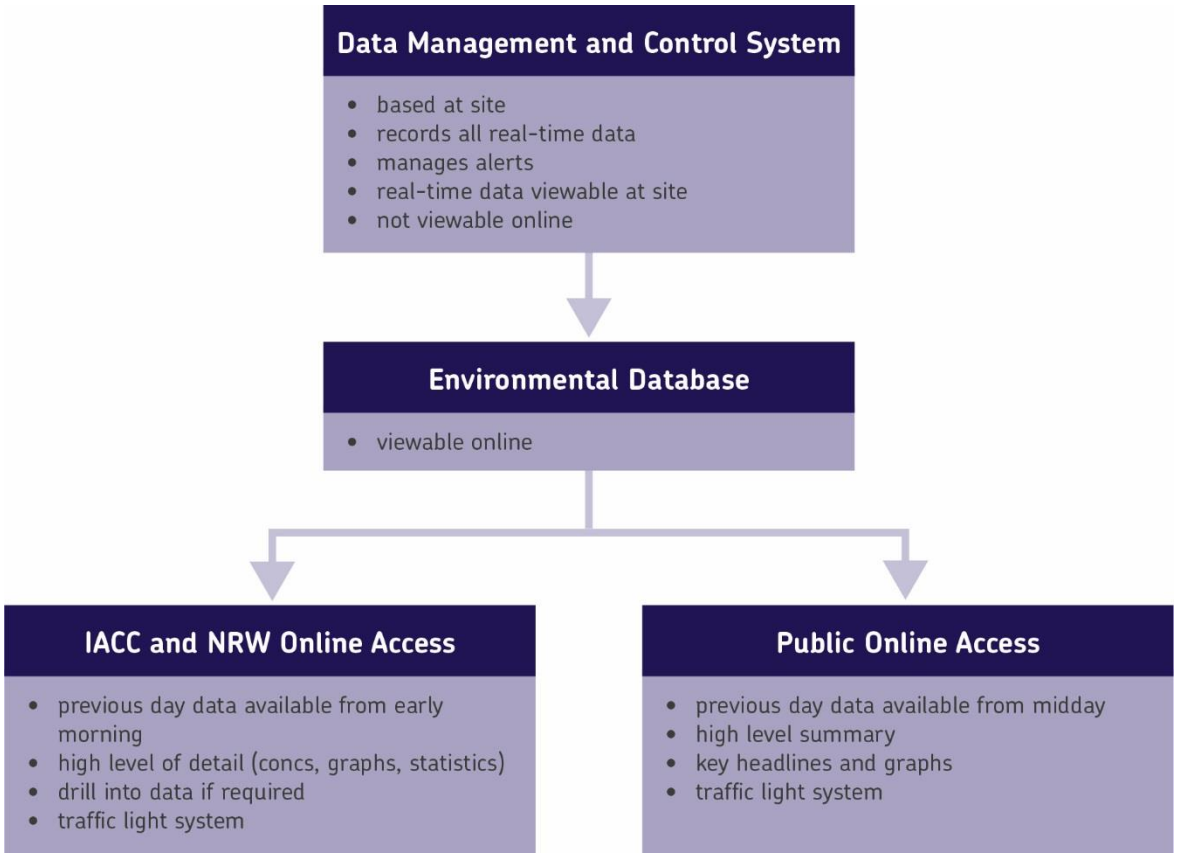
7.4.8 The extent and type of data available to the different external parties would vary depending on the following hierarchy.

- 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 midnight each night and requiring a minimum of six hours (i.e. if the average concentration by 6am or any time after that exceeds $30\mu g/m^3$ 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 $50\mu g/m^3$).

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 (number of preceding hours reviewed will be dependent on the averaging period of the trigger that has been exceeded).
- 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 The alert system and subsequent actions will be held to set response times and key performance indicators to enable the efficiency or effectiveness of responses to be monitored or measured. The response times will be dictated by the specific alert and averaging period of the AQO (e.g. a rapid response will be required for a red alert for PM_{10} 24-hour average concentrations where there are only a few hours of the 24-hour period left). A less rapid response may be required for an amber alert where there is over 12 hours of the 24-hour period left. Performance indicators will be linked to compliance against the relevant air quality standards and other relevant outcomes assessing the effectiveness of the actions.

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

NOx and NO_2 (continuous real-time monitoring)

Human receptors

7.4.19 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

7.4.20 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.

7.4.21 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.

7.4.22 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.

7.4.23 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).

7.4.24 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).

7.4.25 The alert system and subsequent actions will be held to set response times and key performance indicators to enable the efficiency or effectiveness of responses to be monitored or measured. The response times will be dictated by the specific alert and averaging period of the AQO. Performance indicators will be linked to compliance against the relevant air quality standards and other relevant outcomes assessing the effectiveness of the actions.

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

Ecological receptors

7.4.27 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.

7.4.28 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 [REP2-031] or via surveys undertaken by NRW.

7.4.29 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

7.4.30 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.

7.4.31 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).

7.4.32 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

7.4.33 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.

7.4.34 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).

7.4.35 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.

7.4.36 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

7.4.37 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 [REP2-031].

7.4.38 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.

7.4.39 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)	
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

7.4.40 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.

7.4.41 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.

7.4.42 Horizon will use the World Health Organisation annual mean air quality guideline for $PM_{2.5}$ of 10µg/m^3 to trigger a joint review with IACC to determine if Horizon has caused exceedance of the trigger value. This trigger will be based on the measured annual mean concentration at the end of each calendar year (annualised if less than 12 months of data are captured in the first year, although a minimum of six months data would be required)

7.4.43 This will include determination of the baseline concentration to understand the potential contribution from site activities. This is a relatively complex issue as it is not possible to record a baseline measurement at the site once construction commences. Therefore, this would rely on measurements undertaken by the IACC prior to construction works commencing, and annualised and scaled to the current year using a comparison of national network monitoring data for rural locations.

7.4.44 If the exceedance of the trigger level is clearly attributed to site activities (i.e. the annual mean concentration is 30% or more of the estimated baseline concentration), an action plan would be drawn up to set out reasonable actions that can be implemented by Horizon to reduce $PM_{2.5}$ emissions. Reasonable actions would be determined from an initial investigation undertaken in response to the trigger level exceedance, and such an investigation could consider:

- reviewing monitoring data to identify patterns/areas of the site that could be key sources of emissions;
- reviewing any recurring issues from the real-time PM_{10} monitoring, dust deposition monitoring or responses to trigger exceedances and related visual inspections; and
- seeking input from the Health and Wellbeing Engagement Group where relevant.

7.4.45 Drawing on the investigation, as well as operational experience, Horizon would draft up an action plan and implement modifications to site activities or dust control measures as appropriate. For example, these could include:

- increasing dust suppression application to working areas, aggregate stock piles or mounds, including at areas not previously considered to represent significant sources of dust/$PM_{2.5}$ emissions; or

- application of dust suppression during weather conditions not previously considered to lead to dust/$PM_{2.5}$ emissions such as lower wind speeds.

7.4.46 All actions in the action plan would be those considered to be reasonably practicable and would not include suspension/cessation or reduction of works/activities.

7.4.47 Review of action plan will be undertaken on a once per annum basis if $PM_{2.5}$ concentrations remain above 10µg/m^3 as a result of a clear increase on baseline concentrations from site activities. All actions in the action plan remain as reasonably practicable unless the measured annual mean concentration approaches the AQO of 25µg/m^3.

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 [REP2-031] 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 [REP2-031].

8.1.3 In addition, the measures below outline specific measures to be implemented during the construction of the Marine Works and the operation of the MOLF during construction on the Power Station Site.

8.2 Underwater noise

8.2.1 Rock breaking and marine drilling activities are likely to generate similar noise levels to pilling activities and therefore, best practice guidance will be implemented and 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 that will be applied to rock breaking and marine drilling.

- Establishment of a mitigation zone around the construction activity.
- Only commence construction activity 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, where applicable, 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.

8.3 Blasting mitigation

8.3.1 The blasting process would be designed to ensure that relevant vibration thresholds are complied with. The assessment of vibration from blasting is therefore based on compliance with the following guidelines:

- BS 6472-2 [RD9] set of satisfactory vibration magnitudes for residential receptors, offices and workshops; and
- BS 5228-2 [RD10] for buildings (including those of historic value that are considered structurally sound).

8.3.2 All blasting methods will be designed to comply with the vibration threshold values set out below.

1. The following vibration levels set out in BS 6472-2 [RD9], as measured outside the building, would apply:

   i) the vibration level shall not exceed:
      a. 6mm/s Peak Particle Velocity (PPV) for 95% of blasting events in any six-month period (between 09:00 and 18:00 hours Monday to Friday and between 08:00 and 13:00 hours Saturday);
      b. 4.5mm/s Peak Particle Velocity (PPV) for 95% of blasting events in any six-month period (between 18:00 and 19:00 hours Monday to Friday); or
      c. any higher limits agreed with the IACC on a case-by-case basis; and

   ii) the vibration level from any single event shall not exceed 10mm/s PPV.

2. To prevent undue disturbance at offices and workshops, the following vibration levels set out in BS 6472-2 [RD9], as measured outside the building, would apply:

   i) the vibration level shall not exceed 14mm/s PPV for 90% of blasting events in any three-month period; and

   ii) the vibration level from any single blasting event shall not exceed 21mm/s PPV.

3. To prevent the onset of minor cosmetic damage to buildings (including those of historic value that are considered structurally sound), the following peak component particle velocities in the frequency range of the predominant pulse and measured on a structural element at the base of the building would apply (source: table B.2 of BS 5228-2 [RD10]:

   i) At residential or light commercial buildings, 15mm/s at a frequency of 4Hz increasing linearly to 50mm/s at a frequency of 40Hz;

ii) At industrial and heavy commercial buildings, 50mm/s at frequencies of 4Hz and above; and

iii) Important buildings which are difficult to repair, or those thought to be structurally unsound, shall require special consideration on a case-by-case basis.

8.3.3 The above limits are based on up to three blasting events per day. If it is necessary to conduct more than three blasts per day, then the permitted vibration level of each blast would be reduced in accordance with the formula set out in section 6.2 of BS 6472-2 [RD9]. Blasts for the Main Construction works will be scheduled Monday to Friday between 09:00 and 19:00 hours, and Saturday between 08:00 and 13:00 hours (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.

8.3.4 Additionally, suitable vibration threshold limits have been derived previously for the above Site Sensitive Receptors as part of conducting vibration trials during on-site rock fracturing activities. The selected thresholds vary from 5mm/s for National Grid installations up to 50mm/s for buried water utility structures.

8.3.5 Horizon confirm that mitigation measures will be employed as necessary to ensure that the blasting process complies with the relevant thresholds at 8.3.2.

8.3.6 Horizon will employ a specialist blasting contractor with a proven record of blasting work of this scale. Using their experience, they will manage the work safely and control each blast limiting vibrations, airblast and associated noise. The specialist blasting contractor shall have a registered shotfirer and specialist explosive supervisor to direct these works.

8.3.7 Mitigation measures depend on a variety of factors but could typically include:

- face and borehole mapping to establish geological variations;
- accurate survey of boreholes (Light Detection and Ranging (LiDAR)) and measurements of burden;
- optimising placement and suitability review of explosive used;
- effective stemming placement; and
- suitability review of explosives and frequent reassessment of blast pattern design.

8.3.8 The exact mitigation measures to be employed will be determined by the specialist blasting contractor, subject to proximity to sensitive structures, the vibration limits, the size of the bench and charge weight planned and the review of monitoring data from previous blasts.

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 [REP2-031] 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 [REP2-031].

9.1.3 Horizon will implement its waste management arrangements before the construction of the Marine Works begin, in accordance with the controls set out in the Wylfa Newydd CoCP [REP2-031].

9.1.4 In addition, the measures below outline specific measures to be implemented during the construction of the Marine Works and the operation of the MOLF during construction on the Power Station Site.

9.2 Materials management

9.2.1 Any disposal of rock and superficial soft sediment will be carried out in accordance with the Wylfa Newydd CoCP [REP2-031] and in accordance with the Marine Licence to be issued by NRW (see section 9.3).

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

9.2.3 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.

9.2.4 All superficial soft sediment dredged will be disposed at Holyhead North Disposal Site (IS043) in accordance with the Marine Licence to be issued by NRW so that material is retained within the wider sediment budget source.

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.

9.3.2 Where practicable, disposal of superficial soft 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, which will be determined by surveys agreed with NRW under the Marine Licence before intended disposal activities .

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 [REP2-031] 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 [REP2-031].

10.1.3 In addition, surface water controls are described in the Main Power Station Site sub-CoCP [REP2-032].

10.1.4 The measures below outline specific measures to be implemented during the construction of the Marine Works and the operation of the MOLF during construction on the 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 Capital dredging of soft sediments

10.3.1 Capital dredging of superficial soft sediments within the marine component of the Wylfa Newydd Development Area will be restricted to the area identified in a dredging plan. The dredging plan will be agreed with NRW prior to works commencing under the Marine Licence.

10.4 Discharge from dewatering of groundwater and seawater

10.4.1 'Fish-friendly' pumps will be used for initial dewatering behind the coffer dams. 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.

10.4.2 Additional procedures would be implemented where required and be subject to approval by NRW under the construction water discharge Environmental Permit. Additional procedures (as necessary) may include:

- preventing water from entering the excavated area behind the coffer dam, by using cut-off ditches for example;
- using pump sumps in excavations;
- supporting inlet hoses above the bed to avoid fine sediment being "sucked in";

- use of appropriate pumping rates to avoid disturbance to the excavated bed;
- protection of the pump inlet to avoid drawing in aquatic life and other debris;
- excavating temporary ponds to allow sediment to settle out; and
- minimising disturbance of any standing water.

10.5 Foul water discharge

10.5.1 Foul water discharge will be from two outfalls, one located at the northern end of the western breakwater and the other to the west of Wylfa Head (within the vicinity, or as part, of the existing Dŵr Cymru Welsh Water outfall). Foul water discharge limits for suspended solids, biological oxygen demand, ammoniacal nitrogen and flow rate would be set in the construction Environmental Permit issued and regulated by NRW. Foul water discharge will undergo secondary treatment with maximum suspended solids levels being at 30mg/l. 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 [REP2-031] 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 [REP2-031].

11.1.3 In addition, the measures below outline specific measures to be implemented during the construction of the Marine Works and the operation of the MOLF during construction on the 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 [REP2-031]. 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 Shoreline protection and restoration

11.2.1 To address the effects of the footprint of the Maine Works, Horizon will implement shoreline protection and restoration of the intertidal zone following removal of the temporary causeway.

11.2.2 Marine restoration will be integrated into the removal of the Temporary Marine Works and will be subject to a method statement which will be produced to include measures for the protection of existing rocky shoreline. Measures will include:

- provision for limiting the extent of disturbed shoreline;
- placing a protective layer (i.e. a physical barrier such as a geotextile product) 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.

11.2.3 Restoration will aim to return the habitats or environment to its past natural state and include:

- the topography of the substrate including gradient and structural heterogeneity; and,
- the 15 rockpools which are currently known to be present within the area and measure greater than 1m².

11.2.4 Restoration would be delivered in two phases;

- phase 1, being the restoration of the area under the footprint of the temporary causeway following removal of this structure; and,
- phase 2, the restoration of the adjacent intertidal area following removal of the temporary Cooling Water intake cofferdam and following skimmer wall construction.

11.2.5 Monitoring of the success of restoration will be delivered as part of the wider marine monitoring described in paragraph 11.3.4.

11.2.6 All marine restoration works would be undertaken in accordance with the Marine Licence to be issued by NRW.

11.3 Habitat enhancements

11.3.1 Marine ecological habitat enhancements measures will be provided in suitable locations on the permanent marine structures unconstrained by engineering design and functionality. Measures will include:

- 90 precast vertical rockpools will be installed at various heights on the MOLF wall (installation will be phased with a number of rockpools installed immediately following construction of the MOLF, and the remaining installed at the end of Main Construction);
- retro-fitting additional surface heterogeneity at the centimetre scale (e.g. tiles with grooves and crevices) to the MOLF following construction. The feasibility of implementation will be determined through a deploy and monitor approach, as part of the wider marine monitoring described in paragraph 11.3.4. The maximum number of tiles deployed would be governed by the need to ensure that this mitigation measure (either alone or in combination with other measures) does not present a security risk to the Power Station Site and meets relevant health and safety requirements
- 10 precast rockpools will be installed in rock armour on the western breakwater;
- areas of rock armour (including the leeward face of the western breakwater, and any rock revetment) will be seeded with natural rock won from the site, where practicable (alternatively, imported material akin to natural rock will be used);
- ecological enhancement of 16m^3 precast concrete units on the breakwaters, to include textured surfaces;
- retaining surface roughness within the dredged area to promote recolonisation;
- small scale seeding or transplanting of marine kelp of subtidal areas;

11.3.2 All marine enhancement works would be undertaken in accordance with the Marine Licence to be issued by NRW.

11.3.3 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.

11.3.4 A marine monitoring programme to assess the effectiveness of the enhancement measures against a suite of clearly defined ecological objectives will be implemented, which would inform appropriate adaptive management if required. The monitoring programme will include examining the success of marine restoration (section 11.2) and establishment of non-native species (section 11.4)

11.3.5 Horizon will provide relevant monitoring data to local schools and universities to promote ecological enhancement of the marine environment.

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

11.4.1 Horizon will produce and adhere to a Biosecurity Risk Assessment and Method Statement based on industry standards which will be approved by NRW under the Marine Licence. Measures will be taken for the control and protection from introduced Invasive Non-Native Species (INNS). The completed final assessment will include details of the person(s) or group(s) responsible for ensuring that the required biosecurity measures are implemented. The principle measures that the Biosecurity Risk Assessment will contain are set out below.

11.4.2 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.

11.4.3 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.

11.4.4 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 ships should adhere to the International Convention for the Control and Management of Ships' Ballast Water and Sediments (Blast Water Management Convention).
- Any ships using ballast water would comply with the Exchange standards contained in the Ballast Water Management Convention and carry a Ballast Water Management Plan and a Certificate in accordance with the Ballast Water Management Convention.
- Ships must have a Ballast Water Record Book (as required by Regulation B-2 of the Regulations for the Control and Management of Ships' Ballast Water and Sediments annexed to the Ballast Water Management Convention) 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, 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.
- Measures may be taken to reduce the risk of transfer of INNS in water held within dredger hoppers when first arriving on site or moving between dredging locations.
- Where the risk of transfer of INNS from ballast water is identified as high (e.g. due to the origin of the vessel) then further measures would be put in place

11.4.5 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.

11.4.6 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. Ships 400 gross tonnage and over must be surveyed to enable the endorsement of an Anti-Fouling System Certificate.

11.4.7 The IMO Biofouling Guidelines state that ships should implement biofouling practices to include in-water 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.

11.4.8 Horizon will also take the following approaches:

- The import of materials will be controlled such that the number of vessels entering the development area from international destinations will be managed.
- Where possible, vessels used in construction will not be utilised on other projects.
- 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.

11.4.9 On arrival vessels and associated paperwork will be inspected with regards to biosecurity. 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.

11.4.10 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.

11.4.11 Marine surveys as part of the wider marine monitoring programme set out in paragraph 11.3.4 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.

11.4.12 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.

11.4.13 As well as the above, due to the construction of the breakwaters and the MOLF requiring dredging of the seabed, any capital dredged material which cannot be reused will be disposed of at the Disposal Site in accordance with the Marine Licence to be issued by NRW as described in section 9.3 of the sub-CoCP. The Disposal 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.

11.5 Coastal processes monitoring and mitigation

11.5.1 To validate the modelling and assessment work undertaken to predict the no effect of coastal processes on Esgair Gemlyn, Horizon will implement coastal processes monitoring and mitigation.

11.5.2 The key objectives for the monitoring programme are:

- to generate a suitable baseline (without and with the Wylfa Newydd DCO Project);
- to understand the effect of natural variability (e.g. storm events) on Esgair Gemlyn; and,
- to generate a baseline dataset for adaptive management mitigation.

11.5.3 To meet the monitoring objectives, Horizon has secured the following monitoring programme.

- Annual ground topographic surveys undertaken during the construction phase of the Wylfa Newydd DCO Project. Surveys would replicate the thirteen cross-shore profiles undertaken in 2016 and 2018 to examine the ridge profile (i.e. crest elevation, width and gradient). Each survey would be standardised to the same seasonal period dictated by the first survey (subsequent surveys would be within a four-week period of the first survey). A total of nine surveys would be undertaken; at least one survey would provide additional data pre-construction of the breakwater; the remaining surveys would be during and post breakwater construction. The frequency of monitoring post construction phase (from year 9) will be reviewed as part of the adaptive management approach.
- Three LIDAR surveys would also be undertaken at years 1, 4, and 8 to examine sediment volume (in additional to profile). The need for and frequency of additional LIDAR surveys post construction will be reviewed as part of the adaptive management approach.

11.5.4 Monitoring data will be reported in an annual report building on successive datasets to examine temporal trends in ridge profile, storm response and broader scale sediment changes/trends against a set of objectives and principles. The annual report will make recommendations on the coastal processes monitoring and mitigation as part of the ongoing adaptive management mitigation approach.

11.5.5 Adaptive management mitigation will be used to inform the decision to implement mitigation if its shown the breakwater results in changes to Esgair Gemlyn outside of natural variability (e.g. storm event).

11.5.6 The coastal processes monitoring and mitigation will be updated accordingly through its implementation and cease once it is demonstrated that the impacts from the Wylfa Newydd DCO Project are no greater than the residual not significant effects predicted in the Draft DCO application.

11.6 Mitigation of effects on terns

General

11.6.2 Blasting inside the temporary cofferdam will be carried out in the dry for approximately seven months. Blasting will occur 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). Drilling activities prior to blasting will need to be undertaken during both day and night.

11.6.3 Horizon will monitor the Cemlyn Lagoon tern colony from early March during each year of the Wylfa Newydd DCO Project Main Construction phase in order

to record the arrival of black-headed gulls and terns to establish a breeding colony.

Definitions

11.6.4 The 'tern breeding period' is the period from the date on which the first terns begin to establish nests at the Cemlyn Lagoon tern colony until the point where chicks fledge and terns begin to leave the colony. These dates are anticipated to be 15th April to 15th August but will vary on an annual basis to take account of early or late arrivals and departures. Such variations are to be agreed with the NWWT site managers and NRW. Nest establishment will be defined as 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, these being aerial display flights over the nesting islands and/or courtship behaviour on the ground by scrape making.

11.6.5 The 'establishment period' is the period from the start of substantive colony wide breeding activity until the earlier of:

i. four weeks from the start of the period; or

ii. the date on which more than fifty percent (>50%) of the Sandwich terns expected to be present in the colony are considered to have begun egg-laying and be sitting on nests.

11.6.6 Due to the importance of black-headed gulls in establishing the Cemlyn Bay tern colony, from early March, if the observers determine that 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), the 'tern breeding period' mitigation measures will be implemented earlier.

Noise controls throughout the Main Construction phase

11.6.7 In the breeding seasons that occur during the Project's Main Construction phase, Horizon commits that the noise levels set out below will apply.

11.6.8 During the tern breeding period:

- Blasting on the site will only be undertaken when, accounting for 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). This may require blast sizes to be reduced in certain weather conditions.
- Day-time construction noise at the Cemlyn Lagoon tern colony will not exceed 59dB $L_{Aeq, 1\text{-hour}}$.
- Night-time (to be defined in line with working hours) construction noise at the Cemlyn Lagoon tern colony will not exceed 43dB $L_{Aeq, 1\text{-hour}}$.

11.6.9 During the establishment period:

- Blasting on the site will only be undertaken when, accounting for wind factors, noise shielding and other mitigation, the predicted blast noise at the Cemlyn Lagoon tern colony will be less than 55dB $L_{AF,max}$ or the ambient noise at the colony (whichever is higher).
- Day-time construction noise at the Cemlyn Lagoon tern colony will not exceed 55dB LAeq, 1-hour or the daily ambient noise at the colony (whichever is higher).

Meeting committed noise levels

11.6.10 During the tern breeding period, noise levels will be monitored at the Cemlyn Lagoon tern colony through direct monitoring on the islands or extrapolated calculations based on monitoring at nearby locations.

11.6.11 These noise levels will be monitored against action thresholds (amber and red); which are to be defined according to the noise thresholds set out below (with amber being a noise level sufficiently below the agreed red threshold to enable mitigation action to be taken before an exceedance occurs). Where noise levels (based on hourly averages) reach the amber action threshold, the following steps will be taken:

- a review of the real time monitoring data will be undertaken to confirm that the monitored levels are not being impacted by other noise or vibration sources not connected to the Wylfa Newydd DCO Project;
- once confirmed, the onsite management team will be notified that an action level has or is about to be exceeded and an action plan agreed;
- the appropriate site managers will review the works and working strategy in the areas likely to be contributing to the breach and consider any possible/viable mitigation actions;
- mitigation measures will be identified to reduce the noise to the acceptable specified level at the receptors and may include
  - plant/equipment substitution;
  - adjusting the scheduling of the works;
  - adjusting the intensity of the works;
  - adopting alternative construction methodologies;
  - temporary relocation of certain activities;
- the decision-making process on the mitigation measures to be applied will be guided by safety considerations, amongst others, as well as the availability of equipment and potential impacts on other environmental receptors, and the overall construction programme;

- the appropriate site managers will ensure that the selected mitigation measures are implemented, noting that, for any construction activity to be halted, an assessment first needs to be undertaken regarding whether the works are stable, and it is safe to do so (i.e. some works may need to be completed before they can be stopped); this will affect the time taken to alter working practices; and
- monitoring will continue to verify that the control measures have reduced the noise levels to an acceptable level at the relevant receptors.

Reactive monitoring

11.6.12 In addition to the measures set out above, during the tern breeding period the colony will be continuously observed by trained observers, who will be professional, independent ornithologists with a detailed knowledge of terns, during daytime working hours. If the observers determine that 'fly up' responses appear to be associated with Wylfa Newydd DCO Project activities, the following actions (as per the mitigation procedures set out above) will be taken:

- The Wylfa Newydd DCO Project activities responsible for the tern 'fly-ups' will be identified (based on matching acoustic signatures with site activities).
- Site activities will be reviewed to identify what alterations can be made (e.g. change in work intensity, schedules or methods, or additional noise abatement).
- Alternatives will be adopted where they are assessed as being safe and practicable.
- Monitoring will continue in an effort to better understand and control the causes of previous Wylfa Newydd DCO Project related tern 'fly-ups'.

11.6.13 The above protocol will be implemented by the site management team, who will have full knowledge of the construction activities being undertaken and the authority to instigate the control measures deemed to be necessary.

Disturbance at the breeding tern colony from visual stimuli

11.6.14 During the establishment period, there will be no construction 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 Special Protection Area.

11.6.15 During the establishment period, Horizon will only undertake works on the far side of Mound E that are not visible from the Cemlyn lagoon tern colony and minimise reworking of material placed in this area.

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 [REP2-031] 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 [REP2-031].

12.1.3 In addition, the measures below outline specific measures to be implemented during the construction of the Marine Works.

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. 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 Two magnetic anomalies of uncertain origin but of possible archaeological interest (Asset WA7000 and Asset WA7001) have been identified within the micro-sited area for rock disposal. 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	British Standards Institution. 2008. BS 6472-2 Guide to Evaluation of human exposure to vibration in buildings. Blast-induced vibration. London: British Standards Institution.
RD10	British Standards Institution. 2008. BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Vibration. London: British Standards Institution.