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Visual Impact Provision (VIP)

Snowdonia Project

Outline Construction Environmental Management Plan

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APPENDICES

1 INTRODUCTION

1.1.1 The Visual Impact Provision (VIP) Project represents a major opportunity to conserve and enhance the natural beauty, wildlife and environmental heritage within our most protected landscapes by relocating above ground electrical infrastructure such as overhead lines (OHL), underground. The VIP Project will make use of a £500m allocation by Ofgem to carry out work to help reduce the impact of existing transmission lines in English and Welsh Areas of Outstanding Natural Beauty (AONBs) and National Parks. In 2014, National Grid identified twelve transmission lines in eight AONBs and National Parks as having the most significant visual impact. The focus of the VIP Project is on the mitigation of landscape and visual impacts.

1.1.2 In September 2015 the Project's Stakeholder Advisory Group considered a wide range of factors and recommended four VIP Projects be taken forward for potential engineering work. This Outline Construction Environmental Management Plan (CEMP) relates to the VIP, Snowdonia Project (hereafter referred to as the Proposed Project) which aims to relocate a section of OHL 4ZC underground (hereafter referred to as the VIP subsection) within, and adjacent to, Snowdonia National Park.

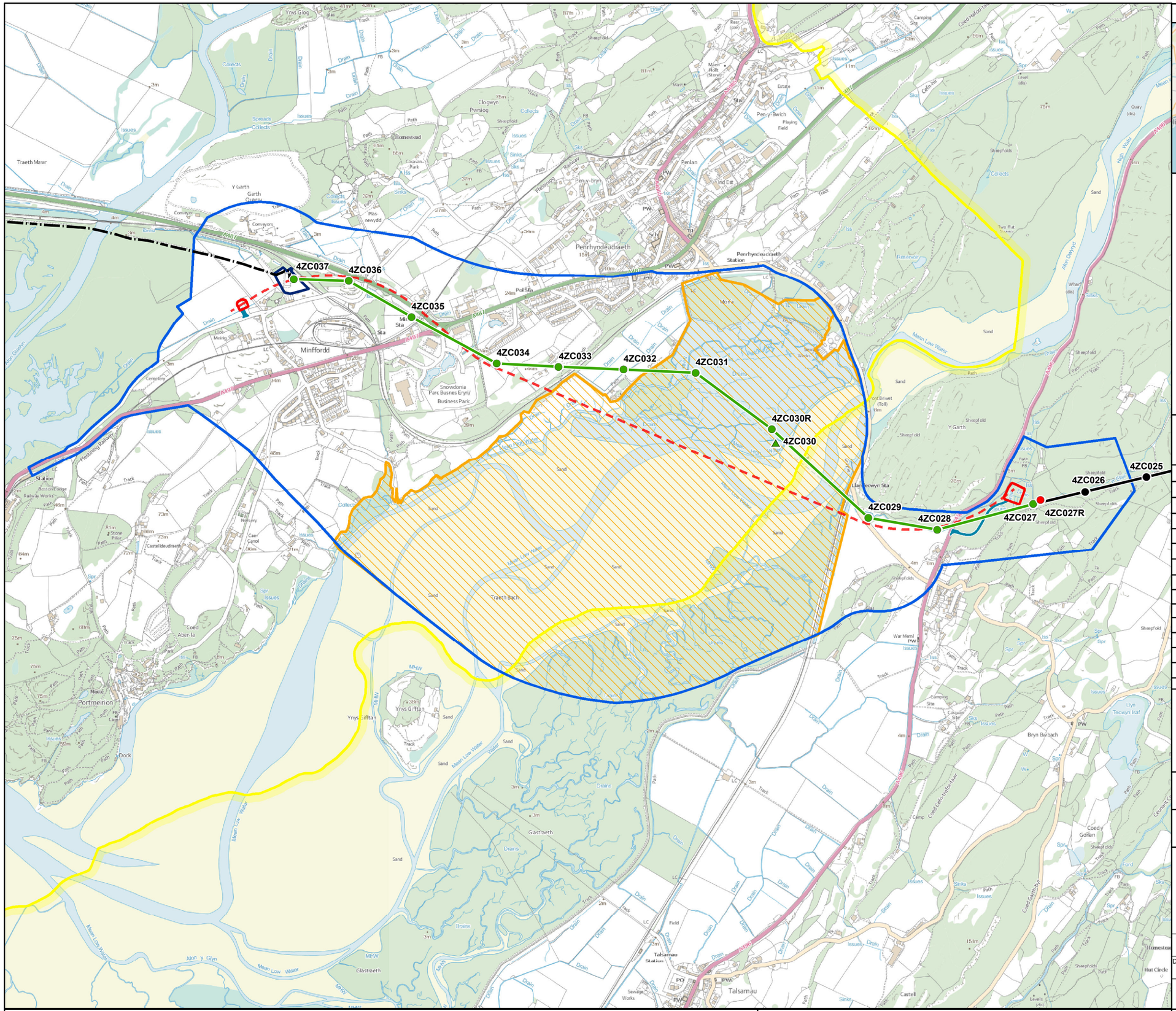
1.1.3 The Contractor shall carry out all mitigation and enhancements included in this draft Outline CEMP and comply with all limits and thresholds where specified.

1.1.4 The final CEMP shall be prepared by the Contractor and shall need to be submitted for acceptance by National Grid in consultation with the relevant stakeholders prior to construction. The Contractors CEMP is to include a Pollution Incident Plan which shall state the procedures for pollution control and emergency response measures in the event of accidental spillage or leakage during construction. The Contractor shall undertake the Works in accordance with the CEMP and employ an Environmental Manager.

1.1.5 Proposed monitoring which will be undertaken during construction is defined within the relevant sections of the Outline Construction Environmental Management Plan and the supporting management plans which are appended. This information will be brought together within a chapter of the Construction Environmental Management Plan (which will be prepared by National Grids appointed construction contractor) to form a monitoring framework.

1.2 The Proposed Project

1.2.1 The VIP subsection runs from National Grid's existing Garth Sealing End Compound (SEC) near Minffordd (to the east of Porthmadog) across the Dwyryd Estuary where it enters the western edge of the Snowdonia National Park to Pylon 4ZC27. It then continues past the small settlement of Cilfor. This VIP subsection is approximately 3km in length. The Proposed Project lies within the administrative boundaries of Snowdonia National Park Authority and Gwynedd Council. Figure 1 below provides a Project Overview Map.



Overview

Legend

- Area of Search for Permanent and Temporary Works
- National Grid Land Ownership Boundary
- Tunnel Headhouse Compound
- Proposed Permanent Access Road
- Marine Environment Area
- Snowdonia National Park
- Overhead Line to be Removed
- Existing National Grid Underground Cable
- Existing National Grid Overhead Line
- Proposed Tunnel
- Foundation of Former Pylon 4ZC030 to be Removed
- Existing National Grid Pylon to be Removed
- Existing National Grid Pylon to be Retained
- Proposed New National Grid Pylon

Rev	Description	Cre'd	Chk'd	App'd	Date
14	National Park Boundary	NH	SR	SR	13/02/2020
13	remove SEC search, add THH	NH	SR	SR	04/11/2019
12	SEC Search Extent	NH	SR	SR	05/06/2019
11	SEC Search Extent	NH	SR	SR	01/05/2019
10	NG Ownership	NH	SR	SR	06/11/2018
09	NG Ownership	NH	SR	SR	10/10/2018
08	Temporary diversion added	NH	SR	SR	05/10/2018
07	Defunct tower location added	NH	SR	SR	26/09/2018
06	Junction Area removed	NH	SR	SR	16/08/2018
05	SEC & Junction Areas	NH	SR	SR	12/08/2018
04	Marine Environment	NH	SR	SR	11/05/2018
03	SEC search area and AoS update	NH	SR	SR	30/04/2018
02	Revised Tunnel Alignment	NH	SR	SR	03/04/2018
01	Study Area Extended	NH	SR	SR	07/03/2018

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Master Scheme No:	Sub-Scheme No:	Site:
-	-	

Scheme Name:
Visual Impact Provision (VIP) Snowdonia Project

Document Title:

Figure 1.1: Proposed Project Overview

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1.2.2 The Proposed Project includes the following principal elements which are described in detail in the Environmental Appraisal and have been divided in to the different planning jurisdictions:

Table 1: The Proposed Project

Western Side of the Dwyryd Estuary (Planning Jurisdiction of Gwynedd Council)
• Diversion of third-party assets, including the undergrounding of an OHL supported on wooden poles away from the construction area in accordance with operator requirements
• Reconfiguration of equipment at the existing Garth SEC (including removal of the gantry, there will therefore be no equipment greater than 10m high)
• A tunnel head house (containing a tunnel shaft), with a permanent access road close to National Grid's existing Garth SEC. The ground will need to be raised out of the flood zone level. A permanent power supply and site drainage will be required.
• Underground buried cable to connect into the SEC from the tunnel head house
• Removal of six lattice pylons and associated foundation to 1.5m below ground level
• Temporary access routes (with potential highways improvements or passing places) and laydown areas to facilitate construction activities
• A section of cable tunnel (total length across the Proposed Project 3.4km long, with an internal diameter of up to 4.4m, at varying depths below the ground)
• Landscape and visual mitigation mounding and planting
Eastern Side of the Dwyryd Estuary (Planning Jurisdiction Snowdonia National Park)
• Diversion of third-party assets including the potential diversion of a water pipeline and OHL supported on wooden poles away from the construction area in accordance with operator requirements
• A new SEC near Cilfor (required to connect the new underground cable to the remaining existing OHL)
• A tunnel head house (containing a tunnel shaft), with a permanent access road. The ground will be raised to create a working platform and will be regraded/ contoured. A permanent power supply and site drainage will be required.
• A section of cable tunnel
• Removal and reinstallation of one pylon (Pylon 4ZC027) adjacent to the new Cilfor SEC
• Removal of two lattice pylons and associated foundation to 1.5m below ground level
• Temporary access routes and laydown areas to facilitate construction activities

• Landscape and visual mitigation mounding and planting (at an appropriate maturity)
Dwyryd Estuary (Planning Jurisdiction of Natural Resources Wales)
• A section of cable tunnel
• Removal of Pylon 4ZC030R, National Grid will also aim to remove all pylon structures including the foundation piles and cofferdam sheet piles; alternatively, foundations will be removed to the maximum depth possible by an excavator located on the working area
• Partial removal of the foundations of the previously dismantled pylon 4ZC030
• Removal of Pylon 4ZC031 and partial removal of its foundations
• Temporary accesses associated with the removals noted above, as well as temporary access to enable the dismantling of Pylon 4ZC032 (although the pylon itself is within the terrestrial environment)

1.3 The Purpose of the Outline Construction Environmental Management Plan

1.3.1 This Outline CEMP supports the planning application by National Grid Electricity Transmission plc (National Grid) to construct, operate and maintain the Proposed Project. The Proposed Project lies within the administrative boundaries of Gwynedd Council and Snowdonia National Park Authority.

1.3.2 This document has been prepared by National Grid and the contractor will take on the responsibility as specified in this document. This document presents the approach and application of environmental management and mitigation for the construction of the Proposed Project. The Outline CEMP aims to ensure that adverse effects on the environment and local communities, from the construction phase of the Proposed Project, are minimised.

1.3.3 The Outline CEMP has been prepared in accordance with the construction mitigation measures identified during the environmental assessment phase and in accordance with National Grid's Environmental Management System (EMS)(Appendix 1).

1.3.4 The Contractor shall produce their own CEMP which adopts all requirements laid-out in this Outline CEMP.

1.4 Objectives

1.4.1 The objectives of the CEMP are to:

- provide a mechanism for ensuring the delivery of mitigation measures, to reduce environmental effects identified in the environmental assessment phase;
- ensure compliance with legislation and identify where it will be necessary to obtain authorisation from relevant statutory bodies;
- provide a framework for compliance auditing and inspection to ensure the agreed environmental aims are being met; and
- ensure a prompt response to any non-compliance with legislative and planning conditions, including reporting, remediation and any additional mitigation measures required to prevent a recurrence.

1.5 Supporting Plans

1.5.1 This Outline CEMP references a range of supporting documentation including a series of subject specific management plans for specific environmental topics and the environmental management measures that have been identified as mitigation requirements within the environmental assessment. These subject specific management plans form appendices to this Outline CEMP and comprise:

- Outline Waste Management Plan (OWMP)
- Outline Peat Management Plan (PMP)
- Dust Risk Assessment
- Outline Construction Traffic Management Plan (CTMP)
- Biosecurity Risk Assessment (for invasive weeds)
- Reptile Method Statement
- Outline Habitat Mitigation Plan

1.5.2 Drafts of these outline plans have been prepared by National Grid; these shall then be updated by the Contractor once detailed construction practices have been identified and refined prior to finalising these documents.

1.5.3 In addition to the above plans, the appointed Contractor will be required to develop a series of specific plans to set out in detail the management systems, procedures and approaches that will be implemented during construction to comply with the Outline CEMP. These plans (see also Table 3) will include:

- Construction Environmental Management Plan (CEMP);
- Contractor Environmental Management System (EMS);
- Pollution Incident Control Plan (PICP);
- Construction Phase Safety, Health and Environmental (SHE) Plan;
- Site Waste Management Plan (SWMP);
- Emergency Response Plan (ERP); and
- Site Drainage Plan (SDP).

1.5.4 Outline plans will need to be updated once further information is available or as agreed as part of any planning condition.

1.6 Structure of the Outline CEMP

1.6.1 Chapter 2 of this Outline CEMP provides information on general environmental management procedures and conformance, roles and responsibilities (including a summary of the specific management plans to be produced by the appointed Contractor) and compliance with legislation and consents.

1.6.2 Chapter 3 describes the site-specific environmental management measures that will be implemented during construction.

2 ENVIRONMENTAL MANAGEMENT

2.1 Conformance with Corporate and Project EMS

2.1.1 National Grid take their responsibilities for Environmental Sustainability very seriously. As a minimum, National Grid will meet compliance obligations but will aspire to world class performance.

2.1.2 National Grid maintain an Environmental Management System (EMS) to provide a framework within which to manage and reduce their effects on the environment. The EMS is accredited to ISO14001:2015. National Grid's Environmental Sustainability Policy is provided in Appendix 2.

2.1.3 The EMS sets out the overall processes for:

- environmental responsibilities;
- identifying environmental aspects;
- setting and achieving environmental objective and targets;
- controlling environmental impact;
- meeting the conditions of environmental consents and permits; and
- preparing and responding to environmental emergencies and incidents.

2.1.4 The Contractor will prepare their own project-based EMS in accordance with National Grid's EMS prior to construction commencing. The contractors' EMS will detail their framework for managing the environment. National Grid will approve the Contractor's EMS prior to construction.

2.1.5 The contractors' EMS will address:

- the environmental aspects identified in the Environmental Appraisal and Outline CEMP;
- compliance with environmental consents and permits;
- overall compliance with environmental legislation, approved codes of practice and industry best practice;
- production of the CEMP, including roles and responsibilities;
- monitoring and review arrangements;
- emergency procedures that are defined and adopted; and
- appropriate training and information for personnel.

2.2 Conformance with Planning Conditions

2.2.1 The Proposed Project encompasses the planning jurisdictions of the Snowdonia National Park Authority and Gwynedd Council. National Grid will obtain full planning permission for the Proposed Project by way of a planning application under the Town and Country Planning Act 1990 to Snowdonia National Park Authority (also acting on behalf of Gwynedd Council) for the tunnel head houses (including a permanent access to these sites) and the proposed new SEC on the eastern side of the Dwyryd Estuary. The Planning Application will allow for construction compounds associated with these works.

2.2.2 Shaft and tunnel construction in the terrestrial environment and the section of underground cable between the western tunnel head house and the existing SEC at Garth constitute permitted development under the Town and Country Planning (General Permitted Development Order) 1995 (as amended) Part 17 Class G. The construction and use of temporary access tracks used to facilitate construction activities will make use of National Grids permitted development rights.

2.2.3 Reconfiguration of Garth SEC is permitted development and OHL removal is utilising the existing consent held by National Grid.

2.2.4 Marine licence applications will be submitted to Natural Resources Wales for works within the marine environment of the Dwyryd Estuary (as defined by Mean High Water Springs) under the Marine and Coastal Access Act (MCAA) 2009 including the construction of the tunnel beneath the marine environment, laying of the cable within the tunnel, pylon foundation removal including the dismantling of pylons (4ZC030R and 4ZC031), and removal of the foundations of the previously dismantled pylon 4ZC030.

2.2.5 The Electricity Act 1989 sets out that, with certain conditions and exceptions, consent must be obtained for installing and maintaining any electric OHL. Proposed works on OHLs require a new consent unless they are permitted under an existing consent or under an available exemption. Under Section 37 of the Act, specific electricity works would require an application for consent to be submitted to the Department for Business, Energy and Industrial Strategy (BEIS). However, due to the technical specification of the works involved with the Proposed Project, National Grid are seeking notification from Snowdonia National Park Authority (also acting on behalf of Gwynedd Council) that the Proposed Project would be exempt from the Act as no significant residual adverse environmental effects have been predicted. The notification process is under The Overhead Lines (Exemption) (England and Wales) Regulations 2009.

2.2.6 Any conditions imposed through the planning system will be appropriately discharged at the relevant stage of the proposed works by National Grid or their appointed contractor.

2.3 Conformance with the Environmental Appraisal

2.3.1 The Proposed Project has been screened as a non-EIA development; formal statutory EIA is not required as the Proposed Project is unlikely to have a significant adverse effect on the environment. An Environmental Appraisal has however been prepared to accompany the planning application

2.3.2 The Environmental Appraisal includes assessments of the potential effects on the environment that are likely to be caused during the construction, operation and decommissioning phases of the Proposed Project. Mitigation has also been developed to reduce environmental impacts and effects to an acceptable level and includes:

- Primary or ‘embedded’ mitigation measures developed through the iterative design process that have become integrated mainstream components of the design of the Proposed Project;
- Standard construction practices for avoiding and minimising environmental effects. For example, best practice construction management measures; and
- Additional (or secondary) mitigation measures which are designed to further reduce impacts remaining after primary measures and standard construction practices have been applied to the Proposed Project.

2.3.3 The principles adopted in the identification and development of environmental mitigation for the Proposed Project are avoidance (wherever possible), reduction (where avoidance cannot be achieved) and compensation (where reduction is unachievable or would not achieve the required level of mitigation).

2.3.4 This Outline CEMP has been prepared in accordance with the mitigation measures identified in the Environmental Appraisal to reduce the adverse effects of the Proposed Project on the environment during the construction phase.

2.3.5 The Contractor will implement the mitigation measures identified in the Environmental Appraisal and in this Outline CEMP.

2.4 Compliance with Legislation, Standards and Guidance

2.4.1 The Outline CEMP will be kept under review and updated as required as a result of new or amended legislation, standards and guidance by National Grid and issued to its contractors.

2.5 Consents and Licences

2.5.1 A number of sections of this Outline CEMP reference consents, permits and licences that will be required during construction. A Consents Register will be maintained by the Contractor's Environmental Manager which will document all existing consent conditions, record all new applications made and the status of the applications.

2.6 Roles and Responsibilities

2.6.1 Establishing roles and responsibilities on site is important to ensure the successful construction of the Proposed Project, including the implementation of including the implementation of the Contractor's CEMP.

2.6.2 The responsibilities of the personnel who will be responsible for implementing, monitoring, responding to, and updating the CEMP are described at Table 2.

Table 2: Responsibilities of the Contractor

Role	Responsibilities
Project Manager	• Overall responsibility for ensuring conformance with the Outline CEMP; and incident investigation.
Safety, Health, Environment, Security and Quality (SHESQ) Manager	• Reviewing risk assessments and method statements (RAMS); • Manager of the Safety, Health and Environment (SHE) Plan; • Reviewing, updating and issuing the CEMP; • Incident investigation; • Liaison with the emergency services; • Site inspection; • Reviewing applications for environmental consents and permits; and • Sensible monitoring.

Role	Responsibilities
Environmental Manager	• Ensure management plans are implemented; • Oversee environmental mitigation; • Site inspection; • Preparing and submitting applications for environmental consents and permits; • Maintaining a consents register; • Liaison with third parties and licensing authorities; • Organising environmental surveys; and • progress monitoring.
Ecological Clerk of Works (ECoW)	• oversee ecological mitigation works.

2.6.3 Prior to construction commencing, Contractor shall prepare management plans as detailed in Table 3.

Table 3: Plans to be Prepared by the Contractor

Management Plan	Description
Construction Environmental Management Plan (CEMP)	Details the environmental mitigation measures that will be implemented during each stage of the construction works and will be in accordance with this Outline CEMP.
Contractor Environmental Management System (EMS)	Details the framework for managing the environment.
Pollution Incident Control Plan (PICP)	Identifies how the risk of pollution due to construction works, materials and extreme weather events will be controlled and identifies the remedial actions in the event of an incident.
Construction Phase Safety, Health and Environmental (SHE) Plan	Details relevant safety, health and environmental information relating to all construction activities.
Site Waste Management Plan (SWMP)	Sets out details developed from the Outline CEMP to identify site-specific measures for the collection, segregation, treatment and disposal of waste.
Emergency Response Plan (ERP)	Describes the procedure to be followed in the event of an emergency.
Site Drainage Plan (SDP)	Identifies drainage arrangements to ensure that surface water runoff-off (i.e. volume, rate and quality) during the construction phase will be sustainably managed throughout the extent and duration of all construction activities.

2.6.4 The plans will be made available to any person working on the Proposed Project.

2.6.5 Environmental issues that arise during the construction of the Proposed Project will be reviewed at the inaugural and subsequent regular meetings held by the Contractor. Where necessary, daily toolbox talks will be held by the Contractors to inform the construction staff of any environmental issues and any changes to the plans.

2.6.6 The Contractor shall ensure that a Considerate Constructors Scheme will be in place to ensure that everything is done, where practicable, to reduce the effect on the environment and this will include awareness-raising, through tool box talks, of the sensitivity required should livestock be in close proximity to works.

2.6.7 The appointed Contractor will ensure that all staff, including sub-contractors are trained and competent in the management of environmental impacts to a level that is appropriate to their role.

2.6.8 National Grid will convene regular meetings with the Consultees. These will be open discussions and will be attended by engineering and environmental staff. The Contractor shall also liaise closely with Natural Resources Wales (NRW) and other key stakeholders throughout the project.

2.7 Environmental Procedures

Audits and Inspections

2.7.1 The contractor shall undertake daily site inspections, which will include monitoring conformance with the Outline CEMP. Daily assessment forms will be completed during the daily checks. Checks on equipment will be undertaken to reduce the risk of incidents occurring (for example oil leaks). As a minimum the following equipment and receptors will be inspected:

- fencing,
- waste storage facilities;
- oil separators;
- chemical storage facilities;
- bund integrity;
- foul water storage facilities;
- silt traps;
- drainage ditches and watercourses or other nearby environmental receptors;
- storage vessels (including pumps, gauges, pipework and hoses);
- secondary containment (for example, secondary skins for oil tanks);
- spill response materials;
- equipment with potential to leak oils and other liquids, for example, compressors and transformers; and
- Signage, fencing and condition of any diverted Public Rights of Way and associated temporary bridges.

2.7.2 Contractor shall carry out weekly inspections jointly with National Grid. The objective of these weekly inspections to verify and monitor contractors daily site inspections

2.7.3 The Contractors daily and weekly inspections will also include, in addition to the list at paragraph 2.7.1:

- reviewing the daily risk assessment forms;

- ensuring that faults and defects are identified and rectified; and
- providing data for performance monitoring.

2.7.4 Environmental performance data will be collected and collated into the SHE Plan by the contractor

2.7.5 Immediate action including ceasing of all works, if necessary, will be taken should any incidents or non-conformance with the Outline CEMP be found during inspection.

2.7.6 All monitoring reports will be made available to statutory and non-statutory bodies on request.

Incident Procedure

Pollution Incident Control Plan (PICP)

- The Contractor shall provide and maintain a PICP which will detail their response in the event of any incident on site and shall include and detail how incidents and adverse environmental effects are managed describe the procedure to be followed in the event of an incident (in accordance with the 'Incident Response' procedure below);
- describe the procedure for the notification of appropriate emergency services, authorities and personnel on the construction site;
- describe the procedure for the notification of relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers;
- provide maps showing the locations of local emergency services facilities such as police stations, fire authorities, medical facilities, other relevant authorities, such as NRW and also the address and contact details for each service and authority;
- provide contact details for the persons responsible on the construction site for pollution incident response;
- provide contact details of a competent spill response company which can be contacted at short notice for an immediate response.
- ensure that site drainage plans and flood risk management plans are available on site and are kept up-to date; and
- ensure staff competence and awareness in implementing plans and using pollution response kit.

Incident Response

2.7.7 The Contractor shall adequately resource and maintain an Environment Incident Response Team for immediate response and attendance at environmental incidents or aspects. Out of hours contact names and telephone numbers for the Environment Incident Response Team shall be made available to the Project Manager.

2.7.8 All incidents associated with the construction of the Proposed Project including environmental incidents and non-conformance with the Outline CEMP, will be reported and investigated using the PICP.

2.7.9 The following procedure will be followed in the event of an incident and will be detailed further in the PICP:

- related works will stop;

- the Environmental Manager and SHESQ Manager will be contacted;
- the size of the incident will be assessed;
- if the incident is controllable by staff on Site, remedial action will be taken immediately in accordance with the PICP;
- if the incident cannot be controlled by the staff on Site, emergency assistance will be sought;
- the appropriate enforcing authority will be contacted and informed, as appropriate including:
  - NRW for incidents affecting rivers, groundwater, marine environment, major emissions to atmosphere and protected species;
  - the local sewerage undertaker for incidents affecting sewers;
  - the Local Authority Environmental Health Department for incidents that could affect the public or other assets;
  - the Food Standards Agency for incidents that have the potential to affect food through deposition on crops or land used for grazing livestock;
- the Project Manager and SHESQ Manager will instigate an investigation into the occurrence of the incident;
- the findings will be sent to the appropriate enforcing authority where necessary; and
- an action plan will be prepared to determine why the incident occurred and whether any modifications to working practices are required to prevent a recurrence. If necessary, the Outline CEMP, PICP and SHE Plan will be updated (and any other plans as appropriate) and all workers will be notified.

Training

2.7.10 The Contractor will ensure that all site personnel and sub-contractors are aware of their responsibilities with respect to the CEMP and its appropriate implementation.

2.7.11 All staff, site visitors and delivery drivers will receive a relevant project induction by the Contractor to ensure they are aware of site hazards and health, safety and environmental management requirements. Site staff will be briefed daily by the contractors prior to work commencing. Site-specific risk assessments will be carried out to ensure the risk strategy of the frequently changing workplace remains relevant.

2.7.12 Where required, environmental training commensurate to the work task, work location and work phase, will be provided by the Contractor.

2.7.13 Tool box talks will be given to site personnel with information provided to the workforce to ensure that staff are aware of environmental issues and how to manage them in accordance with the CEMP.

3 ENVIRONMENTAL MANAGEMENT OF SITE OPERATIONS

3.1 Introduction

3.1.1 This chapter of the Outline CEMP describes the environmental management measures that will be implemented during the construction of the Proposed Project to minimise adverse effects on the terrestrial and marine environment. These are based on current best practice guidance, Guidance for Pollution Prevention (GPP) documents[1], and mitigation measures as identified during the Environmental Appraisal process.

3.2 Working Hours

3.2.1 The core working hours for general construction work (including but not limited to, site establishment, shaft construction, headhouse and sealing end compound construction and reinstatement) be limited to between 0800 and 1800 Monday to Friday, 0800 and 1300 Saturday, and no working on a Sunday or bank holidays, unless otherwise approved by the relevant planning authority. Piling will be undertaken between 0900 and 1700 during weekdays.

3.2.2 The following operations may take place outside the core working hours referred to above (exempt activities):

- Tunnelling, including associated above ground plant and equipment required to enable this activity. This can be 24 hours 7 days per week;
- completion of operations commenced during the core working hours which cannot safely be stopped;
- any highway works requested by the highway authority or requested by third parties such as network rail, police escorts etc;
- security monitoring;
- the completion of works delayed or held up by severe weather conditions which disrupted or interrupted normal construction activities;
- Getting workers to and from the site, and activities such as briefings, setting to work, maintenance of equipment and machinery (excludes running engines) etc.;
- Any surveys such as continuous baseline monitoring or ecology surveys which are required to take place at night.;

3.2.3 In all instances, there will be no movement of excavated material offsite during weekends and no HGV deliveries outside of the core working hours.

3.3 Material/ Resource and Waste Management

3.3.1 An Outline Waste Manangement Plan (OWMP) has been prepared for the Proposed Project as presented in Appendix 6. The OWMP set out the principles and procedures for the management of waste during the construction of the Proposed Project including a commitment to the production of Site Waste

[1] Guidance for Pollution Prevention (GPPs) are a series of documents that provide environmental good practice and regulatory guidance in Wales, they are directly replacing a series of guidance documents called Pollution Prevention Guidelines (PPGs) that were administered by the Environment Agency. Where no GPP is yet available information provided within the relevant PPGs is still considered as best practice.

Management Plans (SWMP) and where appropriate, Materials Management Plans (MMP), for each Principal Contractor and their associated works.

3.3.2 The objective of a SWMP is to manage and reduce the amount of waste produced by a construction project through a simple process of identification of wastes, input to the design process, and the continued measurement and management of wastes to achieve the most sustainable options in the waste hierarchy.

3.4 Lighting

3.4.1 Tunnelling activities (24 hour working) and winter working (due to the short-day lengths when lighting will be required at the beginning and end of the day) will require task-specific lighting. Lighting will be used only when required and will comprise lighting of work areas and access and egress with low level directional lighting.

3.4.2 Contractor shall provide and maintain all lighting for the construction works and the site welfare and site security cabins shall include low level lighting. Motion sensor lighting shall be used in areas of high security risk and access and egress.

3.4.3 The following measures shall be applied by the contractor at all times for any lighting provided at or above ground level:

- Lights installed will be of the minimum brightness and/or power rating capable of performing the desired function;
- Light fittings will be used that reduce the amount of light emitted above the horizontal;
- Light fittings will be positioned correctly and directed downwards;
- Direction of lights will seek to avoid spillage onto neighbouring properties;
- Passive Infra-Red (PIR) controlled lights will be considered for use where appropriate as these may be more acceptable to neighbours than those which are controlled by a time switch or are on all the time; and
- Unnecessary lights will be switched off.

3.5 Security

3.5.1 The Contractor shall be permitted (subject to appropriate planning approvals) to use:

- high perimeter fencing or hoarding for site security and public safety, placed so that PRoW are maintained or appropriately diverted;
- motion sensor lighting in areas of high security risk;
- And contractor shall consult with Police on security proposal and review arrangements throughout the period of the contract;
- Immobilisation of plant out of hours, removing or securing hazardous materials from site, securing fuel storage containers and preventing unauthorised use of scaffolding.

3.6 Welfare

3.6.1 No living accommodation shall be permitted on the construction site. Welfare facilities will be kept clean and tidy. The Contractor shall control rodents encountered on site and shall inform the local authority's pest control officer upon their discovery.

3.7 Unexploded Ordnance

3.7.1 National Grid has undertaken desk-based assessments for unexploded ordnance. The Contractor shall undertake construction risk assessments and prepare an emergency response plan based on this information.

3.8 Pollution Prevention/ Storage and Plant

3.8.1 The Contractor shall demonstrate application of appropriate industry best practice and published guidelines to reduce pollution.

Table 4 Summary of guidance documents

Title	Details
PPG1: Understanding your environmental responsibilities	An introduction to pollution prevention including containment, waste and emergency planning.
GPP2: Above ground oil storage tanks.	This will advise the correct storage of oils across the Areas for permanent and temporary works, particularly within the proposed SEC and contractor compounds to minimise the risk of causing pollution.
GPP5: Works and maintenance in or near water.	Given the proximity of several streams and ponds to the proposed areas of temporary and permanent works there is the potential to cause pollution, transfer non-native species and can impact on the bed and banks of a watercourse.
PPG 6: Working at construction and demolition sites.	An overarching document providing best practise principles and examples to be used as guidance on how to prevent pollution.
PPG 7: Safe Storage – the safe operation of refuelling facilities	Including guidance on small scale liquid refuelling of plant and machinery on site to prevent damage to surface waters, ground water, land and air.
GPP8: Safe storage and disposal of used oils.	The correct handling of waste during the construction period and during ongoing maintenance, including waste oils, must be safe and secure. Waste minimisation is the preferred option. Waste is regulated under the Duty of Care Regulations. Oil storage is regulated under the Oil Storage Regulations (see GPP2).
GPP13: Vehicle washing and cleaning.	Effluent and run-off from vehicle washing and cleaning can damage the environment and pollute rivers, streams, burns and ground water. It may be a legal requirement to arrange the collection and disposal of effluent and run off. If vehicle wash areas are required on site these should be managed appropriately.
/GPP19: Vehicles: Service and Repair.	The repair and maintenance of machinery and plant must be conducted in an appropriate location and properly managed.

Title	Details
PPG 20: Dewatering underground ducts and chambers	Protection of controlled waters during any dewatering works to avoid pollution.
GPP21: Pollution incident response planning.	Production of a plan will help to prevent or reduce environmental damage of such an incident occurs. A template is available to assist the production.
PPG 26: Safe Storage – drums and intermediate bulk containers (IBCs)	Good practice guidance for the safe storing and handling of small containers and IBCs to reduce the risk of pollution from sites to land, surface waters and ground water.

3.8.2 The Contractor shall make available a suitable quantity of pollution control equipment, including consumable items such as sorbent pads and sorbent granules or similar material. These materials shall be readily available at the Site always and a regular check during the weekly inspections made to see that they are available. Adequate provision shall be made to ensure that sorbent pads, booms and granules are kept dry prior to use.

3.8.3 The Contractor shall make provisions for access to more sophisticated containment/clean-up equipment such as sorbent booms, river booms etc.; which shall be 'boxed' and readily transportable at the construction base/site establishment and available for immediate dispatch to a spillage.

Storage and Handling Requirements

3.8.4 Details on the storage of waste will be provided in the SWMP. Facilities will be provided for the collection, segregation, treatment and disposal of solid and liquid waste.

3.8.5 The following measures shall be implemented on site for the storage of materials by the contractor:

- All oil and diesel storage facilities will be at least 10m from any watercourse including surface water drains; and at least 50m from any borehole or well; Oil storage containers include:
  - oil drums and fixed tanks
  - intermediate bulk containers (IBCs)
  - mobile bowsers - containers designed to store and dispense oil that can be moved between locations but not under their own power
  - some types of generator and transformer
- Spill kits and drip trays will be provided for all equipment and at locations where any liquids are stored and dispensed;
- All static Plant, such as pumps and generators, shall have integral drip-trays where possible or as a secondary requirement external drip trays, that are to be checked and emptied daily in accordance with the Pollution Prevention & Control Plan or Waste Management Plan. All drip trays for static Plant. refuelling and servicing shall be of sufficient size to retain 10% of the total volume of liquids being 'handled'. Interceptor drip trays shall only be used for oil based products. They are ineffective for water soluble products.
- For larger items of Plant or mobile Plant such as side-booms, excavators etc, where the continuous. use of drip trays is not practical, the Plant shall undergo

daily inspections by a competent person to check for defects, such as leaking hoses, interference by others etc. Records of inspections shall be maintained and held on file by the Contractor. Where defects are evident the item of Plant shall be removed from the Site immediately; and serviced or replaced as soon as possible.

- Storage facilities will be provided for solid materials, including waste soils, to prevent deterioration of the materials and their escape (via surface run off or wind blow);
- Storage facilities will be kept secure to prevent acts of vandalism that could result in leaks or spills; and
- All containers of any size will be correctly labelled indicating their contents and any hazard warning signs.

Fuel Tanks, Mobile Bowsers and Bunds

3.8.6 In accordance with the Control of Pollution (Oil Storage) (Wales) Regulations 2016 the following measures shall be implemented by the contractor:

- Fuel tanks and mobile bowsers (and any other equipment that contains oil and other fuels) shall have secondary containment,
- All tanks will be located in a sealed impervious bund;
- Fuel fill pipes will not extend beyond the bund wall and will have a lockable cap secured with a chain;
- Any tap or valve permanently attached to a tank or bowser through which fuel can discharge, will be fitted with a lock;
- Where fuel is delivered through a pipe permanently attached to a tank or bowser:
    - the pipe will be fitted with a manually operated pump or a valve at the delivery end which closes automatically when not in use;
    - the pump or valve will be fitted with a lock;
    - the pipe will be fitted with a lockable valve at the end where it leaves the tank or bowser;
    - the pipework will pass over and not through bund walls;
    - tanks and bunds will be protected from vehicle impact damage; and
    - tanks will be labelled with contents and capacity information.
- All valves, pumps and trigger guns will be turned off and locked when not in use.

3.8.7 Suitable precautions will be taken to prevent spillages from equipment containing small quantities of hazardous substances (for example, chainsaws and jerry cans) including:

- Each container or piece of equipment will be stored in its own drip tray made of a material suitable for the substance being handled; and
- Containers and equipment will be stored on a firm, level surface.

Drum Storage

3.8.8 In accordance with the Control of Pollution (Oil Storage) (Wales) Regulations 2016, where oil drums are over 200 litres it will be ensured that:

- Multiple drums and containers have suitable secondary containment with sufficient capacity to contain at least 25% of the total volume of the containers or 110% of the largest container, whichever is the greatest;

- Drum storage areas will be covered to prevent rainwater getting into bunds and drum pallets;
- Drums will be labelled and positioned such that leaks cannot overshoot the bund or drip tray wall; and
- All containers are stored securely when the site is unattended.

Flammable and Hazardous Substances

3.8.9 The Contractor shall ensure that all flammable and hazardous substances will be kept in accordance with the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended) and any substance specific safety data sheets, which would be expected to contain measures such as, within a secure bunded cupboard, cabinet or tank constructed of materials which are chemically resistant to its contents.

Deliveries and Dispensing

3.8.10 For deliveries and dispensing activities it will be ensured that:

- Site-specific procedures are in place for bulk deliveries;
- Delivery points and vehicle routes are clearly marked;
- Emergency procedures are displayed and a suitably sized spill kit is available at all delivery points, and staff are trained in these procedures and the use of spill kits;
- Suitable facilities (for example, drip trays, drum trolleys, funnels) meet the sites specific dispensing needs and are maintained and used;
- Tank capacities and current contents levels are checked prior to accepting a delivery to ensure that they are not overfilled;
- All deliveries are supervised throughout the delivery operation;
- Spill prevention equipment is used during dispensing activities; and
- All spillages occurring during dispensing and handling activities are cleared up and reported via the SHESQ Manager and are dealt with in accordance with Section 2.7 of this CEMP.

Vehicles and Plant

3.8.11 The Contractor shall ensure:

- Vehicles and plant provided for use on the site will be in good working order to ensure optimum fuel efficiency, and are free from leaks. Plant with integral bunding and/or drip trays will be specified;
- Throughout construction phase the Contractor shall ensure as a minimum that all vehicles that access the construction site shall carry an "Emergency Grab Pack"/ spill kit) for immediate use in the event of a pollution incident. All fuel bowsers and emergency vehicles shall carry larger spill kits including sorbent pads and sorbent material to deal with any small spillages, in addition to polythene sacks for gathering spent absorbents. The Contractor shall make provisions for access to more sophisticated containment/clean-up equipment such as sorbent booms, river booms etc.; which shall be 'boxed' and readily transportable at the construction base/ site establishment and available for immediate dispatch to a spillage.
- Any hired vehicles and plant will be checked on delivery and not accepted if they are not in good working order for example, leaking, excessive fumes, excessive noise and/or smoke;

- Vehicles and plant will be regularly maintained to ensure that they are working at optimum efficiency and are promptly repaired when not in good working order;
- Vehicles and plant will not park near or over drains;
- Employee- owned vehicles will not be driven or parked in construction areas unless authorised to do so;
- Fuel/ oil refilling of vehicles and plant will be carried out on hardstanding using drip trays and not over or near drains, or, where this is not reasonably practicable, drip trays and/or drain covers will be used to reduce the risk of spills;
- Vehicles and plant will not be overfilled with fuel; and
- Plant containing oils will be inspected daily and maintained to both prevent and identify leaks.

Road Sweeping

3.8.12 Road sweeping will be undertaken twice a week and as required to remove deposits of silt from roads and reduce the risk of silt being washed into surface water gullies and watercourses.

3.9 Geology, Soils and Contaminated Land

Contaminated Land

3.9.1 If temporary stockpiling of excavated/tunnelled materials is proposed by the Contractor, then it shall be required to segregate obviously contaminated materials and stockpile these separately from materials that are uncontaminated and/or suspected of being uncontaminated until verification testing has been undertaken. The Contractor shall stockpile materials displaying obvious signs of contamination on an impermeable surface and prevent leaching of contaminants to ground and water. The Contractors method for handling and stockpiling contaminated materials on site (including for example, containment measures, such as bunding, membranes, temporary drainage, and alternative pollution prevention methods) shall be forwarded to the Project Manager for approval prior to the commencement of such works.

3.9.2 The permanent storage of contaminated materials on site shall not be permitted.

3.9.3 The Contractor will ensure that:

- Suitable PPE and good hygiene practices are implemented to reduce risk to human health in areas of known contamination.
- Work will stop in the vicinity of any previously unidentified contamination encountered until the nature and concentration of the contaminant(s) are determined and appropriate risk control measures implemented.
- Clay bungs or other vertical barriers will be constructed within trench excavations where deemed necessary to prevent the creation of preferential drainage pathways or to prevent the creation of preferential migration pathways for contaminants (where suspected).
- Guidance on the assessment of risks from potentially contaminated land will be followed in line with the Model Procedures for the Management of Land Contamination (CLR11).

3.9.4 The contaminated land assessment as detailed in Chapter 10 (Geology, Soils and Contaminated Land) identifies the potential residual impact relating to the hazardous accumulation of ground gas. The Contractor shall undertake suitable ground investigation to ascertain the ground conditions at the Proposed Project areas including the assessment of soil conditions and a suitable programme of gas monitoring to ascertain the gas regime. The investigation should also include the assessment and potential remediation of contamination encountered.

Use of drilling / support fluids

3.9.5 The Contractor will be responsible for providing a specification of the type, volume and frequency of Tunnel Boring Machine (TBM) drilling fluids/additives to be used.

3.9.6 Drilling / tunnelling fluids shall be limited to either clean water or water-based muds with inert and non-toxic additives only. The Contractor must be able to demonstrate that any drilling fluids/additives shall be acceptable for use on the project by the prevailing Environmental Regulator (i.e. NRW). The Contractor to supply details of all such additives to the Environmental Regulator for their acceptance.

Soil Management Measures

3.9.7 During construction the principal impacts relate to the potential for contamination of soils or controlled waters through spillages during construction and damage to soils through construction activities and excavation works. Measures in relation to pollution prevention are outlined in Section 3.8 of this CEMP. The Contractor will follow DEFRA guidance (in particular, DEFRA Code of Good Agricultural Practice for the Protection of Soil, 1998) and will include, but not be restricted to, the following measures, where required:

- construction traffic will be restricted to operating on the designated access roads and not on unprotected soils;
- topsoil stripping will be restricted to the extent of the permanent and temporary elements of the Proposed Project (where required);
- appropriate geotextile membranes, wooden matting or aluminium trackways will be used over particularly sensitive areas;
- in peaty and soft saturated clay soils, where the use of geotextile membranes is not appropriate, wheeled vehicles may be fitted with low ground pressure bearing pneumatic tyres to allow a greater distribution of weight;
- soil loosening techniques such as deep-tine cultivation will be used to break up any compaction which has occurred;
- subsoil and different superficial deposits will be stored separately to prevent mixing and will be reinstated in reverse order of excavation;
- topsoil and subsoil movements will only be undertaken in suitable conditions, for example, when it is not too wet;
- soil stabilising methods will be undertaken to reduce the risk of erosion, the creation of leachate and potential water quality issues;
- early re-seeding of the reinstated ground will be undertaken to help re-establish and stabilise the structure of the topsoil; and
- soils will not be stockpiled within 10m of surface water features. Stockpiled soils will be protected by appropriate measures, for example, membranes, spraying or seeding to reduce the risk of windblown dust, surface water run-off and to reduce the risk of overland migration of silt and sediment to surface

waters. Any potentially contaminated soils should be covered and stored on an appropriate impermeable surface material.

- A buffer strip will be left along watercourse/ ditch banks to prevent the sediment yield generated by the works to enter the river system. Silt and sediment control and trapping measures would be used as appropriate
- Construction will not be undertaken during extreme wet weather where it may lead to erosion of sediments or could increase the risk of flooding.

Peat

3.9.8 A floating road will be required to access the proposed Cilfor SEC. '*Floating Roads On Peat', A Report into Good Practice in Design, Construction and Use of Floating Roads on Peat with particular reference to Wind Farm Developments in Scotland*' will be used with regard to the management of peat and referenced during construction in this area.

3.9.9 Contractors shall ensure that works are carried out in accordance with the Outline Peat Management Plan (PMP) (Appendix 6). The PMP includes the following information/ measures:

- Roles and responsibilities – a commitment to having in place individuals with sufficient training and expertise in assessing peat, peat condition and peat handling operations
- Baseline conditions – a peat depth map with the supporting depth data presented as an appendix, along with an assessment of the depth of acrotelmic peat (i.e. the surface peat layer) and a calculation of peat volumes which would be disturbed
- Peat excavation methodology – areas of peat within the footprint of the Proposed Project will have the surface horizon (acrotelm), with vegetation, stripped off as turves using a low ground pressure (tracked), long-reach 360° excavator (or similar). The turves will be a minimum of 0.3m in depth and, where practical, in excess of 0.5m x 1m in size. If possible, turves of up to 0.5m in thickness should be cut.
- Turfing will be used where the nature of the acrotelm ensures the turves will remain intact on handling. Where this is not possible the surface layer will be carefully scraped off with a non-toothed excavator bucket with the aim of maximising the size of intact clods of surface vegetation.
- Peat storage - to minimise handling and haulage distances, where possible excavated material will be re-used immediately. Where this is not possible it will be stored local to the site of excavation and/or local to the end–use site where it would be required. The exact storage location(s) will be set out prior to commencement of main phase of works.

3.10 Protection of the Water Environment (Marine and Terrestrial)

3.10.1 Appropriate industry best practice and published guidelines will be followed to reduce pollution and sediment movement during construction.

Surface Water Resources

3.10.2 The Contractor shall review the information in the Outline CEMP and the Environmental Appraisal and use it to develop a project specific Water Management Plan for the construction phase. Information in the Water Management Plan shall be updated to incorporate relevant findings from site

investigations and any water quality monitoring. When developing the Plan, the Contractor shall refer to the following publications CIRIA C648- Control of Water Pollution for linear construction projects. Technical Guidance dated 2006 and the accompanying site guide (CIRIA C649).

3.10.3 When documenting the Water Management Plan the Contractor shall do the following as a minimum but is not restricted to;

- List water treatment methods/technologies and identify which treatment methodologies are applicable for different conditions e.g. use in different soil types
- Have a system in place for separating, storing and disposing of clean water (for example from shaft dewatering if it has not come into contact with construction materials) and dirty water. Obtain any transfer or discharge licences associated with water discharges.
- Document areas at risk for water pollution from surface water run off. Best practice is to annotate strip maps to do this.
- Rank the risk areas.
- Use strip maps to identify and document the specific location and design of mitigation required to deal with "worst case scenario" for each area at risk.
- Establish the requirement for and the position of water stops.
- Construction activities may adversely affect the quality of surface water or ground water as a result of contaminated runoff, or spillages.

3.10.4 The Contractor shall provide 24hr water quality monitoring equipment with live alarm system. This shall be monitoring as a minimum dissolved oxygen, conductivity, pH, oxidation-reduction potential (ORP), temperature, and turbidity. The water monitoring equipment shall be located on the eastern and western construction compounds downstream of construction and discharge activities. The Contractor should also undertake visual daily checks, weekly inspections and monthly audits of nearby watercourses.

3.10.5 The Contractor shall take all necessary precautions to ensure that oil or other deleterious matter shall not enter any existing drainage system or water courses and shall not by his operations, pollute or injuriously affect any drainage systems, water supply, groundwater aquifers, streams, rivers or estuary. All liquids contaminated by oil or other deleterious matter shall be passed through approved interceptors to remove contamination.

3.10.6 The Contractor will prepare a Site Drainage Plan (SDP) to identify drainage arrangements and ensure adequate management of surface water run-off (including volume and quality) and prevent pollution of controlled waters. Best practice measures to be implemented include:

- A survey of the works area in consultation with the landowner/occupier. Where appropriate, pre-construction drainage will be installed. The design of the drainage will pay particular attention to the need to ensure that the drains do not act as pathways for contamination or cause flooding off-site, consulting with the Local Flood Authority wherever necessary. Permanent records of the land drain locations will be made and passed to the landowners/occupiers;
- Where the Proposed Project interacts with existing hydraulic structures, every effort will be made to preserve these in their current form, or else these will be refurbished and/or reinstated accordingly and the appropriate consents obtained;

- Geotextile to be used on the ground in the immediate vicinity of watercourse/ drain crossings to reduce damage to the surrounding ground and vegetation and reduce erosion;
- Permanent surface water/ agricultural drains will be re-installed to reinstate any pre-existing field drainage systems to pre-construction condition;
- Dewatering and discharge of water will be carefully controlled to prevent the risk of sediment laden run-off entering watercourses;
- Water removed from terrestrial excavations will be treated in a suitable manner to avoid the passage of silt into local watercourses. If there is a requirement to discharge to surface water an Environmental Permit will be sought from NRW prior to undertaking such operations; no silty water will be pumped directly into any watercourse but to be allowed to settle out (for example, in settlement lagoons) or filtered (for example, using straw bales to filter out coarse particles) prior to discharge;
- Where settlement or filtering is not practicable or effective, alternative disposal options will be considered, for example discharge onto a grassed area (with consent from the landowner and following NRW consultation), and discharge to foul sewer (with consent from the local sewerage undertaker);
- If clean water is discharged into a watercourse, a baffle will be fitted to the discharge point to prevent disturbance of the watercourse bed;
- Watercourses will be protected from surface water run-off by using French drains, cut off ditches, grips, silt fences or bunds round the edge of watercourses. Numerous small, passive mitigation measures will be installed in preference to one large treatment system to prevent large-scale water build-up;
- Existing and new surface water drains will be kept clear of silt or weed build-up;
- Roads and hard surfaces will be kept clean, to prevent a build-up of mud and sediment that could contaminate surface water;
- All soils will be stored a minimum of 10m from watercourses and any potentially contaminated soil will be stored on an impermeable surface and covered to reduce leachate generation and potential migration to surface waters;
- Clay bungs or other vertical barriers will be constructed within trench excavations where deemed necessary to prevent the creation of preferential drainage pathways or to prevent the creation of preferential migration pathways for contaminants (where suspected);
- Ensure construction compounds, areas of storage (with the exception of limited quantities of uncontaminated topsoil) and parking bays are located outside of any Source Protection Zone 1 (SPZ1) and the discharge location of construction runoff is not directed into SPZ1;
- Ensure construction compounds, areas of storage (including topsoil where possible) and parking bays are located outside of any areas vulnerable to flooding;
- No refuelling or storage of hazardous materials within 10m of a watercourse or 50m of a well, spring or borehole; and
- The SDP should be prepared in conjunction with the soil management measures outlined within this CEMP and may need to include temporary attenuation storage, infiltration drainage, and sediment trapping techniques as appropriate and should be driven by source control techniques where possible.

- The Contractors CEMP will contain pollution prevention measures to safeguard water quality in the Dwyryd Estuary during pylon and foundation removal activities.
- Where appropriate, and if required, watercourses or drains will be crossed by temporary/permanent hydraulic structures at right angles to the watercourse using as short a distance as possible while avoiding flow obstruction in order to minimise land surface disturbance and to reduce the cross-sectional area of the crossing. Temporary/permanent hydraulic structures (e.g. culverts/ flumes for crossings) would be appropriately sized, and construction timed, where possible, to coincide with periods of low flow. Temporary/permanent watercourse crossings will be implemented in accordance with the relevant Land Drainage Consent applications.
- All watercourse/ ditch crossing points would be visually inspected to ensure that construction (or otherwise) debris does not block the crossing point.
- After re-grading of the working areas to reflect the original profile, a replacement drainage scheme would be installed, where appropriate, following discussions with the landowner/ occupier. The design of these drainage schemes should pay particular attention to the need to ensure that the drains do not act as new pathways to watercourses for sediment/contamination or cause flooding off-site.

Groundwater Compliance

3.10.7 It is the Contractor's responsibility to ensure compliance with the Groundwater Regulations 1998 (SI 2746) and other relevant guidelines for protection of groundwater.

3.10.8 The Contractor shall gain the prior agreement of NRW for all shaft and tunnel construction materials, which are likely to come in contact with the groundwater. An inventory of the materials to be supplied and used for construction of the project shall be made available for audit.

3.10.9 In accordance with the Groundwater Regulations the Contractor shall implement procedures to:

- Prohibit the use of construction materials containing List I substances that come into contact with groundwater;
- Control the use of construction materials containing List II substances that come into contact with groundwater by demonstrating that List II substances do not leach out such as to create groundwater pollution, or otherwise prohibit their use.

3.10.10 Tests to demonstrate that listed substances do not leach out of construction materials may need to be conducted in order to satisfy NRW.

3.10.11 The Contractor shall develop detailed method statements, drawing from previous work and proven techniques and experience, which describe the construction processes and procedures to be used for the main components of the tunnel (shafts, tunnel, culverts, drive site) and define the chemical composition of materials to be used during the construction process. (Note: COSHH data on materials chemical composition shall not suffice). These method statements shall be submitted to the Project Manager for agreement with NRW. The Contractor is responsible for obtaining the NRW agreement at least three months prior to any procurement of resources.

Other Discharges

3.10.12 There is the potential that groundwater will be encountered whilst constructing the tunnel shafts, necessitating the requirement to remove ground water from the shafts during their construction and discharge to surface water (it should be noted that dewatering is only anticipated for a number of months and not for the full duration of construction activities). Potential discharge points for dewatering have been identified and are currently the subject of consultation with NRW. A network of existing drainage ditches exist in close proximity to each of the tunnel shafts.

3.10.13 It is currently unknow whether the water to be discharged will be fresh or saline due to the proximity to the Dwyryd Estuary. Groundwater monitoring undertaken to date does not indicate saline waters, however this cannot be ruled out or confirmed at this stage. Should saline waters be encountered whilst dewatering, pipe should be used to contain the saline waters from freshwater habitat until a point in the watercourse when brackish waters are encountered (as surface water features get closer to the Dwyryd Estuary, this location will depend upon the point in the tidal cycle).

3.10.14 It is currently anticipated that during tunnel construction, water inflows will be discharged through the western drive shaft. At this stage in the design the estimated average water inflows are as follows (although this may be subject to changes as the design evolves):

- Western shaft: 137 m^3/day over 34 days; and
- Eastern shaft: 268 m^3/day over 74 days.

3.10.15 Other effluents may be produced that need to be properly managed and controlled in order to prevent contamination of surface water or groundwater. As part of best practice measures, the Contractor will ensure that:

- Washing of equipment using detergent is carried out at commercial facilities only;
- Washing of vehicles and equipment without the use of detergent is only carried out at either commercial facilities, or at purpose-built wash stations where the water is contained for controlled disposal;
- All foul effluent will be contained; and the foul effluent container will be subject to daily inspection and a maintenance and emptying schedule as recommended by the manufacturer. The effluent will be removed by tanker and disposed of at a licensed facility.

3.10.16 The Contractor shall not be permitted to make discharges of any kind to watercourses or sewers without the prior written consent of the appropriate authority and shall comply with all their requirements in respect of discharges. Requests for permission to discharge to watercourses or sewers shall be made by the Contractor to NRW, Welsh Water, their Agents, or other appropriate authorities. Discharges to ground via soakaways shall not be permitted under any circumstances.

3.10.17 The Contractor shall provide settlement tanks of sufficient capacity to ensure that discharge water meets standards required by NRW, Welsh Water, or their Agents.

3.10.18 Space allowance has been made for the provision of reed beds as an additional water quality treatment method should this become a requirement by NRW.

3.10.19 The Contractor shall put in place special measures for the mixing of grout and washing out of grouting lines and equipment at all sites. Direct discharge of grout

washout into sewers is not permitted at any location. Temporary holding tanks shall be provided, by the Contractor, as required. Special measures are also required for areas where excavated material is stored. Any water within the excavated material and water run-off from the excavated material storage and transfer areas shall be passed through settlement tanks before disposal.

3.10.20 The Contractor shall put in place special measures for holding and disposal of possibly contaminated water extracted at shaft locations in accordance with the Water Act (and earlier Acts). The Contractor shall carry out regular monitoring for such contamination. Dewatering and disposal measures shall be agreed with the NRW and an Abstraction License shall be obtained by the Contractor.

3.10.21 The Contractor shall manage all surface water from paved areas or roofs, which shall otherwise flow into the working area and shall ensure that surface run-off is not permitted to enter any excavation. Pumping shall be provided as necessary.

3.10.22 The Contractor shall record details of all existing drains within excavated areas and the drains shall be reinstated where necessary on completion of the Works.

3.10.23 The Contractor shall, whilst he is responsible for the care of the Works, maintain all interior surfaces of pipes and manholes free from any liquid or solid deposits and shall prevent any such deposits from.

Drainage

3.10.24 Land drainage may be encountered and adversely affected during construction activities. To minimise impacts on the drains, the following best practice measures will be implemented:

- The measures in Section 3.9 of this CEMP (Soil Management) will be prepared in advance of construction to ensure protection, conservation and reinstatement of soil material, its physical and chemical properties and functional capacity for agricultural use;
- Following completion of construction operations all agricultural land will be fully reinstated to as near as practically possible to its former condition. Topsoil will be prepared and seeded using an appropriate seed mix or returned to previous cultivation;
- Permanent surface water/ agricultural drains will be re-installed to reinstate any pre-existing field drainage systems to pre-construction condition;
- Extended excavations will be arranged so as not to create preferential drainage pathways with the potential to cause flooding of lower land;
- Appropriate measures will be implemented such as the introduction of baffles or creation of sumps to reduce the risk of preferential drainage paths being created;
- Where drains are encountered they will be either repaired or diverted to ensure that preferential pathways are not created;
- Ensure that all reinstated surfaces have the same runoff properties and are at the same elevation as existing as far as practically feasible;
- The Contractor will be responsible for the development of a construction phase drainage strategy (referred to as Site Drainage Plan (SDP) in this document). This drainage strategy should be prepared in conjunction with the measures in Section 3.9 of this CEMP (Soil Management) and may need to include temporary attenuation storage, infiltration drainage, and sediment trapping

techniques as appropriate and should be driven by source control techniques where possible; and

Permitted Discharges

3.10.25 Discharges (including potentially uncontaminated surface water run-off) will require a permit from NRW (for discharges to controlled waters, including rivers, estuaries, other watercourses and soakaways) or the local sewerage undertaker (for discharges to sewer). A Transfer Licence may be required to discharge 'clean' groundwater from tunnel shafts to surface water systems. Discharges will not be made without prior consent from NRW or sewerage undertaker. To ensure discharges are appropriately authorised, the following best practice measures will be followed:

- Consult with the appropriate consenting body before any discharge is required from the site and obtain a permit, or where a permit is not required, obtain written confirmation that one is not required;
- Ensure that any permitted discharge is sampled and analysed at the frequency specified in the permit to ensure compliance and that monitoring results are kept. More frequent analysis may be required if analytical results indicate that limits are being approached or exceeded; and
- Ensure that the consenting body is advised if results indicate that limits are being exceeded and report the occurrence as an incident in accordance with the CEMP. Take immediate steps to rectify the situation; check receiving water for pollution resulting from exceedance; carry out any remediation works necessary.

Abstraction Licenses

3.10.26 Where water is required from a potable water supply or natural resource, an Abstraction Licence will be obtained from the local water company or NRW, as appropriate. As part of the best practice measures:

- Any necessary Abstraction Licences are obtained where required;
- Abstraction Licence conditions will be complied with; and
- Volumes of water abstracted will be recorded.

Flooding

3.10.27 A Flood Consequence Assessment (FCA) has been carried out (Flood Risk Assessment) as part of the Proposed Project as presented in Appendix 9A of the Environmental Appraisal. The FCA sets out mitigation measuresas follows:

- The Contractor shall make use of existing flood risk information to help to safely plan and manage the construction phase works in these areas;
- During construction check local and national weather forecasts, and NRW website (https://naturalresources.wales/flooding/check-flood-warnings/?lang=en) to check the live flood warning map (which is updated every 15 minutes to show flood alerts and warnings). The five-day flood outlook can also be checked on the NRW website);
- Show consideration for potential of groundwater flood risk;
- The development of a construction phase drainage strategy that may need to include temporary attenuation storage, infiltration drainage, and sediment trapping techniques as appropriate and should be driven by source control techniques where possible;

- The monitoring of groundwater has been undertaken prior to construction. There may be a requirement to continue this monitoring during and following construction to a) phase construction stage activities to avoid the need for significant groundwater de-watering as required; and b) assess the impact of the underground assets on the local groundwater levels;
- The location of access and egress routes will be designed to avoid areas at risk of flooding, wherever possible;
- Following the completion of all construction works, the land temporarily used within the working area will be fully reinstated as near as practically possible to its former condition, and where possible all reinstated surfaces will have the same runoff properties and elevation as existing or as agreed with landowners and stakeholders in advance (this will include the reinstatement of drainage ditches and existing culverts);
- Where possible, the temporary elements of the Proposed Project will be located outside the flood zones, the areas at risk of surface water flooding and the areas at risk of groundwater flooding, however it should be noted that the proposed location of the western tunnel head house compound falls within the 1 in 100 year (plus climate change) flood extent.
- Where possible, soils will be stored at least 10m away from watercourses, and outside of areas of floodplain. Where this is not possible, gaps will be provided in stored topsoil to prevent the impoundment of flood waters (all year around); best practice measures will be applied where required to ensure that stockpiled soil will not be eroded/ transported by overland flow and will not enter any water bodies (such as berms, vegetated strips and silt traps will be included where required);
- Regular monitoring will be put in place to ensure that mitigation measures function as intended and check on any drainage systems to ensure flows are not impeded. This can take the form of regular visual inspections to check that watercourses have not become blocked by debris and should be used to trigger immediate remedial action in the event of debris accumulation;
- Geotextile will be used on the ground in the immediate vicinity of watercourse/drain crossings to reduce damage to the surrounding ground and vegetation and reduce erosion;
- Ensure that access roads / routes, parking bays, hardstanding areas (i.e. those that may be required for temporary access, maintenance or repairs) are laid at existing elevations and not raised compared to existing or surrounding ground levels.

3.10.28 Details of evacuation plans would be developed prior to commencing construction and would detail the procedure to be followed once a flood warning is received:

- Evacuation of personnel from the working areas at risk of flooding – this is the primary safety consideration, and is the highest priority in the unlikely event that there is insufficient time to undertake the following activities;
- Making the site safe and prior to evacuation – this would include appropriate storage of equipment and materials, securing items within site compounds to prevent them being mobilised in flood water; and
- Removal of critical plant and equipment from Flood Zone 3 – this may be removal from the haul roads or from the compounds and could include raising critical items above the design flood level or removing them from the floodplain completely to a suitable alternative compound. At construction stage, the

Contractor would identify the need (or not) to remove equipment from working areas based on the flood warnings.

3.11 Land Use and Agriculture

3.11.1 The Proposed Project will lead to some permanent loss of land which will result in the potential for a permanent reduction in agricultural land area that can be farmed. The Contractor will produce a CEMP which will include a number of best practice techniques for the prevention of pollution, drainage and soil management which will also mitigate the potential effects to land use and agriculture.

3.11.2 Liaison with affected landowners will be undertaken with regard to identifying potential constraints and barriers to construction including providing temporary means of access to severed fields for animals and machinery.

3.11.3 The Contractor shall take all reasonable precautions to ensure that livestock is kept away from the construction zone and protected from dust, and excessive noise.

3.11.4 All land taken for the temporary works shall be reinstated back to its original condition upon completion of the main works.

3.11.5 With respect to the Cilfor construction compound, the Contractor shall seek to limit the creation of any temporary compounds. Those that are required must limit the damage to the land and demonstrate to the client that the size is required.

3.12 Historic Environment

3.12.1 The proposed project has the potential to result in direct permanent impacts to buried archaeological and cultural heritage remains as well as some adverse and beneficial setting effects. The Contractor shall minimise archaeological and heritage impacts during construction in accordance with relevant legislation and guidance and as advised by the relevant authorities and statutory undertakers. The Contractor shall adhere to the procedures and mitigation stated in Chapter 8 (Archaeology and Cultural Heritage) of the Environmental Appraisal.

3.12.2 In summary mitigation measures include:

- Undertake a watching brief by a professional archaeologist during construction to observe groundworks and provide an opportunity for the archaeological investigation and recording of any deposits of significance which are exposed.
- In all instances where archaeological remains are identified the creation of a permanent record will be required, including public dissemination of the results prior to their removal.

3.13 Traffic and Transport

3.13.1 An Outline Construction Traffic Management Plan (CTMP) has been prepared for the Proposed Project and is available in Appendix 4.The Proposed Project has looked to mitigate by design issues in relation to traffic and transport. Access locations have been selected to be located along routes that are suitable for the category of traffic proposed to use it. Accesses have been designed to accommodate the category of traffic to be served from each access. Visibility splays have been provided in accordance with TAN18 requirements and informed by speed survey data where relevant. Outline construction traffic routes have been

selected to reduce, where possible, traffic effects on links that would be more sensitive to changes in traffic volumes.

3.13.2 The Outline CTMP includes a list of mitigation measures to be implemented by the Contractor, location specific measures to be implemented include:

- Traffic management to be agreed with Highways Authority on the approach to the A497/NCR8 junction. This would include, if required, a temporary speed limit reduction, introduction of high-friction surfacing, and advanced warning signage.
- Carriageway widening along NCR8 route to tunnel head house access to provide passing places/ total carriageway width of 6.0m minimum.
- Traffic management along NCR8 route to include a temporary speed limit reduction, and advanced warning signage.
- The use of traffic marshals located at tunnel head house access and A497/ NCR8 to communicate presence of walkers and cyclists or to hold release of HGVs from site compound.
- Typical HGVs used for the construction of the Proposed Project would be to the required Euro Class and could have additional cycle friendly measures such as cameras, sideguards, full length door windows, blind spot warning systems and additional mirrors (Class V and Vi).
- Traffic management along A495N route to include advanced warning signage and temporary speed reduction to 30mph from Pont Briwet /A496 junction to site access.
- Where long distance walking routes (LDWRs) and cyclists cross the link, additional signage would be located to alert drivers to the presence of crossing.

3.13.3 During the pre-construction stage, the Contractor shall produce a detailed CTMP based on the Outline CTMP which is to be implemented and monitored throughout the construction programme. The detailed CTMP shall ensure that all traffic associated with the project's construction works operate in a safe and compliant manner at all times and shall be signed by the appointed Contractor and the relevant highway authority. The detailed CTMP shall include working procedures and measures to:

- Ensure the effects on local residents, properties, businesses and schools caused by construction traffic, where practicable, are kept to an absolute minimum;
- Maximise safety in all aspects of the project associated with the movement of traffic;
- Ensure all third-party traffic interfacing with the project are kept safe from the on-going works;
- Include clear liaison with the Local Authority regarding traffic caused by construction works;
- Identify suitable signage and traffic controls to be used for all access points; and
- Include a Driver Information Pack covering a variety of topics and providing information on the requirements of working on the project.

3.13.4 A copy of the access route plans shall be provided to all suppliers and haulage operators by the Contractor when orders are placed to ensure that drivers are fully briefed on the required route to take. The supplier would be made aware that these

routes are required to be followed at all times unless agreed or alternate diversions are in place.

3.14 Air Quality

3.14.1 A Dust Risk Assessment has been prepared and is provided in Appendix 7. The Contractor shall carry out work in accordance with this assessment and minimise air quality impacts from the construction works, particular attention will be given to the tunnel construction ventilation system, any spoil transport systems installed and mitigation measures to reduce the effect of dust and emissions from construction activities.

3.15 Noise and Vibration

3.15.1 The Contractor shall implement Best Practicable Means (BPM) as per recommendations set out in BS5228 (Code of practice for noise and vibration control on construction and open sites), Mineral Technical Advice Note (MTAN) 1 Wales and current guidelines set down by the Health and Safety Executive. The Contractor will comply with the noise regulations or restrictions imposed by the Local Authorities. The Contractor will apply to the Local Authorities for prior consent under Section 61 of the Control of Pollution Act for noisy activities. The Contractor shall implement all noise control measures required to meet any noise limits agreed with the Local Authorities. The Contractor will submit method statements for all demolition works to National Grid for approval. Demolition using explosives will not be permitted.

3.15.2 The Contractor shall bring to the site only plant conforming to relevant national, European Union or international standards, directives and recommendations on noise and vibration emissions. All generators and compressors used on the site shall be 'sound reduced' models fitted with acoustic linings and all ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers for types of plant and equipment whose noise emissions are governed by EC Directives, only plant bearing the appropriate conformity mark shall be used on site.

3.15.3 Any night time work will be limited as per the Section 61 agreement.

3.15.4 Without prejudice to the generality of the Contractor's obligations under BS5228 series, the Contractor shall comply in particular with the requirements set out herein.

3.15.5 (i) Details of all Contractors' equipment and its arrangement shall be submitted to National Grid prior to its delivery to site. All the Contractor's equipment shall be kept in good repair and condition and shall be powered by electrical motors unless otherwise approved by National Grid. Operations shall be stopped whenever unreasonable noise or disturbance results from faulty equipment. Faults to equipment shall be remedied by the Contractor immediately or the equipment shall be replaced.

3.15.6 (ii) Noise emitting equipment, which is required to be operated continuously, or at night, shall be electrically powered.

3.15.7 (iii) All powered equipment in intermittent use shall be shut down in the intervening periods between works or throttled down to a minimum required.

3.15.8 (iv) Prior to commencing work the Contractor is to undertake sound level readings to establish the background noise levels at the site at locations and for a period to be agreed with the Local Authority.

3.15.9 The Contractor will be required to implement a continuous noise and vibration monitoring system at the closest receptor to each Tunnel Head construction location. The system will be a web-based Live Leq system and provide for trigger levels to be set and early alerts to be sent by text to the Construction Manager and National Grid when trigger levels are reached. This will allow for timeous interventions in the event of exceedance of the agreed noise and vibration limits.

3.15.10 The need for additional long-term noise and vibration monitoring will be the subject of discussion between the Contractor, National Grid and the relevant planning authority prior to submission of any Section 61 application.

3.15.11 In addition to the continuous long-term monitoring, the Contractor will carry out monitoring to consider the transient works such as OHL dismantling. Random monthly noise surveys will be carried out to demonstrate compliance with the appropriate noise limits. The noise surveys will consider the construction programme and identify when noisier works are scheduled to be carried out close to noise sensitive receptor locations.

3.15.12 The Contractor will undertake sound level readings in the event of receipt of complaints regarding noise and/or vibration or as required by National Grid. The results of all noise readings shall be provided to National Grid. The Contractor shall comply with any additional measures required by National Grid to reduce noise and disturbance.

3.15.13 (v) Noise levels shall be monitored by the methods set out in Appendix E of BS5228 series. All measurements shall be made on a noise level meter to BS5969. BS7580-1:1997 shall also be referred to. When required, noise levels at any building subjected to noise resulting from any operation by the Contractor either on or off site and concerned in any way with the Proposed Project shall be measured 1m from the nearest facade.

3.15.14 (vi) All temporary ventilation fans shall be sited down shafts and inlet / outlet ducts baffled to reduce noise levels.

3.15.15 (vii) The Contractor shall ensure that audible warning systems, e.g. vehicle reversing sirens, are switched to a setting, which is compatible with Health and Safety Executive requirements.

3.15.16 The use of metal chains shall be avoided during night time working (1900 to 0700).

3.15.17 The Contractor shall undertake to keep site noise to a minimum and must carry out all works with the local community in mind. All lorries, generators and plant/machinery must be switched off when not in use. If required by the Local Authority, the Contractor will be expected to demonstrate the efficacy of his proposals, demonstrating that they will not give rise to nuisance nor generate noise audible at the site boundaries outside of permitted working hours. The Contractor will undertake random noise readings, if required by the Local Authority or National Grid. Depending on noise levels at the site, loading or unloading bays may have to be housed in suitable acoustic structures.

3.15.18 For all construction activities the following construction noise limits as set out in Section E5 of BS5228 will apply (subject to any alternate agreement in terms of a Section 61 Consent.):

- 65 dB for daytime
- 55 dB for evening and weekends (Saturday after 1pm and Sunday)
- 45 dB for night-time

3.15.19 A noise assessment will be undertaken as part of the environmental assessment that will identify any specific locations requiring additional noise mitigation, The Contractor will ensure that this is implemented.

Operational Noise

3.15.20 The design should allow for a Noise Rating level LAeq r,T of 32 dB at night as a target level at receptors; this is subject to agreement with the Local Planning Authority and further modelling and assessment.

3.16 Vibration

3.16.1 Vibration monitoring is to be carried out at the closest receptor to each Tunnel Head House in conjunction with the continuous noise monitoring at a location to be agreed with the Local Planning Authority.

3.16.2 The monitoring will be required for the duration of the construction and sinking of the tunnel shaft or as stipulated by the Local Planning Authority in any associated Section 61 Consent.

3.16.3 The vibration monitor will be linked to the Live Leq system so that vibration data can be viewed in real time. The vibration monitor would need to record both Peak Particle Velocity (PPV) and Vibration Dose Values (VDV).

3.16.4 As tunnelling works progress the Contractor will be required to carry out spot checks on vibration levels at receptor locations proximate to the TBM location.

3.17 Public Rights of Way

3.17.1 There are a number of PRoW across the site that potentially will require temporary diversion or restricted access during construction. The CTMP will outline mitigation measures to be implemented during construction. The Contractor shall ensure that the measures outlined in this plan are incorporated. The Contractor is responsible for all agreeing all PRoW closures/ diversions.

3.18 Terrestrial Biodiversity and Nature Conservation

3.18.1 Prior to any stage of construction works commencing an appropriately qualified Ecological Clerk(s) of Works (ECoW) will be appointed by the contractor who will be responsible for ensuring that any mitigation proposed in the Environmental Appraisal is implemented.

3.18.2 The following ecological sensitivities are present in the Eastern Tunnel Head House Compound:

- Reptiles
- Peat/ Mire Valley Habitat

3.18.3 Works at the Eastern Tunnel Head House Compound will be undertaken following a programme of reptile translocation. Reptiles will be excluded from the working area using reptile fencing under an agreed method statement (see Appendix 8). Fencing should be erected to make sure reptiles can't pass over, under or through the fencing., e.g. by keeping vegetation close to the fence short on both sides. The fencing will be erected and maintained by the Contractor in working order

throughout the construction phase to exclude reptiles from the working area. 2km of reptile fencing will be required. Reptile translocation can take place April to June or in September.

3.18.4 The following ecological sensitivities are present in the Western Tunnel Head House Compound:

- Potential indirect effects on the Meirionnydd Oakwoods and Bat Sites Special Area of Conservation (SAC);
- Potential indirect effects on Glaslyn Site of Special Scientific Interest (SSSI)
- Potential indirect effects on Ysbyty Bron Y Garth SSSI
- Japanese Knotweed
- Reptiles and Bats.

3.18.5 Embedded mitigation taken into account within Chapter 7 of the Environmental Appraisal incluides the following:

- The use of artificial light will be minimised to that required for safe working with down lighting to minimise light scatter. Night-time lighting during construction phases will be avoided in all ecologically sensitive areas i.e. adjacent to Meirionnydd Oakwoods and Bat Sites SAC and Bron Y Garth SSSI. These dark areas will reduce the impact on bats allowing free bat movement foraging and roosting sites. Cowls will be fitted to lighting to assist in preventing light spill on to sensitive habitats.
- Measures contained in relevant DEFRA and Environment Agency best practice guidance on the control and removal of invasive weed species will be implemented.
- National Grid have made a commitment not to undertake the proposed works within the Dwyryd Estuary to remove the OHL during the winter bird season.
- Following the completion of all construction works, the land temporarily used within the working area will be fully reinstated as near as practically possible to its former condition or as agreed with landowners and stakeholders in advance (this will include the reinstatement of most stretches of drainage ditches and existing culverts).
- Trees which will have been removed during the construction period will be replanted as part of the landscape mitigation planting. Trees will not be planted above or within 3m of the cables to avoid the risk of damage to the cable by tree roots. Areas of habitat will be restored to equivalent habitat condition post-construction. Restoration will seek to replace vegetation with the same species identified in the extended Phase 1 habitat survey as far as is practicable.

3.18.6 Additional ecological mitigation includes the following as detailed in Chapter 7 of the Environmental Appraisal:

- Contractors and site staff will receive a tool box talk on the various ecological sensitivities of the development as part of their site induction.
- Ecological watching briefs would be used where impacts on habitat suitable for polecat or hedgehog cannot be completely avoided. This includes areas inside the Site Boundary that include hedgerow, scrub and rough grassland.
- The Contractor, in compliance with the Protection of Badgers Act 1992 (any work within 30m of an active badger sett requires a licence from NRW) shall authorise an appropriately qualified person to undertake a badger survey prior to construction works as part of any preconstruction site walkover surveys. The timing of the survey is critical as there is a seasonal element relating to

breeding periods and surveys cannot be undertaken too far in advance of the intended works. Should the presence of badgers or their setts be recorded during the survey then the appropriate course of action will be taken in full consultation with a qualified ecologist and, where required, NRW.

- The requirement for licences to close setts will be reviewed following these surveys. Based on current known sett locations, all construction works (excluding OHL removal) will be able to allow a 30m standoff from active badger setts. For OHL removal (or and new setts dug within 30m of other construction activities), mitigation would be implemented to minimise disturbance. If it is necessary to exclude badgers from a sett, a method statement would be prepared and a licence would be required from NRW.
- Open excavations will be fenced to prevent access by Badgers (and other protected species). A ramp will be installed in any excavations that are left open over night to enable any trapped animals to escape.
- Where night time working is essential only the minimal level of night-time lighting for safety purposes would be implemented and these would be directed away from linear features that could be used by bats for navigation. The use of artificial light will be minimised to that required for safe working with down lighting to minimise light scatter. Bat boxes will be installed to increase the availability of roosting sites.
- Habitats suitable for breeding birds will be removed outside of the breeding season (March to August inclusive). Any habitats that are to be removed during the breeding season will be checked by an ecologist immediately prior to removal. Bird boxes will be installed to compensate for the loss of breeding sites.
- For large areas of loss of habitat suitable for reptiles, a translocation, using exclusion fencing, will take place to move reptiles (and any other species found e.g. Toads) away from the construction zone. Details for reptile mitigation, including translocation areas and proposed a receptor site, are provided in the Reptile Method Statement (see Appendix 8). Hibernacula will be constructed in retained habitat to provide an improvement in habitat quality for reptiles. The fence will remain in place throughout construction in these areas.
- For small areas of loss of habitat suitable for reptiles, works will take place following a detailed method statement, including habitat manipulation, hand searching and exclusion fencing.
- Assent and method statements for works in the Ysbyty Bron Y Garth SSSI and the discharge outfall into Glaslyn SSSI will be required for the construction of the project. These will require approval from Natural Resources Wales.

Invasive Species

3.18.7 Invasive species have been identified within the footprint of the Proposed Project, in particular in the vicinity of the Western Tunnel Head House Compound. Japanese Knotweed is the most abundant invasive species identified, but there are also stands of Montbretia and Indian Balsam as well as an area of Virginia-creeper.

3.18.8 A biosecurity risk assessment and working method statement has been prepared by National Grid to minimise the risk of the introduction of invasive non-native species occurring as a result of the works (provided in Appendix 5).

3.18.9 The Contractor will ensure all site personnel are vigilant with regards to awareness of measures contained within the Biosecurity Risk Assessment through site briefings, inductions, training and tool box talks.

3.18.10 The measures within the biosecurity risk assessment must be abided by the contractor throughout construction of the Proposed Project.

Trees

3.18.11 A Stage 1 and 2 Aboricultural Report has been prepared as part of the Proposed Project (see Appendix 6D of the Enviromental Appraisal). An Arboricultural Method Statement (AMS) (Stage 3) will be required and will detail the location and nature of protective fencing, signage, timings, supervision requirements and methods of works and other protection measures.

3.18.12 All trees for removal or trimming shall be clearly marked and agreed on site with the Project Manager prior to removal or trimming. The Contractor shall adhere to the National Joint Utilities Group Guidelines for Protection of Trees. An adequate protection zone in accordance with the guidelines is to be set up around the trees in order to ensure branch and root system protection. The protection zone shall be cordoned off. The Client reserves the right to instruct the Contractor to appoint an ecologist or qualified arboricultural specialist to verify adherence to the guidelines and that adequate protection is in place. All tree cutting/surgery and tree planting shall be conducted by specialist contractors approved by the Client prior to the Works commencing.

3.18.13 The Contractor shall undertake tree and shrub (or other bird nesting material) removal/ outside of the bird-breeding season (February — July inclusive), therefore any applicable work shall be undertaken prior to the mobilisation for the main site works. Alternatively vegetation will be examined for active nests by an ecologist immediately prior to removal. All trees and hedgerows vulnerable to the proposed works will be protected with temporary protective fencing allowing for the minimum protective distances in accordance with British Standard (BS) 5837: 2005 'Trees in relation to construction'. Protective fencing will prevent traffic within the canopy spread of the trees and ensure that compaction of roots is kept to a minimum.

3.18.14 The Contractor may need to undertake pruning at an appropriate time of year (i.e. outside the bird-breeding season). This work shall be carried out under the direction of a qualified arborist appointed by the Contractor.

3.19 Marine

3.19.1 A significant proportion of the above measures will apply in the marine environment. However the contractor should give particular focus to the following whilst working in/on the estuary and saltmarsh.

3.19.2 Prior to any stage of construction works commencing an appropriately qualified Ecological Clerk(s) of Works (ECoW) will be appointed by the contractor who will be responsible for ensuring effective implementation of the construction methodology plan and any mitigation proposed in the Environmental Appraisal.

3.19.3 During pre-construction the ECoW will survey access routes to identify rare plant species; to ensure rare plants are not disturbed. Any plants identified as at risk from the access tracks and work areas will be relocated, or an exclusion area established around them.

3.19.4 The Contractor will undertake a photographic survey to illustrate the current (i.e. pre-commencement) condition of the working area. Photographic survey will be undertaken to demonstrate the condition of the site directly following installation works.

3.19.5 Prior to commencing excavation works at Pylon 4ZC031 the top layer of Atlantic salt meadows / saltmarsh will be temporarily translocated within the marine environment and maintained (to be agreed with NRW). Locally sourced sediment (source to be agreed with NRW) will be used to backfill the depressions. The translocated Atlantic salt meadows / saltmarsh turf will be replaced to restore the habitat.

3.19.6 The Contractor shall programme all works to remove the OHL that are located on the estuary outside of the wintering bird season (1 November – 31 March).

3.19.7 During saltmarsh works all vehicles will be confined to the temporary access trackways to avoid ground compaction. The Contractor shall also ensure that plant and personnel are constrained to a defined working corridor thereby minimising damage and disturbance to ecological receptors. The length of time that trackway will be left in situ in the marine environment will be for the duration nessesary to complete the work and will be minimised where possible.

3.19.8 The Contractor will construct a temporary working platform in the estuary out of boulders or textile bags filled with granular material. The temporary working platform will be constructed in such a way so as to enable all materials to be removed post works. The suitability of the material for construction of the working platform will be discussed and agreed with NRW.

3.19.9 The Contractor shall ensure that there is enough time in works programme and appropriate machinery is available to fully remove any material or infrastructure placed within the estuary, e.g. working platforms.

3.19.10 A Protocol for Archaeological Discoveries (PAD) will be implemented during installation of temporary access ways and the excavation and removal of the pylon foundations.

3.19.11 Contractors shall observe the proposed 100m radius Archaeological Exclusion Zone (AEZ) centred on the recorded amphibious vehicle wreck location.

3.19.12 The Contractor will comply with any conditions within the Marine Licence and associated consents.

3.19.13 The Contactor will ensure that the excavated area around each pylon pile is reduced as much as practicable.

3.19.14 The Contractor will confirm if a ‘soft-start’ is possible with the equipment being used and where conceivable employ a ‘soft-start’ to all noisy activities. Each time the activity is started up after a period of inactivity, the noise levels will be gradually increased over a period of 30 minutes to allow birds (and other animals) to relocate.

3.19.15 Excavated sediment will be set aside to backfill the removed pylon piles following completion of the removal works.

3.19.16 The Contractor will ensure compliance with relevant Guidance for Pollution Prevention (GPP), including that on above ground oil storage tanks, works and maintenance in or near water, pollution incident response plans and dealing with spills (e.g. GPP2, GPP5, GP21, GP22,).

3.19.17 The Contractor shall include measures to minimise the risk of accidental release of litter into the marine licence application area.

3.19.18 The Contractor will ensure that there is no refueling of equipment within the marine licence application area. Stockpiling of chemicals/fuel and other materials will be conducted away from the river/estuary (at least 50 meter from the high tide mark), using appropriate containers situated on a bunded waterproof surface. The area will also be covered to avoid washout from rain.

3.19.19 All activities are to comply with Environmental Permitting Regulations (2010) and The Water Environment (Water Framework Directive) (England and Wales) Regulations (2017), and be conducted in line with, Environmental Permits, Marine Licences, the submitted Water Framework Diretive Assessment and other relevant consents.

3.19.20 The Contractor shall make provisions for access to containment/clean-up equipment for use in the marine environment such as booms; which shall be 'boxed' and readily transportable at the construction base/site and available for immediate dispatch to a spillage.

3.19.21 The Contractors CEMP will contain pollution prevention measures to safeguard water quality in the Dwyryd Estuary during pylon and foundation removal activities.

3.19.22 All estuary-based works will be suspended at high-tide and equipment removed to a place above anticipated water level. Plastic/aluminium panels used to create the tempory access roads will be securely fastened to avoid being dislodged at high-tide.

Appendix 1:

National Grid's Environmental Sustainability Policy

Environmental Sustainability Policy

"It is essential to me as CEO that we operate in an environmentally sustainable way because we know it's the right thing to do – for society, the environment and our business.

Everyone at National Grid has a role to play in proactively supporting the environment in the way we work. We must also be honest and drive for better performance in the way we respond and learn when things don't go right".

John Pettigrew, Chief Executive

We take our responsibilities for Environmental Sustainability very seriously. As a minimum, we will meet our compliance obligations. However, we aspire to world class performance.

Scope

Our Environmental Sustainability Policy applies to you if you are employed by, or carry out work on behalf of any National Grid business.

We commit to

- Identifying our environmental risks, including climate change, and developing plans to mitigate them.
- Protecting the environment by ensuring prevention of pollution is a key consideration in the design of all our assets.
- Using resources more efficiently by using sustainable materials and reducing waste.
- Identifying opportunities to use alternatives to hazardous materials.
- Seeking ways to enhance the natural value of the areas we work for the benefit of local communities and the environment.
- Ensuring all our employees have the training, skills, knowledge and resources necessary to achieve the requirements of our internal standards.
- Setting expectations of those who work on our behalf to demonstrate the same commitment to the environment as we do and working with our supply chain to contribute to the delivery of 'Our Contribution' targets.
- Continually improving the Environmental Management System by reviewing and challenging our performance using feedback from stakeholders and benchmarking against our contemporaries.

For details on the minimum performance requirements for National Grid employees to meet this policy, see our Environmental Sustainability BMS standard in the National Grid book

Date: 14 March 2019. Version 1.0

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Appendix 2:

National Grid's Environmental Management System (EMS)

Sustainable by Choice

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Environmental Management System e-Manual

Contents

1. Scope and purpose

This document provides the scope, description and interaction of the main elements of the National Grid Environmental Management System.

The scope of the National Grid ISO 14001 Environmental Management System, which is documented on the ISO 14001 certificate and available, if requested, to the public is: All National Grid UK regulated and non-regulated activities including design, development, construction, maintenance and operation of gas and electricity transmission, National Grid Ventures, corporate and commercial property.

2. Terminology and abbreviations

Term	Definition
CH_4	Methane, a potent greenhouse gas.
Interested Parties	A person or organisation that can affect, be affected by, or perceive themselves to be affected by a decision or activity. Interested parties could include customers, community, suppliers, regulators, non-governmental organisations, investors and/or employees.
LNG	Liquefied Natural Gas.
OFGEM	Office of Gas and Electricity Markets; the Government regulator for gas and electricity.
SF_6	Sulphur Hexafluoride, a gaseous electrical insulator used in switchgear at electricity substations.

3. Versions and updates

Description	Date of revision	Revision Number	Approved By
New SHE Procedure to formalise the Environmental Management System emanual into the SMS. Additions have been made as follows: 2.1 Section on responsibilities updated 2.2 & 2.4 & 2.5 Reference made to Source-Pathway-Receptor model 2.8 Section on document control expanded	June 2010	Rev 1	Steve Wallace, SHEPAG
Updated to provide the scope, a brief description and the interaction of the main elements of the National Grid Environmental Management System	February 2014	Rev 2	Stuart Bailey, Head of Sustainability and Climate Change
Updated to add recently added procedure numbers to the document	December 2015	Rev 3	Stuart Bailey, Head of Sustainability and Climate Change
Updated to new format, review of Gas Distribution amendments and modifications required for the ISO14001:2015 standard	March 2017	Rev 4	Stuart Bailey, Group Head of Environmental Sustainability
Updated to reflect BMS standards and internal issues	August 2018	Rev 5	Steve Thompson, Environment Sustainability Manager

4. Context of the organisation

4.1. Understanding the organisation and its context

National Grid is one of the largest investor-owned utilities focused on transmission and distribution activities in electricity and gas in the UK and US. We play a vital role in connecting millions of people to the energy they use, safely, reliably and efficiently.

We own and manage the grids that connect people to the energy they need, from whatever source. In Great Britain (GB) we run systems that deliver gas and electricity to millions of people, businesses and communities.

We own and operate the high-voltage electricity transmission system in England and Wales. That includes around 7,200 kilometres of overhead line, about 650 kilometres of underground cable and 342 substations.

As Great Britain's System Operator (SO) we make sure gas and electricity is transported safely and efficiently from where it's produced to where it's consumed. We seek to ensure that supply and demand are balanced in real-time and we facilitate the connection of assets to the transmission system.

Our other activities relate to non-regulated businesses and other commercial operations not included within the business segments including: interconnectors; UK-based gas metering activities; UK property management; a UK LNG import terminal; and corporate activities.

The energy landscape in which we operate is undergoing a period of significant change. In 2017, Great Britain achieved the first ever working day without coal power since the Industrial Revolution and broke 13 clean energy records. These milestones illustrate the rate of change.

National Grid plays an important role in the sustainable development of Great Britain's energy sector. Our stakeholders expect us to deliver energy sustainably while balancing that with the need to provide security and affordability. It's National Grid's job to facilitate an energy system that delivers value for consumers and society.

We're developing an operational model that is in harmony with a low-carbon future by ensuring that low-carbon and renewable energy can be connected to the network, thereby significantly reducing the environmental impact of our day-to-day operations.

The UK's commitment to the 2015 Paris Agreement and its long-term objective of a 2050 decarbonised economy has made the transition to a decarbonised energy system essential. National Grid plays a dual role in this challenge:

- as the Transmission Owner (TO) and System Operator (SO), we connect and support the operation and connection of low-carbon energy
- as an infrastructure business, we design, build and manage assets in a sustainable, affordable way while ensuring security of supply.

We also recognise that a sustainable approach can benefit from innovative thinking, so 'leading innovation' is an essential part of our strategy to improve performance.

These can be demonstrated in the development of the National Grid Standards, particularly the Environmental Sustainability Standard, that sits within the National Grid BMS.

National Grid Standards, set out what is important to us and what good looks like, they will focus on the areas of greatest value or highest risk and align to and support our values of ‘Doing the right thing’ and ‘finding a better way’?

The principles of Environmental Sustainability are wholly aligned with ‘Doing the right thing’ and ‘Finding a better way’. Looking for ways of reducing risk, our carbon footprint, resource use and waste produced also help to ensure the future availability of resources, whilst reducing cost to the business.

The new Environmental Sustainability BMS standard enables the business to take the next step from doing the right by ensuring compliance and working on sustainability projects to ensuring sustainability is embedded into business processes and leaders understand their accountabilities

As part of the Business Management System and Environmental Management System National Grid has established an understanding of the important issues that can affect, either positively or negatively, the way National Grid manages its environmental responsibilities. The issues of interest are those that affect National Grid's ability to achieve the strategic objectives which are appropriate to this EMS and that affect National Grid's ability to meet the commitments of it’s Environmental Policy.

The current external factors that may impact or influence the ability of National Grid to achieve the intended outcomes of our environmental management system include:

- The changing portfolio of energy generation, predominantly the move away from baseload and two-shifting generation and towards a more decentralised, intermittent system, and the significant impact that will have on network operations and design, as well as the inherent impact this change in operations will have, for example line losses and visual amenity,
- The changing demand profile of energy use in the UK, the reduction in the morning and evening peaks as consumers spread their usage out by implementing Smart technology and demand side response becomes more prevalent, and the significant impact that will have on network operations i.e. electrification of the UK,
- Environmental and Climatic Change may impact the operations and management of our assets, for example flooding and increasing temperature differentials can impact the operation of our assets and how the surrounding environment interacts with them,
- Changes and developments in technology may have an impact on the operation of the network e.g. ‘Smart’ technology,

- Changes in the Regulatory landscape of environmental policy and regulation may have an impact on the operations and management of the business entity assets,
- Brexit may have an impact on environmental legislation to which we conform as well as the operations of our cross EU enterprises, for example our interconnectors,
- Negative publicity regarding the energy industry and its impact on the environment and therefore any potential publicity or campaigning may lead to a drop in share price and concern amongst markets and investors (affecting interested parties, shareholders, and stakeholders).

Internal issues that may impact National Grids ability to achieve the intended outcomes of the EMS include:

- The standard operation of our networks and other businesses has the potential to have a significant environmental impact, both locally and globally, from Greenhouse Gas emissions (CH_4 and SF_6 losses) and oil losses to large development projects. If not well managed all of these activities have the potential to prevent National Grid from achieving the ambition of being a recognised leader in sustainable energy infrastructure,
- The launch of the refreshed sustainability strategy 'Our Contribution', has refocused the business on the need to integrate sustainable practices into day-to-day business, that reducing carbon, waste and resource use, as well as our impact on the natural environment are all good business practices,
- The recent and ongoing structural changes to the organisation, there is the potential to lose focus on achieving environmental and sustainability objectives and targets,
- The legal separation of the System Operator from the Transmission Owner means that there is significant uncertainty in areas of the business and the potential to lose focus on who is responsible for delivering on objectives and targets,
- Focus on the business purpose and priorities were refined in 2017, looking to focus on delivering for the customer and ensuring smooth business practices to increase efficiency.

4.2. Understanding the needs and expectations of interested parties

Success in achieving our company ambitions demands that we focus on the needs of our stakeholders in everything we do. Stakeholders are active and empowered in the markets we operate in and their expectations are set by comparisons to peer utilities, other companies and organisations that they deal with, and their own expectations.

We must engage more effectively with stakeholders to deliver on their expectations. Failure to meet their requirements will limit our ability to operate and grow in existing markets and could risk existing stakeholders disengaging from us.

To ensure our stakeholder engagement activities are systematically aligned to National Grid's long-term strategy, Policy Review Groups have been established to link businesses' stakeholder engagement priorities to key policy issues that will be used to help shape the debate.

While Corporate Affairs take the lead shaping the debate on major external stakeholder issues, businesses also need to engage with stakeholders on a daily basis in order to deliver on their priorities.

Although there are clear linkages between how we need to engage our customers and our stakeholders, there are also differences in how we need to manage these groups.

In recognition of the importance of this the Stakeholder Engagement Standard has been developed as part of the BMS and is applicable to all in National Grid who engage physically or digitally with stakeholders.

The Stakeholder Engagement Standard requires compliance with 'Our Code of Ethical Business Conduct' which provides mandatory guidance on how we conduct our stakeholder interactions. Supported by this, review of stakeholder engagement best practice has allowed us to develop three core principles that stakeholders can expect from us.

- **Principle 1:** Stakeholder engagement is integral to our governance and will add value to National Grid and its stakeholders by focusing on material issues.
- **Principle 2:** Stakeholder engagement must have a clearly defined scope that creates opportunities for transparent dialogues leading to an agreed decision-making process.
- **Principle 3:** The stakeholder engagement process must be appropriate to the stakeholder and performed in a timely, flexible and responsive manner.

Our promises are that we will:

- listen to our stakeholders' views so we can understand what they need and expect
- proactively engage and build trust through close working relationships based on openness and honesty
- help them understand our business by clearly explaining our perspectives and how these may influence our overall decision-making
- work together to find innovative ways of building a network for the future
- take responsibility for delivering what we say we'll deliver and do even better wherever we can
- act on feedback.

Due to the geographically diverse nature of its activities the National Grid business communicates with a wide range of stakeholders to ensure relevant environmental requirements and concerns are addressed in the way the business carries out its activities.

Liaison with regulators remains a strong focus area. During 2017/18 we have continued to be an active member of the Energy Networks Association Environment Committee which allows us to strengthen our relationship with the Environment Agency, particularly around areas such as Fluid Filled Cables and SF6 management.

As part of supporting and informing the RIIO t2 negotiations, we have undertaken an environment and sustainability joint Electricity and Gas external stakeholder workshop. The stakeholders included representatives from our customers, suppliers and regulators, both OFGEM and Environmental.

Key Stakeholders who have been identified as having an interest in National Grids environmental management performance are outlined in Appendix 1.

4.2.4 Determining compliance obligations

Environmental legislative and other requirements that are applicable to National Grid's activities, products and services are reviewed using the Environmental Aspects Register against applicable environmental legislation.

The identification of applicable legal and other requirements are identified through a variety of sources, which include:

- Governmental bodies;
- Professional bodies;
- Regulatory bodies;
- Industry associations; and
- Stakeholder expectations.

Some identified legal and other requirements may address a range of issues in addition to environmental matters, however, only the sections that relate to National Grid's environmental aspects are referred too.

The identified legal and other requirements are kept in a Legal and Other Requirements Register. In addition, Legal and Other Requirement Profile Pages which summarise the applicable regulatory and other requirements are created and readily available.

To ensure that National Grid keep abreast of new or changes to legislation and/or other requirements relating to the activities, products or services of National Grid a variety of sources, including those mentioned above are used. The 'What's on the Horizon' process or SHE bulletins are used to ensure new or changes to legislation are communicated to the relevant Business Entities impacted.

The Legal and Other Requirements Register and Legal and Other Requirement Profile Pages are reviewed on a 6-monthly basis as well as being updated when new or changes to current legislation and/or other requirements are implemented.

As well as legal requirements, National Grid has set stretching corporate targets around three key areas of environmental sustainability which form our 'other requirements'.

National Grid's environmental sustainability ambition 'Our Contribution' sets out specific and measurable environmental targets. National Grid's focus is on making significant progress in three areas:

1. Our Climate Commitment: We have challenging, long-term GHG reduction targets. By 2050, we have a target to reduce our greenhouse gas emissions by 80% (from a 1990 baseline), with an interim target of 45% reduction by 2020.

2. Responsible Resource Use: Our goal is to re-use or recycle 100% of recovered assets by 2020 and send zero office waste to landfill by 2020 (at our 10 largest owned sites in the UK and US)

3. Caring for the Environment: We have a goal to deliver sustainability action plans at 50 sites by 2050 and to drive Net Gain in environmental value (including biodiversity) on major construction projects by 2020.

With 'Our Contribution', we're working to respond to global environmental and social challenges, minimise risk, and continue to deliver the service our customers rely on. National Grid is accountable for the successful completion of these targets and therefore progress made is communicated annually via the Annual Report and Accounts to make it accessible to all stakeholders interested in the progress made on our targets.

Each business entity has their own division of these targets and is tasked with setting plans on how to achieve them.

5. Leadership

5.1. Leadership and commitment

Commitment, responsiveness and active support is provided by National Grid's Top Management to ensure the success of the Environmental Management System.

The UK Board has overall responsibility for establishing, implementing and maintaining the EMS. It's also responsible for setting objectives for our operations and ensuring that environmental and sustainability matters are integral to how we operate our company.

The Head of Safety, Health and Sustainability (SHS), supports the Board, Executive and UK SHE committees in delivering strategy, setting standards and targets across the company, and making sure the EMS meets the appropriate international standard ISO14001 (2015).

Across the company, SHE committees at executive and business unit level oversee, assure and monitor environmental performance. In the UK, the Executive SEH Committee operates at the highest level. It is a subset of the Board and is the key governance body for environmental management. It meets quarterly and members include the Chairman and CEO.

5.2. Environmental policy

The National Grid Environmental Sustainability Standard acts as the Environmental Policy and provides a framework for managing of the environmental aspects of the past, ongoing and planned activities, products or services of National Grid. It helps set goals to promote continual improvement in environmental performance as well as to protect and enhance the environment, always seeking new ways to lighten the environmental impact of our past, present and future activities.

5.3. Organizational roles, responsibilities and authorities

In order to ensure continual improvement of its environmental performance, general roles, responsibilities and authorities associated with environmental management have been provided in the Resources, Roles and Responsibilities and Authorities Procedure.

Where necessary, roles, responsibilities and authorities that are specific for a particular business entity or where there is interaction between different Business Functions and/or contractors will be agreed, defined and communicated

Essential resources for ensuring the maintenance and continual improvement of the National Grid Environmental Management System are determined and made available by each business entity Management Team.

6. Planning

Planning is critical for determining and taking the actions needed to ensure the environmental management system can achieve its intended outcomes. It is an on-going process which allows the business to establish and implement elements of the EMS and to maintain and improve them. This covers three broad areas:-

- Achieving intended outcomes, including enhancing environmental performance, fulfilling compliance obligations and achieving environmental objectives;
- Preventing or reducing undesired effects, including significant environmental impacts and environmental conditions affecting the organisation; and
- Achieving continual improvement.

The planning process supports the business and allows it to identify and focus its resources in those areas that are most important for protecting the environment. It is also key to assisting the business to ensure it meets its compliance obligations and other environmental policy commitments by establishing and achieving its environmental objectives.

6.1. Actions to address risks and opportunities

6.1.2. Environmental Aspects

National Grid identifies the environmental aspects of its activities in order to control and / or influence their associated environmental impacts, whether they be adverse or beneficial (opportunities).

An assessment is undertaken using the National Grid Environmental Sustainability Standard, legislative and other requirements, normal and abnormal operating conditions, start-up/shutdowns as well as the risks associated with potential emergency situations. This is then used to identify and quantify environmental aspects, their significance and impact for the past, ongoing and planned activities, products or services that National Grid influence or can influence.

The findings of the assessment process provide a basis for National Grid to prioritise. The aspects and risks are rated according to the severity of their potential adverse or beneficial impact to the environment, so that effective steps can be taken to prevent, reduce or enhance that impact.

The identification of aspects, their significance and impact are held in an Environmental Aspect Register which is kept up-to-date and made readily available. A review is undertaken on an annual basis or if change occurs to activities, products, services or legislation, which may affect the aspect(s), risk(s) and/or control measures. Significant changes are communicated internally as appropriate to ensure that effective mitigation steps can be taken throughout the business.

6.1.3 Compliance Obligations

National Grid ensures that through the effective application of its Environmental Management System our compliance obligations are understood and actioned throughout the business.

Through working closely with the affected business entities, compliance obligations are communicated and monitored in a number of ways:

- Management Reviews
- Standard agenda items on business entity environmental meetings
- Environmental engagement visits
- Internal Audit process
- KPI reporting structures

SHS in consultation with the Executive Committee determine which compliance objects are developed into targets, and these are summarised and communicated in the 'Our Contribution' document.

To manage and deliver on compliance obligations that are driven by their risk profile, National Grid develops robust management processes, with defined monitoring and reporting requirements managed through the business entity SHE governance structure.

The Policy, Assurance and Reporting Team within SHS manage a risk register which holds details of all outstanding risks relating to business compliance. A compliance assurance report (CAR) is produced on a quarterly basis highlighting key outstanding issues and this is reviewed and approved by the appropriate manager. Outstanding environmental compliance issues are assessed by the Environmental Operations Manager and actions taken for investigation and resolution.
While these are consistent with the corporate Environmental Management System procedures, they provide specific operational controls for tasks in order to ensure compliance. Being consistent with the corporate Environmental Management System, local procedures provide the basis for local compliance assessments are regularly reviewed and updated periodically based on the risk profile of document.

6.2. Environmental objectives and planning to achieve them

Environmental sustainability objectives and targets are set by National Grid with the intention to drive continual improvement to its environmental performance. There are three different types of objective that could be set in order to achieve this:

- Improvement Target;
- Management Target; or
- Investigation Target.

Objectives and targets help to drive continual improvement in overall environmental performance. However, not all objectives will necessarily need to define specific environmental improvement goals if:

- a significant aspect(s) is being effectively managed, an improvement goal may not be required but rather an objective may be applied
- National Grid or a business entity may not be in a position to implement improvement actions because there is a need to investigate and understand the nature of an aspect or to identify and evaluate improvement options

Corporate environmental objectives shall be set by SHS with each Business Function. These targets will be relevant to the following objectives:

- Principles and commitments in the National Grid Environmental Policy, particularly those relating to climate change objectives, resource efficiency, diversion of waste from landfill and enhancing ecosystems;
- Significant environmental aspects;
- Applicable legal and other requirements;
- Financial, operational and organisational considerations;
- Technological options and feasibility;
- Views of interested parties;
- Possible effects on stakeholder image of National Grid;
- Findings from environmental reviews; and/or
- Other organisational goals.

When planning how to achieve each objective, the business entity, through the development of a management programme, shall determine what will be done, the resources required, responsibilities, monitoring, completion targets and communication. Business entity data shall be fed back into corporate environmental data to allow for reporting, assessment of compliance and continual improvement.

7. Support

7.1. Resources

Essential resources for ensuring the maintenance and continual improvement of the National Grid Environmental Management System are determined and made available by each business entity Management Team.

7.2. Competence

National Grid determines the necessary competence of persons' working under its control or on its behalf to ensure that they are competent on the basis of appropriate education, training and/or experience. Where gaps within training needs exist the applicable actions are taken to ensure the necessary competency is achieved.

Business entities identify the 'roles' within their area that have environmental responsibilities, what those responsibilities are and how the people fulfilling those roles demonstrate competence, with appropriate training identified for people requiring the competence.

7.3. Awareness

In order to raise awareness of environmental management, National Grid ensures that person(s) participating in work under its control are aware of:

- The Environmental Sustainability Standard commitments;
- The significant environmental aspects and related actual or potential impacts associated with their work;
- Their contribution to the effectiveness of the Environmental Management System, including the benefit of improved environmental performance; and
- The implications of not conforming to the set requirements of the Environmental Management System.

This is primarily achieved via a general environmental awareness training package hosted by The Academy which is undertaken by all staff, as well as more targeted training for those employees with specific environmental responsibilities.

7.4. Communication

National Grid communicates internally among its various business entity levels, via a number of channels that include:

- Infonet;

- Team talk articles;
- SHE Bulletins; as well as,
- Ad hoc presentations, Stand Down days and conferences.

In addition, to our own communications, National Grid encourages and considers initiatives/best practices by persons working for or on its behalf that can contribute to the improvement of the EMS.

National Grid ensures that relevant communication(s) from external interested parties are responded to as appropriate. External contact made by enforcing authorities is captured via the Enforcement Agency Contact database, external communications received by interested parties, other than enforcing authorities, is captured along with the response being retained.

National Grid has been designated as a public authority by the Information Commissioners Office and is therefore required to respond to Environmental Information Requests under the Environmental Information Requests (EIR) Regulations.

Environmental Performance, including information relating to the Environmental Management System is communicated to internal and external interested parties on an annual basis via the National Grid external website.

7.5. Documented information

Environmental management procedures are produced and controlled under The Control of National Grid SHE Standards.

8. Operation

8.1. Operational planning and control

Through the identification of applicable legal and other requirements along with its significant aspects, National Grid have established, implemented and maintain documented environmental procedures to control situations where an absence of such could lead to deviation from the National Grid Environmental Policy, objectives or legal and other requirements.

National Grid sets the standard for outsourced processes to ensure that the requirements of its Environmental Management System are met. However, the implementation of environmental management is required by contractors etc. who undertake the outsourced processes.

The Environmental Operations Team ensure the below list of documented Corporate Operational Environmental Procedures are kept up-to-date, with Business Functions holding responsibility for the establishment, implementation and maintenance of specific Environmental Procedures relevant to themselves.

Procedure Number	Title
NGUK/SHE/200	Waste and Resources
NGUK/SHE/201	Water and Effluent Discharges
NGUK/SHE/202	Energy and Water Resources Management
NGUK/SHE/204	Management of Fluid-Filled Cables
NGUK/SHE/205	Land Management and Biodiversity
NGUK/SHE/206	Management of Potentially Contaminated Land
NGUK/SHE/207	SF_6 Management and Usage Monitoring
NGUK/SHE/209	Use of Hazardous Substances
NGUK/SHE/210	Management of Emissions to Air
NGUK/SHE/217	Management of Environmental Noise, Nuisance and Complaints

The management of changes to the listed above environmental procedures is provided in The Control of National Grid SHE Standards.

8.2. Emergency preparedness and response

National Grid has identified potential emergency situations and incidents that could have an impact on the environment and how they will be responded too. The identified resources and the Emergency Preparedness and Response Plan, which are appropriate to the magnitude of the emergency or incident, are provided for controlling actual or potential situation or accidents to prevent or mitigate the impact to the environment.

National Grid ensures periodical testing of the Emergency Preparedness and Response Plan is undertaken along with a review where applicable after:

- An occurrence of an incident;
- An emergency situation; or
- A test.

Documented up-to-date Emergency Preparedness and Response Plan(s) and information relating to emergency preparedness and response testing is retained at a site level.

9. Performance evaluation

9.1. Monitoring, measurement, analysis and evaluation

To ensure that our environmental performance is actively monitored and managed, we undertake several layers of performance evaluation and reporting.

Internally we have governance structures in place for reporting our environmental performance up to our executive committee that include our most significant environmental incidents, waste and resource management performance and greenhouse gas emissions.

As part of operating responsibly, National Grid also reports our environmental performance open and honestly externally. Our external reporting includes:

- Landfill Tax expenditure and monitoring in the Annual Accounting Reports
- General environmental performance on our external website
- Responding to Environmental Information Regulations requests
- CDP reporting

At an operational National Grid has embarked on a Performance Excellence (PEx) transition, whereby we drive performance improvements and efficiencies whilst eliminating the waste in everything we do. PEx is built around the 'Plan-Do-Check-Act' principle found within ISO 14001 and it provides a clear line of sight between the objectives and targets set at board level down to the operations we undertake.

PEx ensures that all areas within the business use frequent KPI's to track performance, identify blockers and implement remedies to remove these blockers. Within SHS, each 'team' conducts a performance 'hub', with a direct feed for successes and blockers into the SHS leadership team 'hub'. This enables persistent or higher level issues to be raised efficiently to the appropriate level within the business for close out, with the Head of SHS taking the necessary action and information to UKSHE where appropriate.

Each business entity within National Grid has set a series of performance indicators to manage on through their PEx process, which include:

- The key characteristics of its operation that could have a significant environmental impact;
- The key characteristics necessary to assure compliance; and
- Risks and opportunities.

Environmental performance data is also monitored as per our environmental performance procedure and based on a number of factors including:

- Operations that can have a significant environmental impact;
- Legal and other requirements;
- Operational control measures; and
- Progression to achieving National Grid and business entity set objectives.

9.2. Internal audit

National Grid adopts a three tier approach to the assessment of its Environmental Management System. On a cyclical basis Corporate Audit conduct a 3rd line of defence assurance programme which take into consideration:

- The conformance of the National Grid environmental management system to the clauses of the ISO 14001 Standard;
- Key environmental processes; and
- Results of previous environmental audits.

Each Business Assurance Function conducts an environmental management system 2nd line of defence assurance programme, at suitably planned intervals which take into consideration:

- The implementation of the environmental management system procedures into their line of business;
- Key environmental processes; and
- Results of previous environmental audits.

Results following the Corporate Audit and business entity audits, any findings, both positive and negative, are reported and the findings addressed.

The Environmental Operations Team undertakes focussed engagement visits across the business. These assess site specific performance and provide a wider understanding of compliance issues. While local

compliance feedback is provided to site in the form of assurance reporting, metadata from each Business entity is assessed to provide an indication of wider compliance. These issues are addressed through the relevant business unit environmental liaison groups with support from the Environmental Operations Team.

First line of defence assurance is undertaken at the point of work through National Grid's sensible monitoring process. This requires all aspects of SHE to be managed and assessed based on risk profile during the setting to work process, undertaking operations and the closure of jobs. Each Business Unit will determine the frequency and subject matter for which they will undertake sensible monitoring.

9.3. Management review

Management reviews of the National Grid Environmental Management System are periodically carried out per Business entity and include consideration of the following:

- The status of actions from previous management reviews;
- Changes in external and internal issues that relate to the Environmental Management System:
- Information on National Grid's environmental performance; and
- Opportunities for continual improvement.

Based on the completion of each management review, the outputs include:

- Conclusions on the continuing suitability, adequacy and effectiveness of the Environmental Management System;
- Decisions related to the continual improvement opportunities for environmental performance; and
- Any need for changes to the Environmental Management System, including the Environmental Policy, environmental objectives and other elements consistent with the commitment to continual improvement.

10. Improvement

10.1. Nonconformity and corrective action

National Grid has identified a number of different areas of its Environmental Management System, where nonconformities or potential nonconformities associated with activities, products and services could be raised. The Nonconformity, Corrective Action and Preventative Action Procedure sets out.

The criteria for investigating and determining their cause, taking action to control and correct it/them as applicable, as well as dealing with the consequences which may include the mitigation of adverse environmental impact(s).

10.2. Continual improvement

National Grid will use the environmental management system as a structured framework for continuous improvement.

National Grid will evaluate its environmental performance and that of its management system processes annually to identify opportunities for improvement. The evaluation will involve the review of the root causes of the deficiencies of the management system and the board will be involved directly in this evaluation.

Appendix 1: Key stakeholders:

Political - UK	All Party Parliamentary Groups/Select Committees, BEIS, HMT, Special Advisors, UK Parliament - Commons, UK Parliament - Lords, UK Parliament - Specific MPs, Scottish Parliament, Welsh Government, Mayors, Local Councils
UK Government advisory bodies	Committee on Climate change, NIC
Think Tanks	Policy Exchange, Bright Blue, Dieter Helm, Centre for Policy Studies, Infrastructure Forum,
Political - Europe	European Commission / Parliament
Non Political - Europe	ENSO-G (European Network of Transmission System Operators), CEER (Council of European Energy Regulators), ADER (Agency for the Cooperation of Energy Regulators)
Regulatory	Ofgem, CMA (Competition and Markets Authority), Other economic regulators
Industry bodies	Gas Infrastructure Europe, ENA, Energy UK, Renewables UK
Chartered Institutions	IGEM
Business	CBI, FSB (Federation of Small Businesses)
Infrastructure	Highways England, HS2, Network Rail, MI-ROG, Li-Net
Customers	Shippers, Gas Connection Customers, Gas Distribution Networks, Directly Connected Demand, Gas Interconnectors, Terminal Operators, Energy Suppliers

Supply Chain	Suppliers, Partners, Contractors
Energy Industry	Offshore Gas Companies, Operating Margin Providers, European Networks, European TSO associations
Academics	Universities, UKERC Energy Data Centre
Stakeholder Groups	Stakeholder Advisory Panel (inc CAB?)
Media	Consumer, Trade, Financial
Safety	HSE
Environment	EA, SEPA, NRW, Green Alliance, Friends of the Earth, National Trust, English Heritage, John Muir Trust, CPRE, Sustainability First, WWF, Wildlife Trust, Aldersgate Group, BiTC (Environmental Leaders), Accounting 4 sustainability,
Consumer Groups	Which? Citizens Advice Bureau, Age UK, MEUC (Major Energy Users Councils), EIUG Energy Intensive Users Group)
UK Public	Project communities, Other local communities, Landowners
National Grid Employees	National Grid Board, UK employees, Global employees, System Operator
Trade Unions	Prospect, Unison
Material Shareholders (>1%) Total NG Holding 20.65% (Apr '17)	Capital Research & Management Co. (Global Investors) Legal & General Investment Management Ltd. BlackRock Investment Management (UK) Ltd. The Vanguard Group, Inc. Norges Bank Investment Management BlackRock Advisors (UK) Ltd. BlackRock Fund Advisors Standard Life Investments Ltd. SSgA Funds Management, Inc. Federated Equity Management Company of Pennsylvania

Appendix 3:

Outline Waste Management Plan (SWMP)

Visual Impact Provision (VIP): Snowdonia Project - Outline Waste Management Plan

T1.02

Visual Impact Provision (VIP): Snowdonia Project - Outline Waste Management Plan

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Visual Impact Provision (VIP): Snowdonia Project - Outline Waste Management Plan

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1 Introduction

1.1 Background

This Outline Waste Management Plan (OWMP) has been prepared to accompany an application for planning permission to construct and operate the Visual Impact Provision (VIP) Snowdonia Project (here on referred to as the Proposed Project) and forms an appendix of the Outline Construction Environmental Management Plan (OCEMP). It was agreed during the scoping phase of the Proposed Project that the OWMP would focus on the construction phase only.

Reference should be made to the Environmental Appraisal (prepared in support of the application for planning permission) for information on baseline conditions.

1.2 Purpose of the Outline Waste Management Plan

The purpose of this OWMP is to set out the principles and procedures for the management of waste during the construction of the Proposed Project and forms part of the delivery of National Grid's commitment to best practice. As indicated above, operational and decommissioning impacts have been not been included in this this OWMP.

It is understood that the Proposed Project will be undertaken on behalf of National Grid under separate contracts for specific elements, in this OWMP the term 'Principal Contractors' is used to define contractors, appointed by National Grid, which will be responsible for developing Site Waste Management Plans (SWMP) and project specific Construction Environment Management Plan(s) (CEMP). It will be these later documents which identify and confirm suitable end-uses or disposal/reuse options for waste streams generated by the Proposed Project based on the high-level principles set out in this OWMP.

This OWMP follows a format consistent with that employed for similar National Electricity Transmission System (NETS) projects and covers the following key areas as summarised in Table 1.1.

Table 1.1 OWMP Structure

OWMP Section	Section Title	Section Description
Section 1	Introduction	Background to the project; guiding principles; description of stakeholders and statutory bodies; and indicative roles and responsibilities
Section 2	Legislation, Policy and Guidance	A review and analysis of national and local planning policy and legislation related to waste
Section 3	National Grid Waste Management Policy, Principles and Standards	A description of National Grid policy, principles and procedures in relation to waste management
Section 4	Waste Types, Volumes and Initial Characterisation	A description of the general types and an indication of quantities of waste likely to be generated by the Proposed Project
Section 5	Facilities for Aggregate Recycling and Disposal	A high-level initial summary of the facilities for aggregate recycling and disposal in the region

Appendix A	Legislation, Policy and Guidance Review	A review of relevant legislation, policy and guidance to supplement summary information provided in Section 2
Appendix B	Example Site Waste Management Plan (SWMP) Proforma	A template SWMP to follow the general requirements of the Site Waste Management Regulations 2008 (repealed) and ensure that key considerations are identified in an appropriate and accessible format
Appendix C	Potential Outlets for Tunnel Arisings	A list of potential outlets, and corresponding location mapping, for tunnel arisings within a 50km radius of the Proposed Project.

1.3 Involvement of Local Authorities and other stakeholders

National Grid is committed to engaging with stakeholders including local planning authorities (LPA) and other statutory and non-statutory bodies. For the Proposed Project, the LPA comprises jointly; Snowdonia National Park Authority and Gwynedd Council, with Snowdonia National Park Authority acting as lead.

Where required, permits from LPAs or Natural Resources Wales (NRW) will be sought prior to commencement of the relevant works. Consultation will be undertaken by National Grid's Principal Contractors with the appropriate statutory bodies.

1.4 Indicative roles and responsibilities

Indicative roles and responsibilities for Construction and Environmental Management are described in the OCEMP document. These include a Project Level Safety, Health, Environment, Security and Quality (SHESQ) Manager, an Environmental Manager and an Environmental Clerks of Works. These personnel will be responsible for ensuring the implementation and monitoring of the project specific CEMP and SWMP.

2 Legislation, Policy and Guidance

2.1 Guiding Principles

The objectives of this OWMP, in order of preference, in accordance with the waste hierarchy (Figure 2.1) are to:

- minimise raw materials consumed and the volume of waste produced;
- re-use any waste produced, where practicable;
- recycle waste, where reuse is not practicable;
- recover waste, where feasible; and
- dispose of any remaining waste streams in accordance with legislative requirements.

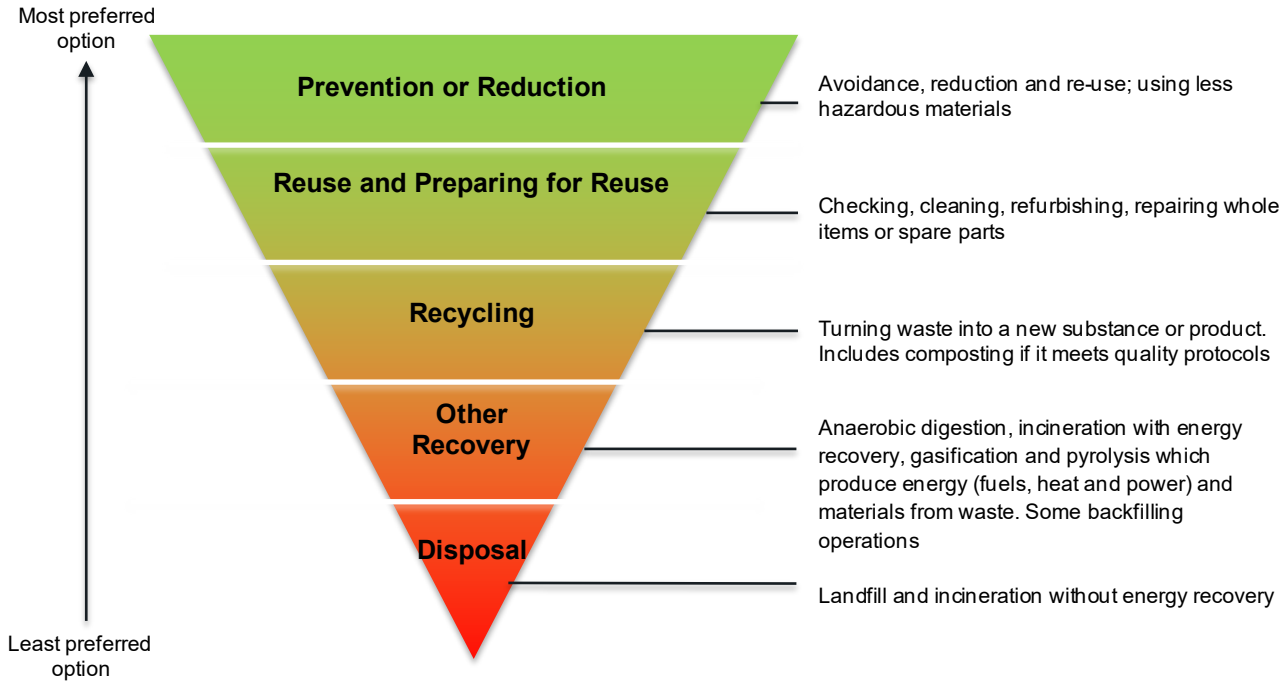

Figure 2.1 Waste Hierarchy (DEFRA, 2011)

2.2 Overview

A summary of key legislation, national and regional policy is provided in Table 2.1, Table 2.2 and Table 2.3 respectively. More extensive detail is provided within text in Appendix A. The legislation, policy and guidance detailed in this section will apply to the management of waste during the construction phase of the Proposed Project.

Table 2.1 EU and National Legislation

Legislation	Description
European Union Legislation	
2008/98/EC on waste and repealing certain Directives: the "Waste Framework Directive" (WFD)	European Union (EU) law on all aspects of waste. Based on the Waste Hierarchy (Figure 2.1)
2018/C124/01 Commission Notice on technical guidance on the classification of waste	EU Commission Notice providing technical guidance on the classification of waste
2014/995/EC Commission Decision on the List of Waste (*amending Decision on the list of waste (2000/532/EC)*)	EU Commission Decision which serves as a common encoding of waste characteristics in a broad variety of purposes the 'List of Waste' (LoW)
1999/31/EC EU Council Directive on the landfill of waste: the "Landfill Directive"	The prime objective of the Landfill Directive is to minimise waste going to landfill and set diversion targets
National Legislation	
Environmental Protection Act (1990)	Imposes a 'Duty of Care' on any person who imports, produces, carries, keeps, treats or disposes of controlled waste
The Landfill (England and Wales) Regulations (2002)	Transposed 1999/31/EC EU into national law
Waste Regulations (2011)	Transposed the WFD (2008/98/EC) into national law
Environmental Permitting (England and Wales) Regulations (2010) (as amended)	Details the regulatory requirements of waste activities (i.e. Environmental Permits) (EPR)
Site Waste Management Regulations 2008 (repealed)	Required any construction project with an estimated cost greater than £300,000 to prepare and update a SWMP
Hazardous Waste (England and Wales) Regulations (2005)	Set out key requirements for the production and handling of hazardous waste.

Table 2.2 National Policy

Policy	Description
National Policy Statement (NPS) EN-1 (DECC, 2011)	Current overarching national policy for the energy sector. Section 5.14 of NPS EN-1 sets out key requirements for waste management

Table 2.3 Regional Policy

Reference	Title/Description
Welsh Assembly Government (2002)	Wise About Waste
Welsh Assembly Government (2010)	Towards Zero Waste
Welsh Government (2014a)	Technical Advice Note 21 - development planning policies associated with waste
Welsh Government (2014b)	Waste Planning Practice Guide - supplementary document to Technical Advice Note 21
Welsh Government (2015)	Towards Zero Waste 2010–2050 Progress Report July 2015
Anglesey and Gwynedd (2015)	Topic Paper 12: Waste, February 2015

Anglesey and Gwynedd (2017)	Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026
Snowdonia National Park Authority (2019)	Adoption of the revised Local Development Plan (Snowdonia National Park Authority, 2016)
Snowdonia National Park Authority (2016)	Local Development Plan Review. Background Paper 19: Waste. Details the LPA's adoption of the North Wales Regional Waste Plan (NWRWP) (as reviewed in 2009)
Snowdonia National Park Authority (2015)	Snowdonia National Park Authority, Supplementary Planning Guidance: Enabling Sustainable Development in the National Parks of Wales
Snowdonia National Park Authority (2011)	Snowdonia National Park Authority, Supplementary Planning Guidance: Sustainable Design in the National Parks of Wales

3 National Grid Waste Management Policy, Principles and Standards

3.1 Environmental Policy

National Grid maintains an Environmental Management System (EMS) which is certified to the International Standard ISO 14001:2015. The Principal Contractor(s) for the Proposed Project will be contractually obliged to work in accordance with National Grid's EMS. Further detail of the National Grid's EMS (National Grid, 2018) is included as Appendix 2 of the OCEMP which accompanies the application Environmental Appraisal.

The EMS sets out the overall processes for:

- environmental responsibilities;
- identifying environmental aspects;
- setting and achieving environmental objective and targets;
- controlling environmental impact;
- meeting the conditions of environmental consents and permits; and
- preparing and responding to environmental emergencies and incidents.

In addition to its certified EMS, National Grid also maintains Sustainability (National Grid, 2019a) and Environment (National Grid 2016) policies which define how National Grid will seek ways to use resources more efficiently through good design, use of sustainable materials, responsibly refurbishing existing assets, and reducing and recycling waste.

3.2 Sustainable Waste Management Principles

As outlined in Section 2, the Waste Regulations 2011 impose a duty on all persons who produce, keep or manage waste, to apply the waste hierarchy. The principles of the waste hierarchy, also known as 'Sustainable Waste Management Principles', and examples of how they will be employed in the Proposed Project are described in Table 3.1 the following paragraphs.

Table 3.1 Sustainable Waste Management Principles

Reference	Title/Description
Prevention	The consumption of raw materials and waste will be minimised, through sound design and good design procedures and procurement practice. The SWMPs will consider the application of the Waste and Resources Action Programme (WRAP) Guidance and Design Guide for 'Designing out Waste for Civil Engineering Projects' (WRAP, 2009a and 2009b), to reduce materials use as well as waste arisings. Both will be monitored as part of the SWMPs' review process.
Reuse	Opportunities for reusing 'waste' before recycling, recovery or disposal will be considered (e.g. excavated soils). Where possible, and appropriate, such materials may be re-used on site, however this may be limited by other aspects of the Proposed Project design.

	Surface vegetation, topsoil and subsoils would be stored separately for re-use and handled in accordance with the Defra guidance 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' (Defra, 2009). The CEMP will contain the method for removing and reinstating topsoil for works such as the access tracks, construction working areas and OHL pylon foundations. Although contaminated ground is not anticipated at any part of the Proposed Project, in the event that soils are encountered during excavation that display contaminant levels that prevent their direct re-use, these would be segregated on site either for on-site treatment (and subsequent re-use) or for disposal off site to an appropriate treatment facility or permitted landfill.
Recycle	The principal recyclable waste produced by the Proposed Project would likely be steel, copper and aluminium from the removal of existing pylons and overhead lines. Steel, copper and aluminium are recyclable with a high degree of efficiency. Other recyclable, general construction waste may be produced, such as wood, plastics and cardboard packaging. These would be segregated and stored for short periods on site in secure designated areas prior to removal from site to a suitable permitted recycling facility. National Grid's preferred policy option, for shaft and cable tunnel arisings that are of suitable quality (physical and chemical), is for these materials to be recycled as aggregate, engineering fill or general fill in the construction industry, according to the demand for the material. Any temporary granular stone access tracks, which are constructed using secondary or primary aggregates, would be removed to an appropriate facility for recycling, for onward use, for example as secondary aggregate in the construction industry. National Grid has produced a guide to the sustainable use of Aggregates on National Grid Projects (National Grid, 2019b). This guide seeks to assist in National Grid's goal of increasing use of secondary and recycled aggregates by 10% year on year which aligns with priorities and commitments defined in its wider corporate policies.
Recovery	Where required, stripped vegetation and removed trees (with landowner agreement, except where identified for re-use or recycling) and general food waste would be taken to a composting, anaerobic digestion or biomass plant. Opportunities for recovery of any tunnel arisings that are not suitable for recycling, such as land re-instatement schemes, would be sought in the region to minimise avoid the disposal of waste.
Disposal	The disposal of waste from the Proposed Project (i.e. to landfill) would be regarded as a last resort. All other options, as described above, would be considered prior to considering disposing of waste to landfill. If required, disposal would be undertaken in a safe and responsible manner ensuring that all waste carriers and disposal (landfill) facilities are appropriately permitted, in accordance with the procedures outlined in this document.

3.3 Resource Targets

In order to promote the Sustainable Waste Management Principles, National Grid has set specific resource targets as follows:

- 10% reduction in waste production year on year;
- 10% increase in secondary/recycled aggregate year on year;
- 100% diversion from landfill; and
- 100% eco-cabin usage.

3.4 National Grid Waste Management Procedures

3.4.1 Background

National Grid has developed Corporate Procedures for Waste Management as part of its accredited EMS (Section 3.1) which includes mandatory requirements for staff and suppliers.

Requirements that are of relevance to the Proposed Projects are detailed in the following sections.

3.4.2 Standard Measures

A set of standard measures, which align with guiding principles (Section 2.1), will be employed for the management of waste and are listed below; more detailed measures are set out the following sections relating to Duty of Care, Hazardous Waste and the Storage of Waste:

- the consumption of materials and production of waste shall be minimised through good design procedures and procurement practice;
- opportunities for reusing, recycling or recovery of waste will be considered as an alternative to disposal to landfill which should be a last resort;
- the treatment of recyclable waste materials from the Proposed Project will be undertaken off-site at an appropriately permitted facility;
- material will be stored for short periods on site in secure designated places in the identified construction working areas until taken away for recycling;
- all waste materials shall be stored securely on site in order to prevent their escape and protect them against vandalism, vermin or outside interference;
- hazardous waste (e.g. paints, solvents, sealants) will be segregated on-site to avoid contaminating other material and waste streams (for further details see Hazardous Waste section below);
- waste management activities on sites operating under an Environmental Permit shall be fully compliant with prevailing regulation;
- will be managed by a nominated Technically Competent Manager i.e. the manager will be technically competent to manage the permitted activity, as defined by the Chartered Institution of Wastes Management/Waste Management Industry Training and Advisory Board's (CIWM/WAMITAB) Operator Competence Scheme (CIWM/WAMITAB, 2018);
- all waste management contractors carrying waste shall be authorised to do so (i.e under prevailing Duty of Care) and all sites that receive the waste shall be authorised to do so (i.e. under prevailing Environmental Permitting Regulation (EPR) requirements);
- a sample of waste management routes will be subject to an annual audit to confirm that waste is being managed correctly;
- management of all waste will be accompanied by the relevant statutory transfer documentation that adequately describes the waste, the documentation will be retained and be readily accessible;

- quantities of waste generated will be recorded and monitored, records will be kept for a minimum of three years;
- an authorised waste management contractor will deal with the disposal of any fly-tipped materials discovered. Any fly-tipping will be reported as an environmental incident and notified to the local authority and/or Natural Resources Wales to enable them to investigate the incident;
- all employees and contractors involved with the handling and managing of waste will have the relevant training and be assessed as competent and training records retained;
- all employees and contractors will have a Duty of Care (Section 3.4.3) when controlling the carriage and disposal of waste to ensure it is handled in a responsible manner;
- all waste containers shall be labelled to indicate the types of waste that may be deposited in them;
- all staff and contractors working on the project shall understand which waste should be deposited where, and that they are not allowed to use the facilities for the disposal of domestic waste. This will be delivered by toolbox talks;
- a SWMP shall be produced for all projects costing over specified thresholds (Section 3.4.8); and
- an MMP (Materials Management Plan) will be produced where appropriate (Section 3.4.9).

3.4.3 Duty of Care

All wastes produced by National Grid and its contractors are governed by waste management legislation (Section 2). The producer of the waste is the holder of the waste generated by an activity.

Duty of Care is a legal process designed to control the carriage and disposal of waste to ensure it is handled in a responsible manner from “cradle to grave”.

In line with the Duty of Care requirements, waste produced will be:

- transferred only to an Authorised Person accompanied by a Waste Transfer Note or Hazardous Waste/Special Waste Consignment Note; and
- not able to escape from anyone's control on site or in transit.

An Authorised Person is a Registered Waste Carrier, broker and/or the manager of a legitimate waste management facility, e.g. a waste disposal site.

If a third party employed by National Grid or one of its contractors, arranges waste transfer/reuse/disposal, and is not the waste producer, the Registered Waste Carrier or the manager of a receiving site, then that third party shall be a Registered Waste Broker.

Waste shall not be allowed to leave site unless Duty of Care checks are successfully completed.

Where a contractor is employed to undertake work that produces waste, it is the contractor’s responsibility as producer of the waste to carry out the Duty of Care checks outlined above (including

Registered Waste Carriers, Registered Waste Brokers, and Environmental Permits/Waste Management Licences for waste disposal sites or proof of exemptions from licensing).

However, National Grid retain a Duty to ensure that waste is managed in a responsible manner; the member of staff employing the contractor shall ensure the contractor has a system of works to ensure that adequate Duty of Care checks are being undertaken and shall carry out periodic checks to ensure the contractor is using only Authorised Persons.

The contractor shall provide evidence of Duty of Care checks that have been undertaken on request.

3.4.4 Waste Classification

All waste will be classified in accordance with prevailing legislation (Section 2.1) and principles and procedures defined in core waste classification technical guidance 'WM3', published by the EA and Natural Resources Wales (2018).

During the Proposed Project, National Grid and its contractors will need to be competent in waste classification and have some knowledge of chemistry to fully utilise all aspects of the guidance.

Appendix A to the WM3 guidance includes the waste classification codes, also referred to as LoW (List of Waste) or EWC (European Waste Catalogue) codes for hazardous and non-hazardous waste.

3.4.5 Non-Hazardous Waste

All non-hazardous waste arising from the Proposed Project will be accompanied with a Waste Transfer Note when passed to a Registered Waste Carrier for removal from a site.

All Waste Transfer Notes will be signed by a trained site representative. Prior to signing, the trained site representative must check the Waste Transfer Note to ensure it has been completed correctly.

The site representative signing the Waste Transfer Note will ensure all Waste Transfer Notes are placed in a Site Waste Management File and kept for a minimum period of three years.

3.4.6 Hazardous Waste

The LoW identifies types of hazardous waste. If the waste is not listed, it shall be analysed for hazardous properties prior to disposal to ensure the appropriate method of disposal is arranged.

If a site produces more than 500 kg of hazardous waste in a year, the Site Manager shall ensure the site is registered with Natural Resources Wales.

Hazardous waste will be correctly labelled, shall not be mixed with non-hazardous waste and will be securely contained preferably on hard standing.

A Hazardous Waste/Special Waste Consignment Note shall be completed for every movement of hazardous waste. Hazardous Waste/Special Waste Consignment Notes will be signed on behalf of National Grid by a trained site representative.

If hazardous waste is being returned to a depot for assessment it will be handled and transported appropriately. A waste carrier's licence will also be obtained.

Hazardous Waste Consignment Notes will be placed in the Site Waste Management File and kept for a minimum period of three years.

3.4.7 Storage of Waste

Waste may be stored during the Proposed Project within appropriate construction compounds for a limited amount of time to help to limit the number of vehicle movements to and from site as far as possible to minimise effects on the local roads.

Storage of waste on site shall either be:

- within the scope of, and comply with, the requirements of one or more of the activities specified as exempt from EPR; or
- carried out under an Environmental Permit under the EPR (for the Proposed Project this would be issued by Natural Resources Wales).

Other measures will include the following:

- waste will be stored in secure designated areas, in enclosures or containers to prevent material being dispersed by the wind;
- designated areas will be sited at least 10m away from drains and watercourses, or 50m away from a well, spring or borehole to limit risk of escape and contamination of water courses;
- waste storage containers will be labelled with their waste type and their LoW code;
- waste containers will be covered to prevent dust emissions and potential nuisances;
- the burning of any waste is prohibited;
- liquid wastes will be stored in containers within bunded zones with secondary containment of at least 110% capacity of the largest container or at least 25% of the total tank capacity inside the bunded zone (whichever is the greatest); and
- incompatible or hazardous wastes will be stored and handled in accordance with the Hazardous Wastes Regulations.

3.4.8 Site Waste Management Plan

National Grid is committed to still work in the spirit of the requirements of the repealed Site Waste Management regulations and will continue to produce SWMPs for projects above the previous threshold (e.g. over £300,000 construction costs) or where it believes that a SWMP will be of benefit to a project. As this project exceeds this threshold then appropriate SWMPs shall be produced by the Principal Contractors on the Proposed Project.

SWMPs manage and reduce the amount of waste produced by construction projects through a simple process of identification of wastes, input to the design process, and the continued measurement and management of wastes to achieve the most sustainable level in the waste hierarchy.

A SWMP will be produced by each of the Principal Contractors appointed for specific phases of the Proposed Project. The Principal Contractor will provide the following information in SWMPs:

- a description of the construction works (for the Proposed Project);
- Measures to increase reuse of any aggregates generated and maximise use of secondary or recycled aggregate;
- Demonstration of how the consumption of raw materials and generation of waste shall be minimised, through sound design and good practice in sustainable procurement and construction methods i.e. encourage the re-use of recycled or secondary resources and aggregates;
- Where waste is generated, show measures taken to reduce, re-use and recycle waste within the development or off-site, including the provision of on-site separation and treatment facilities (using fixed or mobile plants where appropriate) to minimise disposal via landfill;
- Demonstrate how waste laydown/ stockpile areas have been designed to allow effective sorting and storing of recyclables and recycling and composting of waste and facilitate waste collection;
- Ensure waste materials will be stored securely on site in order to prevent pollution and provide protection against vandalism, vermin or outside interference;
- Ensure that Hazardous Waste (e.g. paints, solvents, sealants) will be correctly segregated on-site to avoid contaminating other material;
- Storage of waste on site will either be:
    - within the scope of, and comply with, the requirements of one or more of the activities specified an appropriate WFD exempt non-waste protocol;
    - carried out under a waste exemption listed in the EPR and issued by Natural Resources Wales; or
    - carried out under an Environmental Permit listed in the above regulations and issued by Natural Resources Wales.
- Waste management activities on sites operating under an Environmental Permit will be managed by a nominated technically competent manager (i.e. WAMITAB or similar);
- All waste disposal (or recovery) contractors carrying waste will be authorised to do so and all sites that receive the waste will be authorised (e.g. Environmental Permit) and have sufficient capacity to do so;
- Duty of Care checks on the registration of waste carriers and the permitting of sites receiving project wastes shall be performed and evidence of these checks shall be maintained;
- Disposal (or recovery) of all waste will be accompanied by the relevant statutory transfer documentation that adequately describes the waste;

- Waste transfer documentation shall be held for the statutory time periods: 2 years for non-hazardous waste disposals (including inert wastes); and 3 years for hazardous waste disposals;
- Quantities of waste generated will be recorded and monitored. Records will be kept for a minimum of three years;
- All employees and contractors will have a Duty of Care when controlling the carriage and disposal of waste to ensure it is handled in a responsible manner; and
- All staff and contractors working on the Proposed Project will be informed of which waste should be deposited where.

The Principal Contractor shall pursue all viable opportunities for re-use of any excavated material. The Contractor shall arrange any consents and permissions needed for any re-use option found.

A containment area for the excavated material shall be established at the tunnel drive site. As a minimum, the Principal Contractor shall prepare a bunded, impermeable (concrete) storage area large enough to contain at least seven days production. Where possible containment area should be covered to prevent direct rainfall mixing with the excavated material. Any water accumulating within this area shall be treated (e.g. channelled through settlement tanks) before disposal. The Principal Contractor shall obtain all consents needed to operate the containment area and for disposal of water.

100% of waste (excluding National Grid specified exclusions) shall be diverted from landfill and there must be evidence to explain any waste not diverted. If it is not possible to divert waste from landfill, the excavated material shall be removed by licensed carriers to a licensed disposal site and handled in accordance with Waste Management Regulations.

The SWMPs would be reviewed regularly, (as a minimum, every six months) and updated as necessary following these reviews, to give a current position on how the work is progressing against the waste estimates contained in the plan, this would include recording details of:

- types and quantities of waste produced and a comparison of the estimated quantities of each waste type against the actual quantities of each waste type;
- an explanation of any deviation from the OWMP;
- the identity of the person removing the waste (including waste carrier's registration number);
- all disposal documentation e.g. transfer and consignment notes, marked with the time and date of collection;
- details of the final destination of waste, a description of the waste type and the EWC if appropriate;
- quantitative and qualitative estimate of site waste produced during construction;
- requirements for reporting under the Hazardous Waste Regulations; and

- an estimation of the cost savings that have been achieved by completing and implementing the SWMPs.

An example SWMP template is provided in Appendix A of this document.

3.4.9 Materials Management Plan and the CL:AIRE Code of Practice

The excavation and reuse of materials on site (if applicable) or at a receiving Site may be achieved under a MMP, following the principles of the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoW CoP) (CL:AIRE, 2011).

The DoW CoP defines an approach, on a site specific basis, whereby treated excavated soils can cease to be waste for a particular and specified use. Further, it describes an auditable system to demonstrate that the DoW CoP has been adhered to.

Natural Resources Wales view the use of the DoW CoP as a proactive and industry led approach to allow for the minimisation of the creation of waste materials in the first place and a mechanism to allow materials that are waste, to cease to be waste.

If materials are dealt with in accordance with the DoW CoP then Natural Resources Wales considers that those materials are not waste if they are used for the purpose of land development. This may be because the materials were never discarded in the first place, or because they have been submitted to a recovery operation, which has been completed successfully so that they have ceased to be waste (CL:AIRE, 2011).

The DoW CoP is generally applicable to scenarios where excavated soils are used for a particular and specified use, this typically lends itself to projects where landform engineering is required to support wider development goals (e.g. engineered platform to support construction; infrastructure embankments; and/or screening bunds).

The objective of an MMP is to provide the principles of using site-won materials as non-waste either within the site of the Proposed Project or off-site, the plan must be produced prior to excavation and provide the following:

- details of the project and all parties involved with the implementation of the MMP;
- details of materials to be used, including storage, quantities and specifications for placement;
- details of the final destination and use of these materials;
- details of the tracking system for movement of these materials;
- contingency arrangements; and
- a verification plan outlining the process to produce a Verification Report.

For compliance with the requirements of the CL:AIRE Code of Practice, the materials must:

- not be a risk to human health;
- be suitable for use without further processing (chemically and geotechnically);

- have a certainty of use; and; and
- be only the quantity that is absolutely necessary.

Site based MMP's would be produced where appropriate for each of the major Proposed Project components if the DoW CoP is to be used for the reuse of soils. The materials would be assessed to fall within one of the following categories:

- material is capable of being used in another place on the same site without treatment;
- material is capable of being used in another place on the same site following on site ex-situ treatment;
- material is capable of being used on another development site without treatment;
- material is capable of being used on another development following ex-situ treatment on another site (designated as a Hub site);
- material is not capable of being used on site or elsewhere and as such will require recovery or disposal offsite as waste; and
- material is surplus to requirements and as such will require recovery or disposal offsite as waste.

Depending on the above, the MMP would be prepared and submitted for independent review by a Qualified Person (QP). The QP would be registered through CL:AIRE and, if satisfied that the DoW CoP has been followed, would sign off a declaration and submit to Natural Resources Wales.

3.5 Communications and Training

In order to ensure the principles, standards and requirements outlined in this document are delivered, the Principal Contractor(s) would develop and implement comprehensive communications and training programmes for all relevant staff, to include the following:

- understanding the different sources, types and nature of wastes and materials likely to be generated during the Proposed Project;
- the legal responsibilities for waste and its impact on the Proposed Project;
- the requirements of the SWMP and MMP (if applicable) and CEMP;
- how to conduct basic waste audits to identify, estimate and report quantities of waste;
- how to produce a SWMP (and, if appropriate MMP);
- the roles and responsibilities of waste regulators and licensed carriers; and
- the roles and responsibilities of site personnel in the management of waste.

All site personnel would be made aware of the principles of sustainable waste management, as outlined in this OWMP, and any project specific requirements of SWMPs, of relevance to their work.

4 Waste Types, Volumes and Initial Characterisation

4.1 Introduction

This section of the OWMP provides an initial estimate of the likely types and volumes (where available) of waste that would arise as a result of the construction of the Proposed Project. These will be fully determined during the production of the detailed SWMPs and MMPs.

4.2 Waste Types

Broad descriptions of sources and types of waste that would arise include:

- construction waste in the form of excavated material from the construction of the tunnel underneath the Dwyryd Estuary and the associated shafts. This may include, soils, superficial (alluvial) deposits, and bedrock;
- wastes from the construction of the new 400kV transmission infrastructure through the tunnel, SEC and associated infrastructure works;
- demolition type materials (e.g. concrete) from OHL and pylon decommissioning;
- access track aggregates;
- metalliferous wastes arising from removing pylons and sections of the existing OHL; and
- municipal type waste arising from construction worker office and welfare facilities.

4.3 Shafts and Cable Tunnel

4.3.1 Quantities

A preliminary estimate of potential waste arisings is provided for the Proposed Project for shaft and tunnelling arisings. A more accurate estimate will be calculated by the Principal Contractor as part of the SWMP and will be verified by the Principal Contractor (at least every six months) during construction and updated as necessary.

Preliminary estimates of shaft and tunnel arisings are provided in Table 4.1.

Table 4.1 Shaft and tunnel arisings – preliminary estimates

Proposed Development	Excavation materials	Estimated Volume (m^3)	Estimated Tonnage	Anticipated Re-use
Eastern Shaft	Tidal Flat Deposits	1,448	2,171	Recycled off-site as fill material
	Glaciofluvial Deposits	2,268	3,402	Recycled off-site as fill material
	Maentwrog Formation	12,496	23,326	See section 4.3.4
	Alluvium	3,897	5,845	Recycled off-site as fill material

Western Shaft	Dol-Cyn-Afon Formation	5,610	10,471	See section 4.3.4
Tunnel Alignment	Dol-Cyn-Afon Formation	43,451	81,399	See section 4.3.4
	Dolgellau Formation	4,587	8,593	See section 4.3.4
	Ffestiniog Flags Formation	33,480	62,720	See section 4.3.4
	Glaciofluvial Deposits	3,313	4,969	Recycled off-site as fill material
	Ffestiniog Flags Formation	9,132	25,661	See section 4.3.4
	Maentwrog Formation	8,028	15,038	See section 4.3.4
TOTALS		**132,275**	**243,596**	

4.3.2 Physical characteristics

Details of anticipated geological conditions, including cable tunnel and shaft arising material physical and chemical characteristics is presented in the Geology, Soils and Contaminated Land Chapter of the Environmental Appraisal.

It is understood that, once the access shaft is excavated (the western shaft being constructed first), the cable tunnel will be excavated using a Tunnel Boring Machine (TBM).

It is understood that tunnelling arisings will take the form of a pumped rock 'slurry' comprising smaller size rock particle sizes ranging from 5mm to 50 mm, and down to silt sized particles. These would be pumped out from the TBM to the surface, suspended in a bentonite slurry. On-site temporary storage and treatment provision (slurry treatment plant) will be required, for instance to allow dewatering and conditioning prior to onward transport and future reuse.

It is National Grid's preference (Section 3) that all of the excavated material is subject to recycling, re-use or recovery, provided there is a local/regional demand for the material. However, this assumes that the material is physically and chemically suitable for off-site reuse under non-disposal approaches (Section 4.3.3).

The volumes of material would represent a significant proportion of the overall recycled aggregate production in the region. It is likely the material would have to be taken to a facility that is capable of storing it beyond the period of the tunnelling contract, for more gradual release to the market according to demand.

It is likely that TBM arisings, would be too small for optimal use as a compacted engineered fill, as standard specifications generally require a larger size range to include particles up to 100 to 125 mm (Highways England, 2016). However, it may be possible for a contractor to blend the tunnel materials with any coarser shaft arisings at the receiving facility, to increase the size range and thereby improve its engineering characteristics.

The TBM arisings would need to be separated from the bentonite slurry by a series of screening processes. The bentonite slurry would be recycled to the TBM for re-use in the tunnelling process. The final condition of the excavated material would depend on the efficiency of these separation

processes and it is possible to reduce the bentonite content to a trace amount (less than 0.5%). The arisings may need to be tested to determine the affect that any remaining bentonite would have on its engineering properties, in order to confirm its suitability for potential end uses.

The complete separation of bentonite from the finer silt sized proportion of the TBM arisings is not likely to be practical. A proportion of the finer element of the TBM arisings would therefore contain a higher proportion of bentonite. Whilst bentonite is essentially an inert material, it is classified as a non-hazardous waste. However, when mixed with other inert materials this may enable it to be categorised as inert waste. Bentonite enriched materials are used as low permeability engineering materials to resist water flow. For example, bentonite enriched sand has been used in landfill engineering where there is a shortage of low permeability clay. Opportunities for utilising the finer fraction of the TBM arisings for engineering purposes would therefore be considered as an alternative to disposal to landfill.

Prior to completion of tunnelling and breakout of the TBM into the reception shaft, the bentonite slurry would be recovered from the pipework for re-use. A small quantity of bentonite would remain in the TBM during breakout and become mixed with the tunnel spoil. There would likely only be a few cubic metres of spoil and bentonite produced and this would be removed from the shaft and disposed of as either inert or non-hazardous waste.

4.3.3 Chemical characteristics

Details of the anticipated geological conditions, which are likely to be encountered during tunnel and shaft construction and the material physical and chemical characteristics are presented in the Geology, Soils and Contaminated Land Chapter of the Environmental Appraisal.

It is considered appropriate to recognise in this OWMP that the re-use and fate of tunnelling arisings is dependent on the materials being both physically and chemically suitable.

A study undertaken by Stantec on behalf of National Grid (Stantec, 2019) identified the potential for pyrite mineralisation to be encountered during tunnelling.

Stantec (2019) described detailed logging and sampling of drill cores taken adjacent to the proposed tunnel alignment to determine the potential risk of Acid Rock Drainage (ARD) from the tunnel arisings.

The report presented by Stantec (2019) summarised that:

- X-ray Diffraction (XRD) sampling showed that sulphide minerals were present primarily within mudstone strata of the Mawddach Group (Section 4.3.1), mostly as pyrite but also as pyrrhotite (in one sample). Pyrite is primarily within the rock mass and is inferred to be formed during early diagenesis.
- Average pyrite content varied from 0.6 – 2.3% dependent on the formation, being higher in the Maentwrog Formation and lower in the Ffestiniog Flags Formation.
- Laboratory Waste Acceptance Criteria (WAC) testing indicated that the tunnel arisings are within the inert WAC limits (with three minor exceptions) and are likely (based on WAC testing alone) to be classified as inert on the basis of tests in cores believed to be comparable to the tunnel alignment.

- Laboratory WAC testing showed that the Acid Neutralisation Capacity (ANC) of the tested material was low and mostly consistent across all formations of the Mawddach Group.
- An analysis of ARD risk was undertaken and it was concluded that most of the Mawddach Group bedrock will be classified as Potentially Acid Forming (PAF) or Low Risk meaning that ARD is potentially possible. This is due to the elevated sulphide mineral content (primarily as pyrite) and the relatively low ANC.
- The coarser sampled Ffestiniog Flags Formation as sampled at BH203 and any encountered superficial strata (i.e. within shafts), are inferred to be Non Acid Forming (NAF).

Stantec (2019) concluded that although WAC testing showed that the tunnel arisings are likely to be within the inert WAC limits (with three minor exceptions) and are likely (based on WAC testing alone) to be classified as inert, the ARD analysis suggested that much of the Mawddach Group is PAF. Therefore, it is possible that the tunnel arisings (c. 243,596 tonnes with the exception of superficial strata and coarser areas of the Ffestiniog Flags Formation) cannot be re-used without mitigation. This initial OWMP assumption would require further consideration based on waste classification and testing to be undertaken by National Grid's Principal Contractor responsible for construction of the cable tunnel.

4.3.4 Reuse options

As detailed in Table 4.1, National Grid's preferred option for shaft and tunnel arisings will be for these to be re-used off-site in accordance with principles defined in the Waste Hierarchy, national and local policy.

Although National Grid's policy preference (Section 3) is that shaft and tunnelling arisings will be reused, recycled or recovered off-Site, materials will need to be physically and chemically inert and not pose a risk to environmental or human health receptors in the location or application in which they are re-used.

The OCEMP details that 100% of waste (excluding National Grid specified exclusions) shall be diverted from landfill and there must be evidence to explain any waste which cannot be diverted. If it is not possible to divert waste from landfill, the excavated material shall be removed by licensed carriers to a permitted disposal site and handled in accordance with prevailing EPR regulations.

Stantec (2019) recommended, based on its assessment, that if the tunnel arisings are not to be landfilled, which would be contrary to National Grid's policy of reuse of materials, two potential re-use options are available to National Grid:

- Option 1: treatment of the tunnel arisings with lime or limestone to augment the ANC of the rock (and therefore reduce the potential for acid formation); or
- Option 2: capping the tunnel arisings at their end destination to restrict water and air ingress so minimising pyrite oxidation which can give rise to ARD.

For either option:

- National Grid's Principal Contractor for the tunnel would need to demonstrate to Natural Resources Wales that there will be no significant adverse environmental impact.

- In both cases (Option 1 and Option 2) it is likely that the off-site reuse of the tunnel arising would need to be regulated by Natural Resources Wales under a Waste Recovery Permit under EPR as the tunnel arisings would be considered a waste and would require a Permit for reuse/recovery, unless a non-waste approach could be justified.
- A Waste Recovery Permit would require Natural Resources Wales's agreement for the proposed mitigation (lining or capping, if required) and it would be necessary to demonstrate that the material in-situ would not have a significant adverse impact on the environment. Either mitigation option should be sufficient to demonstrate that the oxidisation of the pyrite can be controlled and therefore the potential for ARD would be minimised. The Principal Contractor will seek feedback and agreement from Natural Resources Wales prior to deciding to pursue either option.
- If it is not possible to divert waste from landfill, the excavated material shall be removed by licensed carriers to a licensed disposal site and handled in accordance with the Landfill Regulations.
- Where it is agreed with the National Grid Project Manager that the Principal Contractor shall dispose of materials to an appropriately permitted landfill facility, then the Principal Contractor shall make allowance for all testing, pre-treatment or other matters that may be required by the accepting disposal facility. The Principal Contractor shall appropriately document all materials disposed to landfill, in line with Duty of Care and other appropriate regulations. The requirements of the ongoing implementation of the Landfill Regulations shall also be met by the Principal Contractor.

Ultimately it will be the responsibility of the Principal Contractor for the tunnel to undertake testing and classification of tunnelling arisings and identify suitable reuse outlets based on more detailed SWMPs. Should any arisings display contaminant concentrations that make them unsuitable for re-use, these would be managed in accordance with the standards outlined this OWMP and within the CEMP. This may include remediation to make the materials suitable for re-use, or off-site disposal as waste.

Should any asbestos containing material (ACM) be identified by the pre-construction ground investigation or encountered during construction works, then this would be managed and disposed of in accordance with The Control of Asbestos Regulations, 2012.

4.4 Other Wastes

4.4.1 Access track aggregates

It is anticipated that aggregate will be required during construction of the Proposed Project to create plant and vehicle access tracks. Following completion of construction, it is anticipated that temporary access tracks may be removed, however some may remain as permanent features where agreed with landowners and the appropriate authorities.

In the event of access tracks being temporary, material used in their engineering will likely comprise bulk aggregates. Exact volumes are not known and it will be the responsibility of relevant contractors to provide further details in SWMPs.

It is anticipated that surplus aggregates such as those used for temporary access tracks and hardstanding will be recycled off-site for use on other schemes either as aggregate or fill material.

4.4.2 Foundation concrete

Exact volumes of concrete which may be generated from pylon foundation removal are not known and it will be the responsibility of the Principal Contractor to provide further details in the SWMP.

It is anticipated excavated concrete may be physically treated to produce a secondary aggregate. If physical treatment is to be undertaken at the Proposed Project, an appropriate Permit will likely be required from Natural Resources Wales under the EPR unless an alternative industry protocol is followed (e.g. CL:AIRE, 2011 or WRAP 2009a). It will be the responsibility of relevant contractors to ensure that the correct permits or alternatives are in place to allow on-site treatment of foundation concrete. Alternatively, foundation concrete may be removed from site following its excavation and sent for off-site processing/treatment at an appropriately licenced facility.

Assuming that foundation concrete is physically and chemically suitable for re-use it is anticipated that it may be suitable as re-use as a secondary aggregate and re-used off-site.

4.4.3 Metalliferous waste

Exact types and volumes of metalliferous wastes which may be generated from pylon removal are not known and it will be the responsibility of the Principal Contractor to provide further details in the SWMP. It is reasonable to assume however that metalliferous wastes will include significant quantities of: steel; copper; and aluminium.

All such metalliferous materials will likely retain an intrinsic material value and will be readily recyclable off-Site.

4.4.4 General Waste

Waste produced by welfare facilities associated with the construction of the Proposed Project would be classified as municipal waste.

Precise volumes for other waste types arising from the Proposed Project such as vehicle operation, works compounds, site offices and welfare facilities, would be calculated by the Principal Contractor and presented within the SWMP. For the purpose of this OWMP it is considered that established routes for re-use/disposal of such ‘other wastes’ will be readily available in the local market on a commercial contract basis.

The management of other general wastes likely to be produced during the construction phase is described based on National Grid principles and standards detailed in this document.

An indicative, but not exhaustive list of general waste types is provided below:

- excess concrete;
- excess cement;
- paper and cardboard packaging;
- plastic;

- timber;
- glass;
- mixed metals;
- mixed packaging;
- paints;
- oils, fuel oils and lubricants (for vehicle operation and maintenance);
- absorbents and filter materials (spill kits);
- biodegradable waste;
- portable and site toilet waste; and,
- road sweeper waste.

5 Facilities for Cable Tunnel Arising Recycling and Disposal

5.1 Introduction

The Proposed Project would produce approximately 243,596 tonnes of bulk excavation arisings from the tunnel as outlined in Table 4.1. Of which approximately 227,209 tonnes would comprise bedrock strata with the remaining 16,387 tonnes comprising superficial deposits.

Details of the strata are presented in Section 4.3 and it is expected that these materials may be generally suitable for recycling as general fill or engineered fill, subject to the material physical characteristics and further chemical and waste testing. The findings of Stantec (2019) and recommendations presented require consideration.

5.2 Re-use on-Site

There is likely to be a requirement for aggregate for the construction of the access tracks and hardstanding during the construction of the Proposed Project.

Suitability assessment would involve assessing the grading and material properties of the various arisings as they emerge in the sequence. Any material that is unsuitable for temporary access track construction may still be recycled for other purposes.

The important material properties would be the suitability of the particle size range for compaction to form a stable layer, and the hardness of the particles and their resistance to wear and degradation during trafficking. The wearing properties may be less critical if a harder-wearing capping layer was placed over the shaft and tunnel materials to form a wearing course.

If the materials were of marginal suitability, it may be that some processing could be undertaken to improve their quality. For example, it is possible that the smaller sized tunnel arisings would benefit from blending with the coarser arisings.

Any post-excavation processing may need to be undertaken off-site with suitable equipment available for processing and blending of the materials, together with space for temporary storage. Alternatively, if the processing required was minimal, it may be possible to carry this out within the Proposed Project site, provided temporary storage space could be made available for this purpose.

Should the construction programmes allow for re-use as part of the Proposed Project, the arisings would need to be physically and chemically assessed for their suitability for access track construction and re-used under suable provisions of the EPR or under the CL:AIRE DoW CoP using a MMP, consideration should be given to the findings presented by Stantec (2019).

5.3 Re-use off-Site

A list of potential outlets for tunnel arisings (Natural Resources Wales Authorised Waste Sites, Natural Resources Wales Quarrying Sites, Natural Resources Wales Historical Landfill Sites) within a 50 km radius of the Proposed Project is provided in Appendix C, location maps are also provided within this Appendix (this Appendix does not include other potential outlets (e.g. infrastructure

projects etc) which should be explored in the later stages of the Proposed Project once project programmes are confirmed.

It should be noted that a number of sites currently accepting waste materials include those operating under a Waste Recovery Permit (Environment Agency, 2016), whereby the treatment of inert waste is undertaken for land reclamation or construction. These permits operate on the basis of a maximum volume of material, which is permitted to be recovered to achieve a predefined objective. These objectives can include infilling or restoration of quarry workings and land raising operations for reclamation purposes. The life span of a recovery permit is therefore of a relatively temporary nature, and operations cease when the defined infill objective has been achieved. Therefore, it is not considered appropriate to confirm likely options for material fate in this OWMP. Rather National Grid's Principal Contractor for the tunnel should identify suitable sites for the deposit or reuse of tunnelling arisings based on the guiding principles defined in this OWMP.

With regard to the varied physical form and content of the shaft and tunnel arisings, a proportion of the arisings may not be suitable for re-use or recycling. It would therefore be advantageous for the material to be taken to a site with both recycling, recovery and/or disposal options. This would enable any unsuitable materials to be disposed of without further haulage.

All of the above potential end use options are dependent on third parties to facilitate, primarily the Principal Contractor to deliver the tunnel with confirmation of material destination only possible upon relevant material classification and testing and completion of the SWMP (and/or MMPs, if relevant).

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APPENDICES

Appendix A

Legislation, Policy and Guidance Review

Legislation, Policy and Guidance Review

Key Legislation

The Waste Framework Directive (2008/98/EC) (an amendment to the Waste Framework Directive 2006/12/EC)

Directive 2008/98/EC on waste 'The Waste Framework Directive' (WFD) is European Union (EU) law on all aspects of waste and is designed to protect human health and the environment against the negative impacts of waste management, including waste collection, storage, treatment and disposal. The legislation is based around the Waste Hierarchy which outlines five key waste management priorities – prevention, re-use, recycling, recovery and disposal in that order of importance. Figure 1 provides a summary of the Waste Hierarchy.

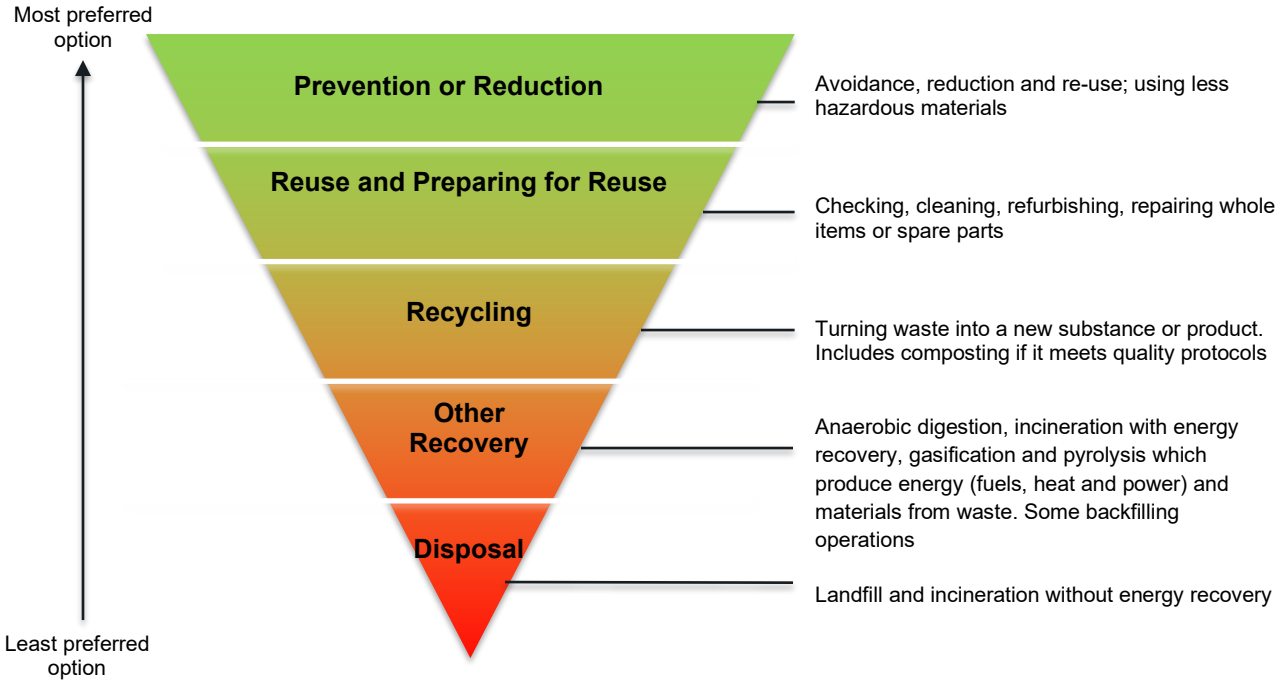

Figure 1 Waste Hierarchy (DEFRA, 2011)

In addition to the promotion of the Waste Hierarchy, the WFD has several other objectives such as the following:

- The duty to manage waste without harming the environment or endangering human health;

- The requirement for member states to have a permitting system for waste management activities, with exemptions available for activities that pose less risk to the environment;
- The polluter pays principle applied to costs of waste management;
- Duty of care; and
- Proximity principle, so waste is disposed of within the state of origin or in the nearest disposal facility in the adjoining state.

By 2020, the member states are expected to have taken the necessary steps to achieve a recycling target of 50%. Moreover, the WFD sets the target of recovering 70% of construction and demolition waste by 2020.

The WFD's requirements are supplemented by other directives for specific waste streams. The WFD considers some wastes to be hazardous waste. A hazardous waste is defined as a waste that has one or more of the fifteen specified hazardous properties listed in Annex III to the WFD.

Waste classification is based on:

- Commission Notice providing technical guidance on the classification of waste (2018/C 124/01);
- Commission Decision 2014/995/EC: the European List of Waste (LoW); and
- Annex III to Directive 2008/98/EC: Annex to the WFD which defines whether waste is hazardous.

Commission Decision 2014/995/EU inserts a new European List of Wastes into Commission Decision 2000/532/EC which originally defined details for waste classification. The List of Wastes (LoW) serves as a common encoding of waste characteristics in a broad variety of purposes like classification of hazardous wastes which are defined in Annex III of the WFD. Assignment of waste codes has a major impact on the transport of waste, installation permits (which are usually granted for the processing of specific waste codes), decisions about recyclability of the waste or as a basis for waste statistics.

The more recent Commission Notice (2018/C 124/01) provides technical guidance on the correct interpretation and application of EU legislation on the classification of waste. It covers a comprehensive overview of relevant EU legislation, gives examples of waste types for which classification is considered difficult by stakeholders, and provides step-by-step information on how to assess whether waste displays hazardous properties and on how to classify it.

The LoW is used to determine the types of waste likely to be produced in the construction and the suitable methods of treatment, for example which wastes can be recycled. The LoW has been transposed into Welsh Law through the Hazardous Waste (Miscellaneous Amendments) (Wales) Regulations 2015.

The Landfill Directive (1999/31/EC)

The Landfill Directive (1999/31/EC) is transposed into UK law by the Landfill (England and Wales) Regulations 2002. The prime objective of the Landfill Directive and Regulations is to minimise waste going to landfill and set diversion targets. The legislation is also designed to standardise the operations of landfill sites in EU member states with the aim of preventing or reducing adverse effects of landfill on the environment, particularly surface water, groundwater, soil, air and human health.

It is important to note that the legal definition of 'Landfill' under the Directive and Regulation only applies to waste which is permanently disposed of and these regulations do not apply to waste which is recovered to land under a recovery activity (Environment Agency, 2016).

Under the Directive and Landfill Regulations, landfills are separated into three categories for hazardous waste, non-hazardous waste and inert waste. The legislation is based around acceptance criteria for waste going to landfill and operating permits for landfill owners. Member states are responsible for ensuring that the following waste acceptance criteria are followed:

- Waste must be treated before being landfilled;
- Waste must be sent to the correct category landfill; and,
- Criteria for the acceptance of waste at each landfill class must be adopted by the Commission in accordance with the general principles of Annex II.

Liquid, flammable, explosive/oxidising, infectious clinical waste, most tyres and any other types of waste set out in Annex II of the directive are not accepted at landfill sites.

Environmental Protection Act 1990 (Duty of Care)

The Environmental Protection (EPA) Act 1990 is earlier legislation which provides the structure and authority for waste management and the control of pollution and introduces the concept of 'Duty of Care'. Requirements are also outlined for waste storage, treatment and disposal and controls for impacts of waste storage such as dust and odour are set out in the Act.

Section 34 of the EPA 1990 (as amended) sets out the extent of the 'Duty of Care' owed by any person who imports, produces, carries, keeps, treats or disposes of controlled waste.

As described in the Code of Practice for the Duty of Care for Waste Management, published by the Department for Environment, Food and Rural Affairs (Defra, 2018), those subject to duty of care must try to achieve the following:

a) to prevent any other person committing the offences of depositing, disposing of or recovering controlled waste without a waste management licence, contrary to the conditions of a licence or in a manner likely to cause environmental pollution or harm to health;

b) to prevent the escape of waste, that is, to contain it;

c) to ensure that, if the waste is transferred, it goes only to an "authorised person" or to a person for "authorised transport purposes"; and

d) when waste is transferred, to make sure that there is also transferred a written description of the waste, a description good enough to enable each person receiving it to avoid committing any of the offences under (a) above and to comply with the duty at (b) above to prevent the escape of waste.

Waste (England and Wales) Regulations 2011

The Waste Regulations 2011 transpose the EU revised WFD (Section 0) into law in England and Wales and implement the waste hierarchy (DEFRA, 2011). In addition, the regulations establish duties in relation to the collection of waste and set requirements for planning authorities. Consistent with aspirations of the WFD, Schedule 1 of the regulations states that measures must to be taken to ensure that by 2020 at least 70% by weight of construction and demolition waste is subjected to material recovery.

The Waste Regulations 2011 resulted in a number of changes to the management of waste which include:

- Greater emphasis on the waste hierarchy. The hierarchy will have to be applied by businesses transferring waste and by environmental permit holders whose operations generate waste. The waste producer has the most important role in this hierarchy.
- Amendments to obligations under duty of care to take account of the waste hierarchy, such as a declaration on transfer notes and hazardous waste consignment notes.
- Introduction of a two-tier carrier and broker registration system, including an obligation on waste producers carrying their own (non-construction/ demolition) waste to register by end of 2013, and a new concept of 'dealer'.
- Minor amendments to the assessment of hazardous waste and to the consignment note procedures and record keeping requirements.
- Bringing certain categories of radioactive waste under waste control.

Environmental Permitting Regulations (2010)

The Environmental Permitting (England and Wales) Regulations 2010, as amended, covers facilities previously regulated under the Pollution Prevention and Control Regulations (PPC) 2000, and Waste Management Licensing and exemptions schemes, some parts of the Water Resources Act 1991, the Radioactive Substances Act 1993 and the Groundwater Regulations 2009.

Under EPR, standard rules permits are available for specific activities. These are usually quicker and cheaper to apply for than bespoke permits. They contain one condition, which refers to a fixed set (or sets) of standard rules that an operator must comply with. They help the Environment Agency (EA) or Natural Resources Wales make sure that the operation does not cause pollution or nuisance to the environment and give operators options on how best to achieve this.

Installations defined under Part A(1) are regulated by the EA or Natural Resources Wales while Part A(2) and B are regulated by local authorities.

For the purpose of this OWMP the key point to note is that any waste activity will require consideration under the EPR, whether that be a time limited exemption or treatment activity, a standard permit or a bespoke permit. This would apply to both waste activities which may occur on-site during the Proposed Project but would also be the key regulatory instrument for external sites which may receive and process waste arisings from the Proposed Project.

Core guidance on the EPR is provided by DEFRA (2013) with national level guidance provided by Natural Resources Wales (2019).

Site Waste Management Regulations (2008)

The Site Waste Management Regulations 2008 required any project on a construction site with an estimated cost greater than £300,000 to prepare and update a SWMP. These regulations were revoked on 1 December 2013 when the Environmental Noise, Site Waste Management Plans and Spreadable Fats etc. (Revocations and Amendments) Regulations 2013, came into force.

Hazardous Waste (England and Wales) Regulations 2005

In the UK, hazardous wastes are regulated by Hazardous Waste (England and Wales) Regulations 2005.

These Regulations set out key requirements for the production and handling of hazardous waste. They include specific responsibilities for producers, carriers and receivers (consignees) of hazardous waste, to ensure that the waste causes no harm or damage.

Producers are required to identify, segregate and store hazardous waste safely, ensure that the waste is managed and transported correctly, and retain the necessary records. These procedures form part of the SWMP.

Typically waste falls into three main classifications as defined by the Landfill Directive and WFD for the purposes of management and disposal.

- hazardous waste (covered by Article 1(4) of Council Directive 91/689/EEC of 12 December 1991 on hazardous waste);
- non-hazardous non-inert waste (includes municipal type wastes); and
- inert waste.

Hazardous wastes include materials such as asbestos, coal tars, materials containing dangerous or corrosive substances organic solvents etc. Product data sheets including detail on any hazardous substances should be made available and used by anyone engaged in the removal and handling of dismantled overhead line parts.

Non-hazardous non-inert wastes include materials which will biodegrade, giving rise to leachates and generation of landfill gas, examples include general municipal wastes, canteen wastes, wood, plastics, fabrics etc.

Inert wastes are defined as materials that do not undergo any significant physical, chemical or biological transformations, they will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which they come into contact in a way likely to give rise to environmental pollution or to harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater. Examples include subsoils, clays, stones, concrete, brick, tiles, glass, etc.

National Policy

Current overarching National policy for the Energy sector is set out in the current National Policy Statement (NPS) EN-1 (DECC, 2011). Section 5.14 of NPS EN-1 sets out key requirements for waste management which are summarised in Table 1.

Table 1 Review of NPS EN-1

Paragraph	Requirement	Compliance
5.14.6	The applicant should set out the arrangements that are proposed for managing any waste produced and prepare a Site Waste Management Plan (SWMP).	The OWMP describes principles and procedures for managing waste from the Proposed Project and identifies the requirement for the production and contents of the SWMP and MMP, to be prepared prior to commencement of construction. The SWMP and MMP will set out in detail the arrangements for managing any waste produced for each of the main work streams. An example (SWMP) is provided in Appendix B of the OWMP.
	The arrangements described in the SWMP should include information on the proposed waste recovery and disposal system for all waste generated by the development, and an assessment of the impact of the waste arising from development on the capacity of waste management facilities to deal with other waste arising in the area for at least five years of operation.	This has been considered in the OWMP and will be addressed in detail further by the Principal Contractor(s).
	The applicant should seek to minimise the volume of waste produced and the volume of waste sent for disposal unless it can be demonstrated that this is the best overall environmental outcome.	This is addressed in the OWMP. Sustainable waste management through the implementation of the waste hierarchy principles is described throughout the OWMP.

5.14.7	The Infrastructure Planning Commission (IPC) should consider the extent to which the applicant has proposed an effective system for managing hazardous and non-hazardous waste arising from the construction, operation and decommissioning of the proposed development. (*Note: operation and decommissioning phases are excluded from this OWMP)* It should be satisfied that: Any such waste will be properly managed, both on-site and off-site; the waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arisings should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arisings in the area; and adequate steps have been taken to minimise the volume of waste arisings, and of the volume of waste arisings sent to disposal, except where that is the best overall environmental outcome.	The OWMP describes procedures for managing hazardous and non-hazardous waste. The future SWMP and MMP will ensure that waste arisings are minimised and do not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arisings in the area.

Welsh Planning Policy

In June 2010 the Welsh Assembly Government launched a document called 'Towards Zero Waste' (Welsh Assembly Government, 2010). This is the Welsh Government's waste overarching strategy document, which outlines plans for the recycling of 70% of Wales' waste by 2025 and be a 'zero waste one planet nation' by 2050.

Welsh Assembly Government (2010) partially replaced Welsh Assembly Government's 2002 strategy called 'Wise About Waste' (Welsh Assembly Government, 2002). It is understood that in the fullness of time, Welsh Assembly Government (2010) will be complimented by sector plans which will detail exactly what actions Welsh Government will need to take to reach these targets.

Welsh Assembly Government (2010) provides an overview of waste management in Wales and together with its associated documents listed below, sets out the requirements within the revised EU Waste Framework Directive, and associated Directives, to adopt waste management plans and waste prevention programmes as they apply in Wales.

The current suite of documents that comprise the formal waste management strategy for Wales include:

- Towards Zero Waste (with revised policies, outcomes sought and targets) (Welsh Assembly Government, 2010);
- Towards Zero Waste 2010–2050 Progress Report July 2015 (Welsh Government, 2015);
- Waste Strategy Progress Report 2002-2008 (Welsh Assembly Government, 2010);
- Wise About Waste (Welsh Assembly Government, 2002) (in respect of policies, targets and actions described therein that are still on going, with the exception of the policies, targets and actions that have been superseded by those in Towards Zero Waste (Welsh Assembly Government, 2010));
- Technical Advice Note 21 (Waste) - for development planning policies associated with waste (Welsh Government, 2014a);
- Waste Planning Practice Guide. Supplementary document to Technical Advice Note 21 (Welsh Government , 2014b);
- Regional Waste Plans for North, South West and South East Wales;
- Waste Sector Plans and Waste Prevention Programme; and
- Local Development Plans.

Local Planning Policy

North Wales Regional Waste Plan

The North Wales Regional Waste Plan (NWRWP) was adopted in 2003. The requirement to establish Regional Waste Groups and produce Regional Waste Plans was set out within preceding versions of Technical Advice Note 21 (Welsh Government, 2014a).

The NWRWP 1st Review, which replaced the original Plan published in 2004, became the strategic framework for underpinning the preparation of waste policies in Local Development Plans and a material consideration in the development control process (Snowdonia National Park Authority, 2016) and contains the following key principles are considered to be fundamental:

- Sustainability;
- The Waste Hierarchy;
- The Proximity Principle;
- The Self-sufficiency Principle; and
- Collaboration.

Gwynedd Council

The Anglesey and Gwynedd Joint Local Development Plan 2011-2026 (AGJLDP), adopted on 31st July 2017 (Anglesey and Gwynedd, 2017) is relevant to the Proposed Project and us supported by Topic Paper 12: Waste, February 2015 (Anglesey and Gwynedd, 2015).

These documents are primarily focused upon providing the planning platform to manage the provision of waste facilities in these geographical areas, however areas of Gwynedd within Snowdonia National Park Authority are excluded. The Topic Paper explains the background used to identify the issues, objectives, options and preferred strategy to inform the preparation of the AGJLDP. Both plans have regard to the Welsh Government, 2014a and 2014b.

Within the Local Development Plan, 'Key Issue' number 27 identifies the "Need to produce less waste in the first place and facilitate re-using and recycling waste along with disposal of residual waste." It also identifies Strategic Objective number 18 seeks to "Encourage waste management based on the hierarchy of reduce, re-use, recovery and safe disposal" and 'Strategic Policy' number 21 for Waste Management which seeks to ensure an adequate availability of land in appropriate locations for an integrated network of waste facilities to meet regional and local obligations.

Snowdonia National Park

Within Snowdonia National Park the Snowdonia National Park Authority assumed responsibility for Minerals and Waste Planning in 1996.

Snowdonia National Park Authority is not required to identify land for large-scale waste facilities to serve more than one local authority area. As a result Snowdonia National Park Authority is only required to ensure that there is adequate land provision to deal with its own needs. All predictions of waste arisings are carried out at the Local Authority level which meant there were no specific capacity requirements identified for Snowdonia National Park Authority.

Specific waste policy for Snowdonia National Park Authority is therefore limited, however the revised Local Development Plan (2016-2031) was adopted by Snowdonia National Park Authority on the 6th of February 2019 (Snowdonia National Park Authority, 2019). Within the adopted Plan, Joint Supplementary Planning Guidance for Snowdonia National Park Authority document also make modest high -level reference to waste (Snowdonia National Park Authority 2011 and 2015).

In broad terms, all Snowdonia National Park Authority waste policy, as with that for Gwynedd Council refers back to key policies and requirements set out in prevailing Welsh Government policy including 'Towards Zero Waste'.

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Snowdonia National Park Authority, 2015. Snowdonia National Park Authority, Supplementary Planning Guidance: Enabling Sustainable Development in the National Parks of Wales. May 2015. https://www.snowdonia.gov.wales/__data/assets/pdf_file/0018/621630/FINAL-SPG-Sust-Development-SAESNEG.pdf

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Snowdonia National Park Authority, 2019. Adoption of the revised Eryri Local Development Plan. https://www.snowdonia.gov.wales/planning/planning-policy/local-development-plan-ldp

Appendix B

Example Site Waste Management Plan (SWMP) Proforma

Example Site Waste Management Plan Proforma

Snowdonia VIP Project

This Site Waste Management Plan (SWMP) proforma has been produced by Stantec UK Ltd on behalf of National Grid in support of its Snowdonia National Park Visual Impact Provision (VIP) Project.

The purpose of this document is to provide an example SWMP template developed in accordance with prevailing DEFRA non-statutory guidance (DEFRA, 2008[1]) based on the now repealed Site Waste Management Plans Regulations 2008 (SI 2008 no.314).

The key aim of the SWMP is to improve materials resource efficiency, by promoting the economic use of materials and methods so that waste is minimized and any waste that is produced can be re-used, recycled or recovered in other ways before disposal options are explored.

This template SWMP proforma includes all fields which are required for projects which exceed £500k in value.

Responsibility

Name of Client	
Name of Principal Contractor	
Name of Person who drafted the Plan	
Notes/Amendments	

Construction Project

Location (Address, postcode if appropriate)	
Nature of Project	
Estimated Project Cost	
Notes/Amendments	

Materials Resource Efficiency

Describe here any methods adopted during the conception, design and specification phase to reduce the amount of waste arising.

Method	Resource Saving (quantify if possible)

[1] *DEFRA, 2008. Non-statutory guidance for site waste management plans. April 2008.*

Waste Management

Declaration:

The Client and Principal Contractor will take all reasonable steps to ensure that:

a) All waste from the Site is dealt with in accordance with the waste Duty of Care in Section 34 of the Environmental Protection Act (1990) and the Environmental Protection (Duty of Care) Regulations (1991); and
b) Materials will be handled efficiently and waste managed appropriately.

Signatures		**Date**
Representing Client		
Representing Principal Contractor		

Waste Data

Estimated Arisings

Waste Type	Quantity (m^3 or Tonnes)							
	Re-use on-Site	Re-use off-Site	Recycling on-Site	Recycling off-Site	Other form of Recovery on-Site	Other form of Recovery off-Site	Sent to Landfill	Other Disposal
Estimated Arisings								
Inert								
Non-Hazardous								
Hazardous								
Totals (m^3 or tonnes)								

Actual Arisings

Waste Type	Quantity (m^3 or Tonnes)							
	Re-use on-Site	Re-use off-Site	Recycling on-Site	Recycling off-Site	Other form of Recovery on-Site	Other form of Recovery off-Site	Sent to Landfill	Other Disposal
Actual Arisings								
Inert								
Non-Hazardous								

Hazardous								
Totals (m^3 or tonnes)								
CHECK: **Difference between estimated and actuals**								

Waste Records

Provide here summary details or waste records for wastes removed from the Site.

Date Removed	Waste Type	Identity of the person removing the waste	Site the waste is being taken to (and whether licenced or exempt)	Waste carrier and registration number*	Confirmation of delivery*

** Evidence of waste carrier registration and waste transfer or hazardous waste consignment notes for each removal of waste should be provided either as part of the plan, or filed and cross-referenced.*

Post-Construction

To be completed within three months of the construction work being completed

Confirmation

This plan has been monitored on a regular basis to ensure that work is progressing according to the plan and has been updated to record details of the actual waste management actions and waste transfers that have taken place.

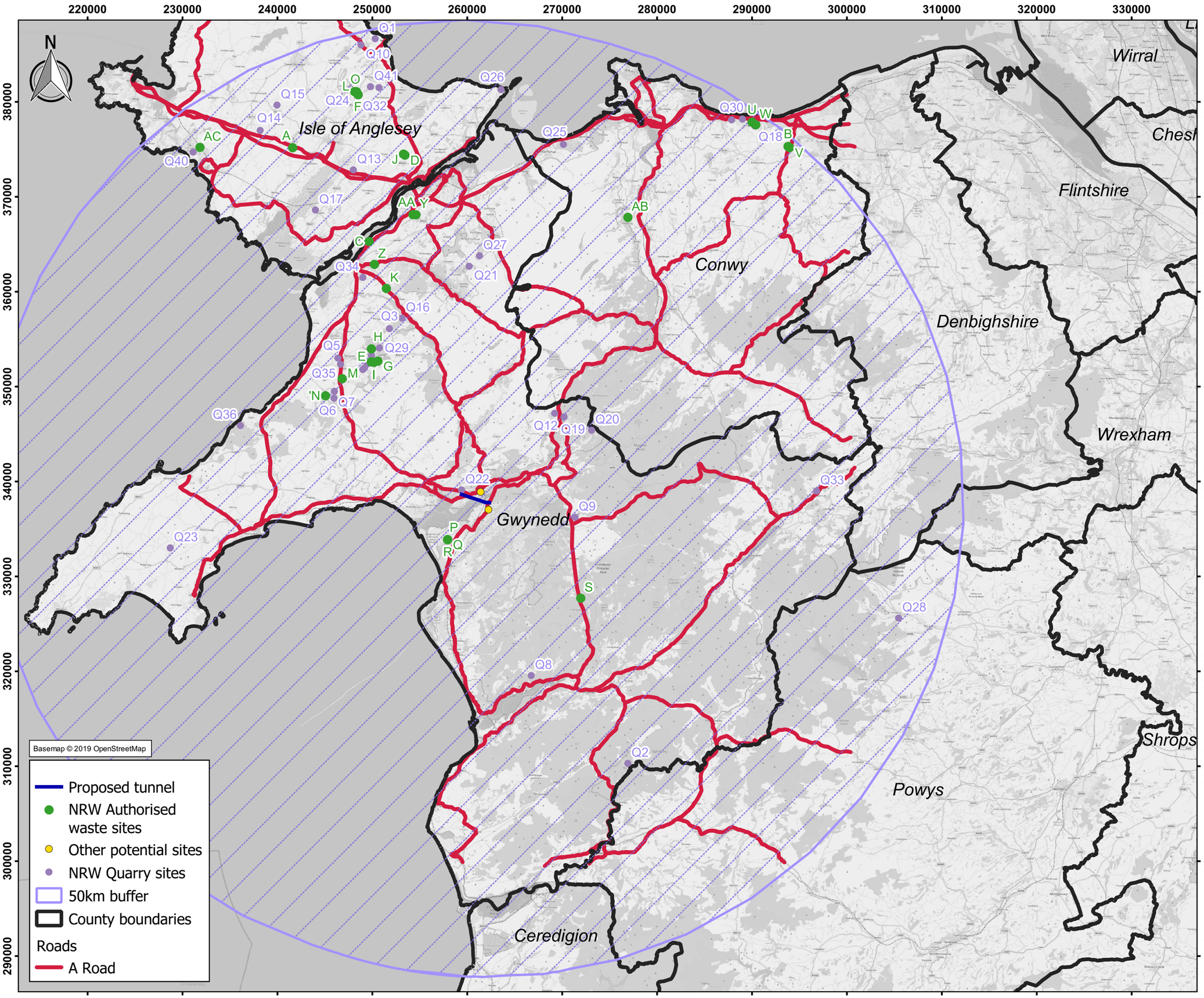
Signature	Date

Issues arising

Issues	Details
Explanation of any deviation from the planned arrangements	
Waste forecasts - exceeded	
Waste forecasts – not met	
Cost savings achieved	

Appendix C

Potential Outlets for Tunnel Arisings



Drawing 1: NRW Authorised Waste Sites (green) and quarries (purple) within 50 km of the proposed tunnel

Date	2019	Drawn	AIA
Scale	1:375000	Checked	FKC
Original	A3	Revision	1

File Reference: O:\66721\GIS\Map documents\Quarries and landfills v0.1\Drawing 1

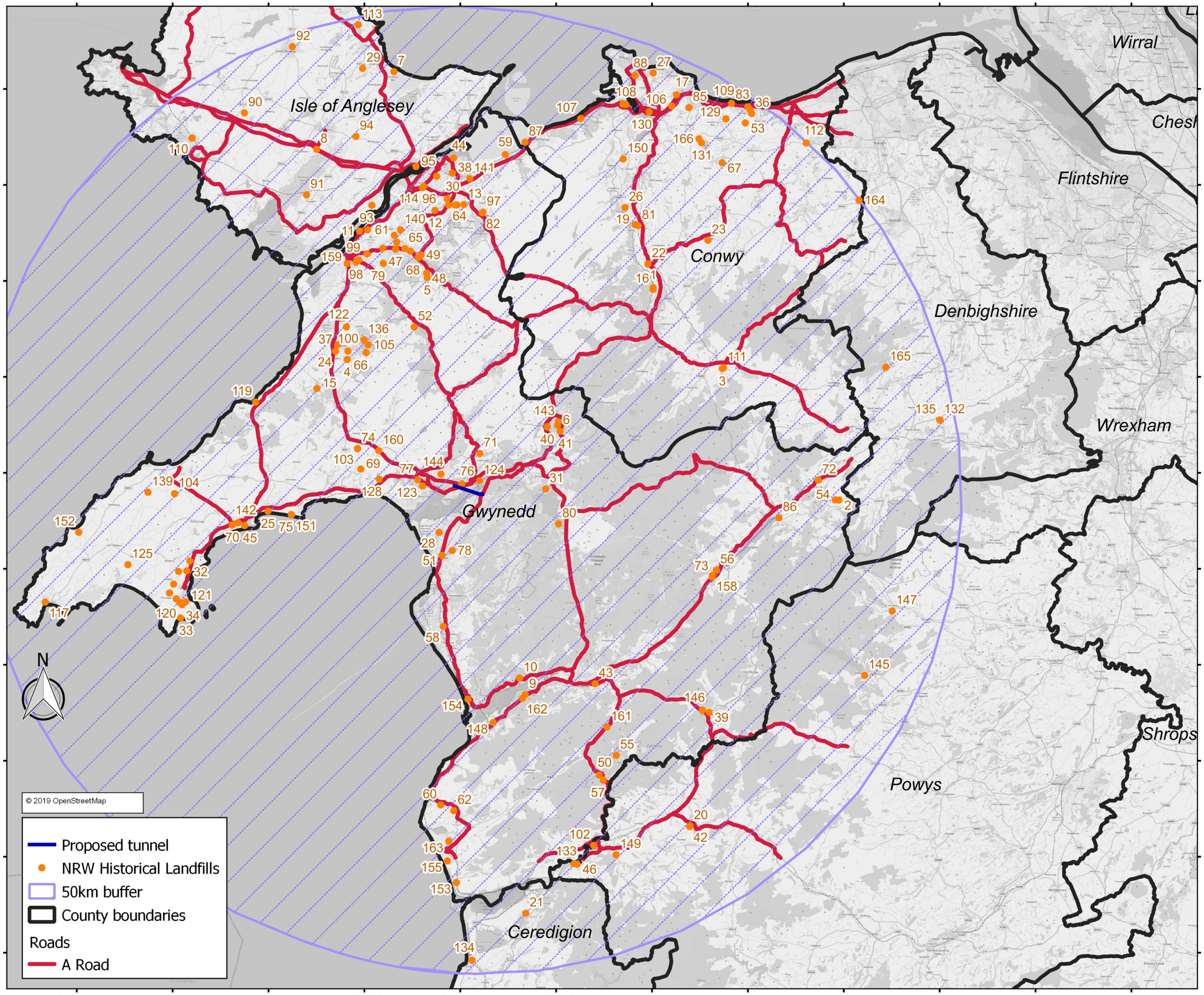
Stantec

ID	Permit Num	Waste Mana	Waste Acti	Site Name	Site Addre	Site Add_1	Site Town/	Site Count	Local Auth	Site Postc	Permit Hol	NGR	Permit Sta	Permit Iss	Permit Eff	Permit Exp	Permit Sur	Permitted	SH/SN?	Easting	Northing
A	AB3597TU	900038	A25: Deposit of waste to land as a recovery operation	Druid Farm	Druid Farm	Gwalchmai	Hollyhead		Isle of Anglesey	LL65 4RP	Mr Owen Wyn Pritchard, Mrs Rosemary Bebb Pritchard And Mr Eilir Wyn Pritchard	SH 41601 75166	Surrender	27-Nov-13	27-Nov-13		15-Sep-15	0	Y	241601	375166
B	BP3330LS	210004	L05: Inert Landfill	Ty Mawr Farm Landfill	Betws Yn Rhos		Abergele	Conwy	Conwy	LL22 8AA	Griffiths Griffith Wyn, Edward Lloyd And Gwenfrai Rees	SH 93800 75300	Effective	29-Mar-07	29-Mar-07			99000	Y	293800	375300
C	BP3694FV	37016	A07: Industrial Waste Landfill (Factory curtilage)	Ferodo Landfill	Griffiths Crossing		Caernarfon	Gwynedd	Gwynedd	LL55 1TR	Ferodo Limited	SH 49656 65288	Expired	06-Jun-90	06-Jun-90	30-Jun-09		0	Y	249656	365288
D	CP3694FW	37129	A01: Co-Disposal Landfill Site	Penhesgyn Gors Landfill (area 2)	Llansadwrn		Menai Bridge	Ynys Mon	Isle of Anglesey	LL59 5RY	Cyngor Sir Ynys Mon	SH 53437 74384	Effective	10-Apr-95	10-Apr-95			0	Y	253437	374384
E	FP3494FV	37117	A06: Landfill taking other wastes	Ty Mawr East Quarry Landfill	Talysarn		Penygroes	Gwynedd	Gwynedd	LL54 6BA	Watkin Jones & Son Ltd	SH 49885 52603	Effective	23-Aug-94	23-Aug-94	04-Sep-09		0	Y	249885	352603
F	FP3590LV	210088	L05: Inert Landfill	Rhuddlan Bach Quarry~Landfill Site	Rhuddlan Bach Quarry Landfill Site		Brynteg	Anglesey	Isle of Anglesey	LL78 7JJ	Clive Hurt (Plant Hire) Ltd	SH 48474 80784	Effective	22-Feb-18	22-Feb-18			125000	Y	248474	380784
G	HP3494FA	37107	A05: Landfill taking Non-Biodegradeable Wastes	Plas Gwernoer	Nantlle		Caernarfon	Gwynedd	Gwynedd	LL54 6BB	Robin Jones & Sons Limited	SH 50590 52677	Effective	28-Apr-94	28-Apr-94	21-May-02		0	Y	250590	352677
H	KP3094FZ	37082	A04: Household, Commercial & Industrial Waste Landfill	Cilgwyn Landfill Site	Carmel		Penygroes	Gwynedd	Gwynedd	LL54 7SF	Gwynedd Council	SH 49902 53971	Effective	25-May-16	25-May-16	20-Mar-15		0	Y	249902	353971
I	KP3594FQ	37084	A05: Landfill taking Non-Biodegradeable Wastes	Gwernoer Farm			Penygroes	Gwynedd	Gwynedd	LL54 6BB	R Black	SH 50157 52550	Expired	26-Nov-93	26-Nov-93	03-Aug-07		0	Y	250157	352550
J	KP3994FG	37083	A04: Household, Commercial & Industrial Waste Landfill	Penhesgyn Gors Landfill (area 3)			Menai Bridge	Ynys Mon	Isle of Anglesey	LL59 5RY	Cyngor Sir Ynys Mon	SH 53285 74494	Effective	23-Nov-93	23-Nov-93			0	Y	253285	374494
K	LP3894FX	37033	A05: Landfill taking Non-Biodegradeable Wastes	Cae Main Farm	Waunfawr		Caernarfon	Gwynedd	Gwynedd	LL55 4YR	Edward Vaughan Hughes	SH 51476 60333	Expired	16-Jun-92	16-Jun-92	13-Mar-16		0	Y	251476	360333
L	MB3232AP	104868	A25: Deposit of waste to land as a recovery operation	Nant Newydd Quarry	Nant Newydd Quarry		Brynteg	Anglesey	Isle of Anglesey	LL78 7JJ	Mr Gwylim Tyrer Owen And Mrs Jean Tyrer Owen	SH 48130 81076	Surrender	09-Oct-13	09-Oct-13		05-Jul-16	31142	Y	248130	381076
M	MP3194FW	37047	A06: Landfill taking other wastes	Greenarfon Slate Quarry			Llanllynfi	Gwynedd	Gwynedd	LL54 6DH	Mulcair Ltd	SH 46825 50825	Effective	12-Jan-93	12-Jan-93	27-Jan-05		0	Y	246825	350825
N	MP3494FQ	37044	A04: Household, Commercial & Industrial Waste Landfill	Llwyn Isaf Landfill And~Transfer Station	Clynnog Fawr, Penygroes		Caernarfon	Gwynedd	Gwynedd	LL54 5DF	Gwynedd Council	SH 45067 49027	Effective	15-Oct-92	15-Oct-92			40000	Y	245067	349027
O	NP3994FH	37144	A05: Landfill taking Non-Biodegradeable Wastes	Nant Newydd Quarry 1			Brynteg	Ynys Mon	Isle of Anglesey	LL78 7JJ	Hugh Selwyn Owen And Gwilym Tyler Owen	SH 48216 81059	Expired	19-Jul-96	19-Jul-96	30-Mar-07		0	Y	248216	381059
P	PP3294FJ	37004	A04: Household, Commercial & Industrial Waste Landfill	Ffridd Rasus Waste~Management Facility	Morfa Road		Harlech	Gwynedd	Gwynedd	LL46 2UW	Gwynedd Council	SH 57933 33868	Effective	29-Mar-18	29-Mar-18			18000	Y	257933	333868
Q	PP3294FJ	37004	A25: Deposit of waste to land as a recovery operation	Ffridd Rasus Waste~Management Facility	Morfa Road		Harlech	Gwynedd	Gwynedd	LL46 2UW	Gwynedd Council	SH 57933 33868	Effective	29-Mar-18	29-Mar-18			18000	Y	257933	333868
R	QP3594FU	37293	A04: Household, Commercial & Industrial Waste Landfill	Ffridd Rasus Landfill Areas 1 And 3			Harlech	Gwynedd	Gwynedd	LL46 2UW	Gwynedd Council	SH 57935 33866	Expired	31-Oct-05	31-Oct-05	31-Jan-05		0	Y	257935	333866
S	RB3197TN	900050	A25: Deposit of waste to land as a recovery operation	Events Parking Area	Coed Y Brenin		Ganllwyd	Gwynedd	Gwynedd	LL40 2HZ	Natural Resources Wales	SH 71960 27702	Effective	18-Nov-13	18-Nov-13			50000	Y	271960	327702
T	RP3337SE	210014	L05: Inert Landfill	Nant Newydd Quary	Brynteg		Llangefni	Ynys Mon	Isle of Anglesey	LL78 7JJ	Clive Hurt (Plant Hire) Ltd	SH 48510 80750	Effective	23-May-18	23-May-18			5000	Y	248510	380750
U	SP3194FQ	37027	A01: Co-Disposal Landfill Site	Llanddulas Landfill Phase 1 & 3	Llanddulas Quarry		Colwyn Bay	Conwy	Conwy	LL22 8HP	3 C Waste Ltd	SH 90005 77857	Expired	15-Jan-92	15-Jan-92	06-Jun-04		0	Y	290005	377857
V	SP3294FB	37025	A06: Landfill taking other wastes	Ty Mawr Farm Abergele			Abergele	Conwy	Conwy	LL2 8AA	Griff Griffiths	SH 93966 75187	Expired	04-Nov-87	04-Nov-87	29-Mar-07		0	Y	293966	375187
W	SP3794FF	37028	A01: Co-Disposal Landfill Site	Llanddulas Landfill Phase 2	Llanddulas Quarry		Colwyn Bay	Conwy	Conwy	LL22 8HP	3 C Waste Ltd	SH 90404 77583	Expired	15-Jan-92	15-Jan-92	06-Jun-04		0	Y	290404	377583
X	VP3594FH	37203	A06: Landfill taking other wastes	Rhuddlan Bach Quarry			Brynteg	Ynys Mon	Isle of Anglesey	LL78 7JJ	C & M Parry Plant Hire Ltd	SH 48337 81065	Expired	21-Sep-99	21-Sep-99	16-Mar-07		0	Y	248337	381065
Y	WP3432SC	210025	L05: Inert Landfill	Nant Y Garth Landfill Site	Vaynol Woodlands		Portdinorwic	Gwynedd	Gwynedd	LL56 4QG	Treborth Leisure Limited	SH 54600 68100	Effective	08-Sep-06	08-Sep-06			75000	Y	254600	368100
Z	XP3094FS	37061	A05: Landfill taking Non-Biodegradeable Wastes	Pontrug Landfill - Part~Ordnance Survey 3990	Nantlle		Caernarfon	Gwynedd	Gwynedd	LL55 2BF	Watkin Jones & Son Ltd	SH 50214 62873	Effective	25-Feb-93	25-Feb-93	25-Jan-02		0	Y	250214	362873
AA	XP3894FA	37064	A05: Landfill taking Non-Biodegradeable Wastes	Nant-y-garth	Nant-y-garth		Y Felinneli	Gwynedd	Gwynedd	LL56 4QF	Treborth Leisure Ltd	SH 54279 68112	Expired	07-Apr-93	07-Apr-93	08-Sep-06		0	Y	254279	368112
AB	ZP3097ET	102879	A25: Deposit of waste to land as a recovery operation	Morfa Uchaf	Dolgarrog		Conwy	Gwynedd	Conwy		Alwyn Jones Limited	SH 76925 67827	Effective	24-Aug-11	24-Aug-11			49999	Y	276925	367827
AC	ZP3494FC	37137	A05: Landfill taking Non-Biodegradeable Wastes	Tywyn Trewan Landfill	Land / Premises At	Tywyn Trewan Common	Rhosneigr	Ynys Mon	Isle of Anglesey	LL65 3SW	C & M Parry Plant Hire Ltd	SH 31835 75206	Expired	21-Sep-95	21-Sep-95	08-Jul-11		0	Y	231835	375206

ID	Primary	BGS Ref	Pit Name	ALTERNATIV	Parent Pit	STATUS	IN RAWP	RAWP class	Type of mi	CMDTY code	CMDTY prod	Easting	Northing	Pit addres	Age	LITHOSTRAT
Q1	94	2410	Aber Quarry	Aberstrecht		A	Y	A	O	LST	Limestone	250300	386650	, MOELFRE, Isle of Anglesey	Carboniferous	Clwyd Limestone Group
Q2	100	2111	Aberllefenni Mine	Aberllefeni		I			U	SLT	Slate	276920	310290	, ABERLLEFENNI, Gwynedd	Ordovician	Narrow Vein Mudstone Formation
Q3	216	2132	Alexandra Slate Quarry	Moel Tryfan & Alexandria		A			O	SLT	Slate	251800	356105	, Moel Tryfan, Rhostryfan, CAERNARFON, Gwynedd	Cambrian	Llanberis Slates Formation
Q4	133	2411	Bryn Engan			C	Y	A	O	LST	Limestone	250700	381500	, Bryn Engan, LLANBEDRGOCH, Anglesey	Carboniferous	Clwyd Limestone Group
Q5	63	2129	Cae Efa Llwyd	Ffordd Clynnog Road		D	Y	ID	O	SAG	Sand & Gravel	246370	353000	, Penygroes, CAERNARFON, Gwynedd	Quaternary	Glaciofluvial Deposits
Q6	126	2108	Cefn Graianog Quarry			A			O	SAG	Sand & Gravel	245955	348770	, Llanllyfni, CAERNARFON, Gwynedd, LL54 6SY	Quaternary	Glacial Deposits
Q7	65	6996	Cefn Graianog Quarry	Graianog Farm	Cefn Graianog Quarry	A	Y	A	O	SAG	Sand & Gravel	246000	349500	, Llanllyfni, Penygroes, CAERNARVON, Gwynedd, LL54 6SY	Quaternary	Glaciofluvial Deposits
Q8	69	10320	Clogau St Davids Mine	Llechfraith Adit		I			U	AU	Gold	266740	319550	, Bontddu, DOLGELLAU, Gwynedd	!	!
Q9	112	13202	Craig y Tan Quarry			A			O	IGN	Igneous & Metamorphic Rock	271349	336224	, TRAWSFYNYDD, Gwynedd	Ordovician	Unnamed Igneous Intrusion, Ordovician
Q10	163	2421	Creigiau			C	Y	ID	O	SST	Sandstone	248800	386000	, Creigiau, Dulas, AMLWCH, Isle of Anglesey, LL70 9H	Carboniferous	Lligwy Sandstone Formation
Q11	23	2113	Dorothea			D			O	SLT	Slate	249905	353270	, Talysarn, CAERNARFON, Gwynedd	Cambrian	Llanberis Slates Formation
Q12	61	2117	Ffestiniog Slate	Oakley		I			O	SLT	Slate	269206	347186	Oakley Quarry, BLAENAU FFESTINIOG, Gwynedd	Ordovician	Nant Ffrancon Subgroup
Q13	62	72	Gaerwen	Bwlch Gwyn		I	Y	ID	O	IGN	Igneous & Metamorphic Rock	248000	372830	, Gaerwen, LLANGEFNI, Anglesey	Neoproterozoic 3 (Late Precambrian)	Coedana Complex
Q14	83	2407	Gwalchmai	Caer Glaw		A			O	IGN	Igneous & Metamorphic Rock	238175	376990	, GWALCHMAI, Isle of Anglesey, LL65 4PN	Precambrian	Coedana Complex (Coedana Granite)
Q15	51	2408	Gwyndy Quarry			A	Y	A	O	IGN	Igneous & Metamorphic Rock	239955	379665	Gwyndy Quarries, Llandrygarn, LLANERCHYMEDD, Isle of Anglesey, LL71 7A	Precambrian	Coedana Complex (Coedana Granite)
Q16	140	2124	Hafod-Y-Wern Slate Tip			A			O	SLT	Slate	253135	357215	, Betws Garmon, CAERNARFON, Gwynedd	Cambrian	Llanberis Slates Formation
Q17	111	2409	Hengae Quarry			A	Y	A	O	IGN	Igneous & Metamorphic Rock	244000	368600	, LLANGAFFO, Isle of Anglesey	Precambrian	Central Anglesey Shear Zone and Berw Shear Zone
Q18	167	926	Llanddulas	Llysfaen		I			O	LST	Limestone	290300	377460	, Llanddulas, ABERGELE, Clwyd, LL22 8HP	Carboniferous	Clwyd Limestone Group (Llandulas - Dulas Limestone)
Q19	74	3964	Llechwedd Slate Mine			A	Y	A	U	SLT	Slate	270200	346800	, BLAENAU FFESTINIOG, Gwynedd, LL41 3NB	Ordovician	Nant Ffrancon Subgroup
Q20	115	2116	Manod Quarry	Cwt-y-Bugail, Manod & Graig Ddu		A	Y	A	O	SLT	Slate	273100	345400	, Cwt-y-Bugail, BLAENAU FFESTINIOG, Gwynedd, LL41 4RG	Ordovician	Nant Ffrancon Subgroup
Q21	205	2130	Marchlyn Slate Quarry	Dinorwig & Marchlyn		D			O	SLT	Slate	260200	362675	, Dinorwig, LLANBERIS, Gwynedd	Cambrian	Llanberis Slates Formation
Q22	211	2104	Minffordd Quarry	Garth Quarry		A	Y	A	O	IGN	Igneous & Metamorphic Rock	259400	339100	, Penrhyneudraeth, PORTHMADOG, Gwynedd, LL48 6H	Ordovician	Unnamed Igneous Intrusion, Ordovician
Q23	60	2105	Nanhoron Quarry			C	Y	A	O	IGN	Igneous & Metamorphic Rock	228700	333000	, Botwnnog, PWLLHELI, Gwynnedd, LL53 8PR	Ordovician	Unnamed Pluton, Ordovician
Q24	128	2413	Nant Newydd Quarry			A	Y	A	O	LST	Limestone	248100	381100	, BRYNTEG, Isle of Anglesey, LL78 7J	Carboniferous	Clwyd Limestone Group
Q25	68	925	Penmaenmawr Quarry			A	Y	A	O	IGN	Igneous & Metamorphic Rock	270135	375515	Bangor Road, PENMAENMAWR, Conwy, LL34 5NA	Ordovician	Unnamed Igneous Intrusion, Ordovician
Q26	151	2412	Penmon	Dinmor, Dinmor Park		I			O	LST	Limestone	263555	381290	, Penmon, BEAUMARIS, Isle of Anglesey	Carboniferous	Loggerheads Limestone Formation
Q27	202	2119	Penrhyn Slate Quarry			A			O	SLT	Slate	261290	363780	, Bethesda, BANGOR, Gwynedd, LL57 4YG	Cambrian	Llanberis Slates Formation
Q28	131	5811	Pen-y-Parc	Berwyn Granite		C	Y	D	O	IGN	Igneous & Metamorphic Rock	305450	325600	, BUILTH WELLS, Powys	Ordovician	Unnamed Igneous Intrusion, Ordovician
Q29	48	2118	Pen-yr-Orsedd Quarries	Nantlle		A	Y	A	O	SLT	Slate	250745	354070	, Nantlle, CAERNARFON, Gwynedd	Cambrian	Llanberis Slates Formation
Q30	71	927	Plas Gwilym			I	Y	ID	O	LST	Limestone	287850	378100	Llysfaen Road, Old Colwyn, COLWYN BAY, Conwy, LL29 9HE	Carboniferous	Clwyd Limestone Group (Dyserth Limestone)
Q31	142	928	Raynes Quarry	Merllyn, Llysfaen Limeworks		A	Y	A	O	LST	Limestone	289000	378190	, Llysfaen, COLWYN BAY, Conwy, LL29 9YW	Carboniferous	Clwyd Limestone Group (Llysfaen Limestone)
Q32	122	2414	Rhuddlan Bach Quarry			A	Y	A	O	LST	Limestone	248600	380700	, Brynteg, LLANGEFNI, Isle of Anglesey	Carboniferous	Clwyd Limestone Group
Q33	139	2110	Sarnau	Cwmni Gro Y Sarnau		C	Y	ID	O	SAG	Sand & Gravel	296800	339000	Pen-y-Bryn, Sarnau, BALA, Gwynedd, LL23 7LH	Quaternary	Glacial
Q34	104	2102	Seiont Caernarfon Quarry	Seiont, Peblig		I			O	CLA	Clay & Shale	249000	361500	Seiont Mill Road, CAERNARVON, Gwynedd, LL55 2YL	Ordovician	Ogwen Group
Q35	85	2133	Tan y Bryn Farm			D	Y	ID	O	SAG	Sand & Gravel	246640	352350	, Penygroes, CAERNARFON, Gwynedd	Quaternary	Glaciofluvial Deposits
Q36	215	2106	Trefor Quarry	Yr Eifl No 2, Rivals		A	Y	A	O	IGN	Igneous & Metamorphic Rock	236100	345900	Gwel-y-Don, Tyddyn Hywel, Trefor, CAERNARFON, Gwynedd	Unknown	Unnamed Igneous Intrusion of Unknown Age
Q37	16	2121	Twll Coed	Tan-yr-Allt		D			O	SLT	Slate	249165	351945	, Talysarn, CAERNARFON, Gwynedd	Cambrian	Llanberis Slates Formation
Q38	24	2122	Twll Llwyd	Tan-yr-Allt		I			O	SLT	Slate	249000	351800	, Tanrallt, Talysarn, CAERNARFON, Gwynedd	Cambrian	Llanberis Slates Formation
Q39	19	11458	Tyn-y-Weirglodd	Vale		I			O	SLT	Slate	249455	352370	, Talysarn, CAERNARFON, Gwynedd	Cambrian	Llanberis Slates Formation
Q40	153	2424	Tywyn Trewan			C	Y	ID	O	SAG	Sand & Gravel	231120	374710	, Tywyn Trewan Common, RHOSNEIGR, Isle of Anglesey	Quaternary	Blown Sand
Q41	209	2417	Ynys Uchaf Quarry			A			O	PEA	Peat	249800	381600	, Ynys Uchaf, BRYNTEG, Isle of Anglesey	Quaternary	Peat

ID	OPER name	OPER addre	DATE UPDAT	EPR CODE	MPA CODE	Council	BGS Ref_	Pit Name_1	RAWP cla_1	PIT STAT_1	CMDTY pr_1	Potental k	Superficia	Aquifer cl	Aquifer _1	Aquifer _2	Aquifer _3	CAMS statu
Q1	Anglesey Masonry Ltd	Anglesey Masonry Ltd, Aber Quarry, MOELFRE, Isle of Anglesey, LL72 8NN	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2410	Aber Quarry	A	A	Limestone	yes	Bedrock	n/a	Principal	Principal	karst	0
Q2	Wincillate Ltd	Wincillate Ltd, Aberllefenni, MACHYNLLETH, Gwynedd, SY20 9RL	14/12/2010	WLS	GWN	Gwynedd Council	2111	Aberllefenni Mine		I	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	WA
Q3	Caernarfonshire Crown Slate Quarries	Caernarfonshire Crown Slate Quarries, Vigo Works, Conduit Road, CANNOCK, Staffordshire, WS11 3TE	12/06/2012	WLS	GWN	Gwynedd Council	2132	Alexandra Slate Quarry		A	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	OL
Q4	C & M Parry Plant Hire	C & M Parry Plant Hire, Rhuddlan Bach Quarry & Landfill, Brynteg, LLANGEFNI, Isle of Anglesey, LL78 7J	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2411	Bryn Engan	A	C	Limestone	yes	Bedrock	n/a	Principal	Principal	karst	0
Q5	Mr H Evans	Mr H Evans, Pant Eithinog, Penygroes, CAERNARFON, Gwynedd, LL54 6PE	14/12/2010	WLS	GWN	Gwynedd Council	2129	Cae Efa Llwyd	ID	D	Sand & Gravel	no	Superficial	Secondary	Secondary	Secondary	Secondary	WA
Q6	Tudor Griffiths Group	Tudor Griffiths Group, Wood Lane, ELLESMERE, Shropshire, SY12 0HY	14/12/2010	WLS	GWN	Gwynedd Council	2108	Cefn Graianog Quarry		A	Sand & Gravel	no	Superficial	Secondary	Secondary	Secondary	Secondary	WA
Q7	Tudor Griffiths Group	Tudor Griffiths Group, Wood Lane, ELLESMERE, Shropshire, SY12 0HY	12/06/2012	WLS	GWN	Gwynedd Council	6996	Cefn Graianog Quarry	A	A	Sand & Gravel	no	Superficial	Secondary	Secondary	Secondary	Secondary	WA
Q8	Dr M Liezers	Dr M Liezers, 567 Swanlow Lane, WINSFORD, Cheshire, CW7 4BP	12/06/2012	WLS	SNP	Snowdonia National Park Authority	10320	Clogau St Davids Mine		I	Gold	no	Bedrock	n/a	Secondary	Secondary	Secondary	WA
Q9	G E Williams	G E Williams, Bron Aber Farm, Bron Aber, TRAWSFYNYDD, Gwynedd, LL41 4UI	08/12/2010	WLS	SNP	Snowdonia National Park Authority	13202	Craig y Tan Quarry		A	Igneous Met	no	Bedrock	n/a	Secondary	Secondary	Secondary	OA
Q10	H Lewis	H Lewis, Creigiau, Dulas, AMLWCH, Isle of Anglesey, LL70 9H	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2421	Creigiau	ID	C	Sandstone	yes	Bedrock	n/a	Principal	Principal	karst	0
Q11	Capital Landfill Restoration Bath Ltd	Capital Landfill Restoration Bath Ltd, 2 Lake End Court, Taplow Road, MAIDENHEAD, Berkshire, SL6 0JQ	14/12/2010	WLS	GWN	Gwynedd Council	2113	Dorothea		D	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	WA
Q12	Welsh Slate	Welsh Slate, Penrhyn Quarry, Bethesda, BANGOR, Gwynedd, LL57 4YG	12/06/2012	WLS	GWN	Gwynedd Council	2117	Ffestiniog Slate		I	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	OA
Q13	The Hogan Group	The Hogan Group, Hogan House, Cyttir Lane, Caernarfon Road, BANGOR, Gwynedd, LL57 4DA	12/06/2012	WLS	AGY	Isle of Anglesey County Council	72	Gaerwen	ID	I	Igneous Met	no	Bedrock	n/a	Secondary	Secondary	Secondary	0
Q14	The Hogan Group	The Hogan Group, Hogan House, Cyttir Lane, Caernarfon Road, BANGOR, Gwynedd, LL57 4DA	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2407	Gwalchmai		A	Igneous Met	no	Bedrock	n/a	Secondary	Secondary	Secondary	0
Q15	The Hogan Group	The Hogan Group, Hogan House, Cyttir Lane, Caernarfon Road, BANGOR, Gwynedd, LL57 4DA	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2408	Gwyndy Quarry	A	A	Igneous Met	no	Bedrock	n/a	Secondary	Secondary	Secondary	WA
Q16	Gwilym Elias Owen	Gwilym Elias Owen, 26 Tyddyn Llwydyn, Hendre Park, CAERNARFON, Gwynedd, LL55 2L	14/12/2010	WLS	GWN	Gwynedd Council	2124	Hafod-Y-Wern Slate Tip		A	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	OL
Q17	The Hogan Group	The Hogan Group, Hogan House, Cyttir Lane, Caernarfon Road, BANGOR, Gwynedd, LL57 4DA	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2409	Hengae Quarry	A	A	Igneous Met	no	Bedrock	n/a	Secondary	Secondary	Secondary	0
Q18	Waste Recycling Group	Waste Recycling Group, 6 Sidings Court, White Rose Way, DONCASTER, South Yorkshire, DN4 5NL	04/01/2011	WLS	CWY	Conwy County Borough Council	926	Llanddulas		I	Limestone	yes	Bedrock	n/a	Principal	Principal	karst	Not assessed
Q19	Greaves Welsh Slate Co Ltd	Greaves Welsh Slate Co Ltd, BLAENAU FFESTINIOG, Gwynedd, LL41 3NB	14/12/2010	WLS	GWN	Gwynedd Council	3964	Llechwedd Slate Mine	A	A	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	OA
Q20	Welsh Slate	Welsh Slate, Penrhyn Quarry, Bethesda, BANGOR, Gwynedd, LL57 4YG	12/06/2012	WLS	GWN	Gwynedd Council	2116	Manod Quarry	A	A	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	NWA
Q21	First Hydro	First Hydro, Dinorwic Power Station, LLANBERIS, Caernarfonshire, LL55 4TY	14/12/2010	WLS	GWN	Gwynedd Council	2130	Marchlyn Slate Quarry		D	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	NWA
Q22	Lafarge-Tarmac	Lafarge-Tarmac, Portland House, Bickenhill Lane, Solihull, BIRMINGHAM, B37 7BQ	26/02/2013	WLS	GWN	Gwynedd Council	2104	Minffordd Quarry	A	A	Igneous Met	no	Bedrock	n/a	Secondary	Secondary	Secondary	0
Q23	R T Davies	R T Davies, Gwel-y-Don, Tyddyn Hywel, Trefor, CAERNARFON, Gwynedd, LL54 5PS	14/12/2010	WLS	GWN	Gwynedd Council	2105	Nanhoron Quarry	A	C	Igneous Met	no	Bedrock	n/a	Secondary	Secondary	Secondary	0
Q24	W J Owens & Sons	W J Owens & Sons, Nant Newydd Quarry, BRYNTEG, Isle of Anglesey, LL78 7JJ	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2413	Nant Newydd Quarry	A	A	Limestone	yes	Bedrock	n/a	Principal	Principal	karst	NWA
Q25	Hanson Aggregates, North Region	Hanson Aggregates, North Region, Clifford House, Wetherby Business Park, York Road, WETHERBY, West Yorkshire, LS22 7N	12/06/2012	WLS	CWY	Conwy County Borough Council	925	Penmaenmawr Quarry	A	A	Igneous Met	no	Bedrock	n/a	Secondary	Secondary	Secondary	0
Q26	Jones Bros Ruthin (Civil Engineering) Co Ltd	Jones Bros Ruthin (Civil Engineering) Co Ltd, Denbigh Road, RUTHIN, Denbighshire, LL15 2TN	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2412	Penmon		I	Limestone	yes	Bedrock	n/a	Principal	Principal	karst	0
Q27	Welsh Slate	Welsh Slate, Penrhyn Quarry, Bethesda, BANGOR, Gwynedd, LL57 4YG	12/06/2012	WLS	GWN	Gwynedd Council	2119	Penrhyn Slate Quarry		A	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	NWA
Q28	Berwyn Granite Ltd	Berwyn Granite Ltd, Leaton Quarry, Leaton, Wellington, TELFORD, Shropshire, TF6 5HI	03/11/2010	WLS	POW	Powys County Council	5811	Pen-y-Parc	D	C	Igneous Met	no	Bedrock	n/a	Secondary	Secondary	Secondary	NWA
Q29	Welsh Slate	Welsh Slate, Penrhyn Quarry, Bethesda, BANGOR, Gwynedd, LL57 4YG	12/06/2012	WLS	GWN	Gwynedd Council	2118	Pen-yr-Orsedd Quarries	A	A	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	WA
Q30	Plas Gwilym Environmental	Plas Gwilym Environmental, Llysfaen Road, Old Colwyn, COLWYN BAY, Clwyd, LL29 9HE	12/06/2012	WLS	CWY	Conwy County Borough Council	927	Plas Gwilym	ID	I	Limestone	yes	Bedrock	n/a	Principal	Principal	karst	Not assessed
Q31	CEMEX UK Materials Ltd	CEMEX UK Materials Ltd, CEMEX House, Coldharbour Lane, Thorpe, EGHAM, Surrey, TW20 8TI	17/09/2012	WLS	CWY	Conwy County Borough Council	928	Raynes Quarry	A	A	Limestone	yes	Bedrock	n/a	Principal	Principal	karst	Not assessed
Q32	Clive Hurt Plant Hire Ltd	Clive Hurt Plant Hire Ltd, Sandham House, Redrose Drive, Lancashire Business Park, LEYLAND, PR26 6T	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2414	Rhuddlan Bach Quarry	A	A	Limestone	yes	Bedrock	n/a	Principal	Principal	karst	0
Q33	Cwmni Gro-y-Sarnau Ltd	Cwmni Gro-y-Sarnau Ltd, Pen-y-Bryn, Sarnau, BALA, Gwynedd, LL23 7LH	03/11/2010	WLS	GWN	Gwynedd Council	2110	Sarnau	ID	C	Sand & Gravel	no	Superficial	Secondary	Secondary	Secondary	Secondary	NWA
Q34	Hanson Aggregates, Central Region	Hanson Aggregates, Central Region, Ashby Road East, Shepshed, LOUGHBOROUGH, Leicestershire, LE12 9BU	12/06/2012	WLS	GWN	Gwynedd Council	2102	Seiont Caernarfon Quarry		I	Clay & Shale	no	Bedrock	n/a	Secondary	Secondary	Secondary	NWA
Q35	G & G L Bowness	G & G L Bowness, Tanybryn Farm, Penygroes, CAERNARFON, Gwynedd, LL54 6N	14/12/2010	WLS	GWN	Gwynedd Council	2133	Tan y Bryn Farm	ID	D	Sand & Gravel	no	Superficial	Secondary	Secondary	Secondary	Secondary	WA
Q36	R T Davies	R T Davies, Gwel-y-Don, Tyddyn Hywel, Trefor, CAERNARFON, Gwynedd, LL54 5PS	14/12/2010	WLS	GWN	Gwynedd Council	2106	Trefor Quarry	A	A	Igneous Met	no	Bedrock	n/a	Secondary	Secondary	Secondary	0
Q37	Welsh Slate (Rigcycle Ltd)	Welsh Slate (Rigcycle Ltd), Penrhyn Quarry, Bethesda, BANGOR, Gwynedd, LL57 4YG	14/12/2010	WLS	GWN	Gwynedd Council	2121	Twll Coed		D	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	WA
Q38	W Humphries	W Humphries, Ffestiniog Slate Ind. Estate, BLAENAU FFESTINIOG, Gwynedd, LL41 3ND	14/12/2010	WLS	GWN	Gwynedd Council	2122	Twll Llwyd		I	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	WA
Q39	Welsh Slate	Welsh Slate, Penrhyn Quarry, Bethesda, BANGOR, Gwynedd, LL57 4YG	12/06/2012	WLS	GWN	Gwynedd Council	11458	Tyn-y-Weirglodd		I	Slate	no	Bedrock	n/a	Secondary	Secondary	Secondary	WA
Q40	C & M Parry Plant Hire	C & M Parry Plant Hire, Rhuddlan Bach Quarry & Landfill, Brynteg, LLANGEFNI, Isle of Anglesey, LL78 7J	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2424	Tywyn Trewan	ID	C	Sand & Gravel	no	Superficial	Secondary	Secondary	Secondary	Secondary	0
Q41	P Huws	P Huws, Ynys Uchaf, BRYNTEG, Isle of Anglesey, LL78 8JZ	12/06/2012	WLS	AGY	Isle of Anglesey County Council	2417	Ynys Uchaf Quarry		A	Peat	no	Superficial	Secondary	Principal	Secondary	Secondary	0

ID	SAC (dist	SAC (name	SPA (dist	SPA (name	RAMSAR (di	RAMSAR (na	SSSI dist	SSSI name	NNR (di	NNR (name	LNR (dist	LNR (name	Dewatering
Q1	3760	Corsydd Mon / Anglesey Fens	533	Liverpool Bay / Bae Lerpwl (Wales)	3760	Corsydd MÃ¶n a Llyn / Anglesey and I	511	TRAETH LLIGWY	4410	CORS ERDDREINIOG	9786	LLANDDONA AND LLANIESTYN CC	No
Q2	2020	Cadair Idris	11686	Craig yr Aderyn (Bird's Rock)	13878	Cors Fochno and Dyfi	448	COED MAES-MAWR, COED ESGAIRNEIRIA	3885	CADER IDRIS	31139	COED Y CWM	Yes future
Q3	1371	Afon Gwyrfai a Llyn Cwellyn	17580	Traeth Lafan / Lavan Sands, Conway	12342	Llyn Idwal	1216	AFON GWYRFAI A LLYN CWELLYN	8453	YR WYDDFA	1331	DUDLEY QUARRY	Yes future
Q4	158	Corsydd Mon / Anglesey Fens	1912	Liverpool Bay / Bae Lerpwl (Wales)	158	Corsydd MÃ¶n a Llyn / Anglesey and I	158	CORS GOCH	295	CORS GOCH	6592	LLANDDONA AND LLANIESTYN CC	Yes now
Q5	1037	Corsydd Eifionydd / Eifionydd Fens	23605	Traeth Lafan / Lavan Sands, Conway	18978	Llyn Idwal	1037	CORS LLANLLYFNI	8731	NEWBOROUGH WARREN A	5063	Y FORYD	No
Q6	209	Corsydd Eifionydd / Eifionydd Fens	25298	Mynydd Cilan, Trwyn y Wylfa ac Ynys	18095	Corsydd MÃ¶n a Llyn / Anglesey and I	209	CORS GYFELOG	12427	NEWBOROUGH WARREN A	8769	Y FORYD	Unknown
Q7	1019	Corsydd Eifionydd / Eifionydd Fens	26122	Mynydd Cilan, Trwyn y Wylfa ac Ynys	18744	Corsydd MÃ¶n a Llyn / Anglesey and I	1019	CORS GYFELOG	11741	NEWBOROUGH WARREN A	8079	Y FORYD	No
Q8	999	Coedydd Derw a Safleoedd Ystlumod Meiri	12103	Craig yr Aderyn (Bird's Rock)	21804	Cors Fochno and Dyfi	971	ABER MAWDDACH/MAWDDACH ESTUAR	6714	CADER IDRIS	20347	PEN Y BANC	Unknown
Q9	361	Migneint-Arenig-Dduallt	361	Migneint-Arenig-Dduallt	17566	Llyn Tegid	361	MIGNEINT-ARENIG-DDUALLT	2964	COED-Y-RHYGEN	14543	PEN Y BANC	No
Q10	2625	Corsydd Mon / Anglesey Fens	1706	Liverpool Bay / Bae Lerpwl (Wales)	2625	Corsydd MÃ¶n a Llyn / Anglesey and I	6	PENRHOS LLIGWY	3061	CORS ERDDREINIOG	9955	NANT Y PANDY (THE DINGLE)	Yes future
Q11	3499	Corsydd Eifionydd / Eifionydd Fens	21119	Traeth Lafan / Lavan Sands, Conway	14866	Llyn Idwal	2483	GLYNLLIFON	9804	NEWBOROUGH WARREN A	4837	DUDLEY QUARRY	Yes future
Q12	2801	Coedydd Derw a Safleoedd Ystlumod Meiri	3990	Migneint-Arenig-Dduallt	12229	Llyn Idwal	2801	COEDYDD DYFFRYN FFESTINIOG (GOGLED	2898	COED CYMERAU	14781	PEN Y BANC	Yes future
Q13	3993	Corsydd Mon / Anglesey Fens	10488	Liverpool Bay / Bae Lerpwl (Wales)	4216	Corsydd MÃ¶n a Llyn / Anglesey and I	1051	MALLTRAETH MARSH/CORS DDYGA	4409	CORS BODEILIO	3485	NANT Y PANDY (THE DINGLE)	No
Q14	5772	Y Twyni o Abermenai i Aberffraw / Aberme	7322	Ynys Feurig, Cemlyn Bay and The Ske	8826	Corsydd MÃ¶n a Llyn / Anglesey and I	745	Y WERTHYR	8112	NEWBOROUGH WARREN A	6807	NANT Y PANDY (THE DINGLE)	No
Q15	6371	Corsydd Mon / Anglesey Fens	10008	Ynys Feurig, Cemlyn Bay and The Ske	6371	Corsydd MÃ¶n a Llyn / Anglesey and I	1614	CORS BODWROG	6369	CORS ERDDREINIOG	6054	NANT Y PANDY (THE DINGLE)	Yes now
Q16	138	Afon Gwyrfai a Llyn Cwellyn	16642	Traeth Lafan / Lavan Sands, Conway	11300	Llyn Idwal	111	AFON GWYRFAI A LLYN CWELLYN	7887	YR WYDDFA	1047	DUDLEY QUARRY	No
Q17	2599	Glan-traeth	13781	Ynys Feurig, Cemlyn Bay and The Ske	9851	Corsydd MÃ¶n a Llyn / Anglesey and I	369	MALLTRAETH MARSH/CORS DDYGA	2792	NEWBOROUGH WARREN A	6836	Y FORYD	No
Q18	12734	Great Orme's Head / Pen y Gogarth	793	Liverpool Bay / Bae Lerpwl (Wales)	17424	The Dee Estuary (Wales)	2	LLANDDULAS LIMESTONE AND GWRYCH (	13602	MAES-Y-FACRELL, PEN Y GC	711	MYNYDD MARIAN	No
Q19	1893	Migneint-Arenig-Dduallt	1893	Migneint-Arenig-Dduallt	13207	Llyn Idwal	1893	MIGNEINT-ARENIG-DDUALLT	3040	COED CYMERAU	15562	PEN Y BANC	Yes future
Q20	344	Migneint-Arenig-Dduallt	344	Migneint-Arenig-Dduallt	15467	Llyn Idwal	344	MIGNEINT-ARENIG-DDUALLT	3781	COED CYMERAU	17140	PEN Y BANC	Yes future
Q21	0	Eryri / Snowdonia	9153	Traeth Lafan / Lavan Sands, Conway	4764	Llyn Idwal	0	ERYRI	3647	CWM IDWAL	1901	COED DINORWIG	No
Q22	0	Coedydd Derw a Safleoedd Ystlumod Meiri	11006	Migneint-Arenig-Dduallt	20393	Llyn Idwal	0	GLASLYN	1040	MORFA HARLECH	2563	PEN Y BANC	Yes future
Q23	3715	Corsydd Llyn / Lleyn Fens	6015	Mynydd Cilan, Trwyn y Wylfa ac Ynys	3715	Corsydd MÃ¶n a Llyn / Anglesey and I	1145	FOEL GRON A THIR COMIN MYNYTHO	4029	CORS GEIRCH	8400	LON COB BACH	No
Q24	205	Corsydd Mon / Anglesey Fens	4448	Liverpool Bay / Bae Lerpwl (Wales)	205	Corsydd MÃ¶n a Llyn / Anglesey and I	205	CORS ERDDREINIOG	346	CORS ERDDREINIOG	5228	NANT Y PANDY (THE DINGLE)	Unknown
Q25	2850	Eryri / Snowdonia	584	Liverpool Bay / Bae Lerpwl (Wales)	16162	Llyn Idwal	973	TRAETH LAFAN	4440	COEDYDD ABER	562	TRAETH LAFAN	No
Q26	8488	Coedydd Aber	105	Liverpool Bay / Bae Lerpwl (Wales)	12827	Corsydd MÃ¶n a Llyn / Anglesey and I	51	ARFORDIR GOGLEDDOL PENMON	8848	COEDYDD ABER	2414	LLANGOED COMMONS AND ABER	No
Q27	0	Eryri / Snowdonia	6017	Traeth Lafan / Lavan Sands, Conway	4693	Llyn Idwal	0	ERYRI	4030	CWM IDWAL	3760	COED DINORWIG	Yes now
Q28	469	Berwyn a Mynyddoedd De Clwyd / Berwyn	469	Berwyn	15261	Llyn Tegid	166	WEST LLANGYNOG SLATE MINE	3310	Y BERWYN	38130	MOEL FINDEG	Yes future
Q29	3686	Afon Gwyrfai a Llyn Cwellyn	20156	Traeth Lafan / Lavan Sands, Conway	13771	Llyn Idwal	2213	GLYNLLIFON	8909	YR WYDDFA	3868	DUDLEY QUARRY	No
Q30	10606	Great Orme's Head / Pen y Gogarth	645	Liverpool Bay / Bae Lerpwl (Wales)	19750	The Dee Estuary (Wales)	936	MYNYDD MARIAN	11447	MAES-Y-FACRELL, PEN Y GC	851	FAIRY GLEN	No
Q31	11209	Great Orme's Head / Pen y Gogarth	345	Liverpool Bay / Bae Lerpwl (Wales)	18410	The Dee Estuary (Wales)	102	MYNYDD MARIAN	12072	MAES-Y-FACRELL, PEN Y GC	102	MYNYDD MARIAN	Yes future
Q32	258	Corsydd Mon / Anglesey Fens	4108	Liverpool Bay / Bae Lerpwl (Wales)	258	Corsydd MÃ¶n a Llyn / Anglesey and I	258	CORS GOCH	258	CORS GOCH	5141	NANT Y PANDY (THE DINGLE)	Yes now
Q33	285	River Dee and Bala Lake / Afon Dyfrdwy a L	4759	Berwyn	5235	Llyn Tegid	114	CORS Y SARNAU	5805	Y BERWYN	32149	MOEL FINDEG	Unknown
Q34	1457	Afon Gwyrfai a Llyn Cwellyn	14979	Traeth Lafan / Lavan Sands, Conway	15063	Llyn Idwal	404	AFON SEIONT	4001	NEWBOROUGH WARREN A	2551	Y FORYD	Yes future
Q35	657	Corsydd Eifionydd / Eifionydd Fens	23979	Traeth Lafan / Lavan Sands, Conway	18944	Llyn Idwal	657	CORS LLANLLYFNI	9402	NEWBOROUGH WARREN A	5736	Y FORYD	No
Q36	1995	Clogwyni Pen Llyn / Seacliffs of Lleyn	19444	Mynydd Cilan, Trwyn y Wylfa ac Ynys	8794	Corsydd MÃ¶n a Llyn / Anglesey and I	0	YR EIFL	9956	CORS GEIRCH	10710	LON COB BACH	No
Q37	2865	Corsydd Eifionydd / Eifionydd Fens	23120	Traeth Lafan / Lavan Sands, Conway	16796	Llyn Idwal	2865	CORS LLANLLYFNI	10714	NEWBOROUGH WARREN A	6812	DUDLEY QUARRY	No
Q38	2429	Corsydd Eifionydd / Eifionydd Fens	23141	Traeth Lafan / Lavan Sands, Conway	16891	Llyn Idwal	2429	CORS LLANLLYFNI	10550	NEWBOROUGH WARREN A	6835	DUDLEY QUARRY	No
Q39	3189	Corsydd Eifionydd / Eifionydd Fens	22231	Traeth Lafan / Lavan Sands, Conway	15828	Llyn Idwal	2726	GLYNLLIFON	10376	NEWBOROUGH WARREN A	5934	DUDLEY QUARRY	No
Q40	2267	Llyn Dinam	44	Ynys Feurig, Cemlyn Bay and The Ske	16152	Corsydd MÃ¶n a Llyn / Anglesey and I	44	YNYS FEURIG	9747	NEWBOROUGH WARREN A	13740	NANT Y PANDY (THE DINGLE)	No
Q41	0	Corsydd Mon / Anglesey Fens	2230	Liverpool Bay / Bae Lerpwl (Wales)	0	Corsydd MÃ¶n a Llyn / Anglesey and I	0	CORS GOCH	0	CORS GOCH	5768	NANT Y PANDY (THE DINGLE)	Unknown



Drawing 2: NRW Historical landfill sites within 50 km of the proposed tunnel

Date	2019	Drawn	AIA
Scale	1:375000	Checked	FKC
Original	A3	Revision	1

File Reference

O:\66721\GIS\Map documents\Quarries and landfills v0.1\Drawing 2

Stantec

UniqID	HLD_REF	SITE_NAME	SITE_ADD	EA_WMLR	REGIS_NO	WRC_REF	BGS_NUM	SITE_REF	LIC_HOLD	LICHOLDADD	SITEOPNAME	SITEOPADD	OS_PREFIX	EASTING	NORTHING	EA_REGION	EA_AREA	LIC_ISSUE	LIC_SURREN	FIRSTINPUT	LASTINPUT	INERT	INDUSTRIAL	COMMERCIAL	HOUSEHOLD	SPECIAL	LIQSLUDGE	GASCONTROL	LEACHATCNT	EXEMPT	LICENCED	BUFF_POINT
1	EAHLD31216	Site on B. 5106 Road	Betws-y-coed, Gwynedd	0			2506				Betws Y Coed Urban District Council		SH	280100	359200	CY	Northern CY			31/12/1951				Yes									
2	EAHLD31180	Near Tyddyn-Isaf	Llanddeiniolen, Bala, Gwynedd	0			128				Penllyn Rural District Council		SH	299400	337100	CY	Northern CY			31/12/1947	01/01/1972												
3	EAHLD32420	Pentrefoelas Tip	Avondale Llanrwst, Gwynedd	0			190				Hiraethog Rural District Council		SH	287300	350800	CY	Northern CY			31/12/1945				Yes									
4	EAHLD31253	Tyddyn Agnes Quarry	Tansallt, Tansallt Pen Y Groes, Caernarvon	0		6905/0026	490				Cwyrfai Rural District Council		SH	248200	351800	CY	Northern CY			31/12/1946	31/12/1974	Yes	Yes	Yes	Yes								
5	EAHLD31281	Ffridd y Glyn	Llanberis, Caernarvon	0			982				Gwyrfai Rural District Council		SH	256500	360300	CY	Northern CY			31/10/1972	Yes	Yes	Yes	Yes									
6	EAHLD31217	Cwmbowydd Tip	Blaenau Ffestiniog, Gwynedd	0		6810/0059	2525		Gwynedd District Council		Ffestiniog Urban District Council		SH	270100	344900	CY	Northern CY			31/12/1940	31/12/1992	Yes	Yes	Yes	Yes						Yes		
7	EAHLD14156	St Davids Caravan Site	Benllech	0		6805/0021			J A Hewitt	Benllech Farm			SH	253000	381800	CY	Northern CY			31/12/1977	31/12/1992			Yes	Yes						Yes		
8	EAHLD14157	Turnpike Nant	Llangristiolus	0		6805/0022			Isle of Anglesey County County				SH	245000	373700	CY	Northern CY			31/12/1967	31/12/1970	Yes	Yes	Yes	Yes								
9	EAHLD31209	Garthangarad Refuse Tip	Near Dolgellau, Gwynedd	0			2334						SH	266700	316800	CY	Northern CY				31/12/1980				Yes								
10	EAHLD31207	Tomen Fachynys	Bontddu, Dolgellau, Gwynedd	0		6810/0060	2332						SH	266100	318600	CY	Northern CY						Yes		Yes							
11	EAHLD14163	Ferodo Landfill	Griffiths Crossing, Caernarfon, Gwynedd	37016	WW1/L/FER003	6810/0010	1024	NOW-006-L, 314-26/90	Ferodo Limited	Burrfields Road, Chapel-en-le-Frith, Stockport	Ferodo Limited	Burrfields Road, Chapel-en-le-Frith, Stockport	SH	249400	365100	CY	Northern CY	06/06/1990		31/12/1970	31/12/1997	Yes			Yes	Yes	Yes				Yes		
12	EAHLD14165	Niwbwrch Farm	Bangor, Caernarfonshire	0		6810/0015	95		Ogwen Rural Council/Arfon Borough Council		Ogwen Rural District Council		SH	257300	367300	CY	Northern CY			31/12/1960	31/12/1976	Yes	Yes	Yes	Yes						Yes		
13	EAHLD13860	Old Penrhyn Railway~to Bethesda Road	Tregarth	0		6810/0030		314-16/2619(a)	Mr M A Tyrell				SH	260300	367900	CY	Northern CY	18/09/1981		31/12/1981	31/12/1983	Yes	Yes								Yes		
14	EAHLD14169	Council Refuse Tip	Caer Glyddyn, Rhosbodrual, Caernarfon, Gwynedd	0		6810/0024	1953		County Council		Caernarvon Royal Borough Council		SH	250200	362800	CY	Northern CY			31/12/1954	31/12/1974	Yes	Yes	Yes	Yes								
15	EAHLD14175	Llwyn Isaf	Clynnog Fawr	0		6810/0050			Dwyfor Council	Shire Hall, Caernarfon, Gwynedd			SH	245000	348700	CY	Northern CY			31/12/1980	31/12/1990	Yes	Yes	Yes	Yes	Yes					Yes		
16	EAHLD14181	Disused Tip off B5106~at Drws Gwyn	Betws-y-Coed, Conwy	0		6905/0002		CL5E9	Aberconwy District Council				SH	280000	359100	CY	Northern CY			31/12/1960	31/12/1970	Yes	Yes	Yes	Yes								
17	EAHLD14182	Bron-Y-Nant	Colwyn Bay	0		6905/0003		CL5E14	Aberconwy District Council		Local Authority		SH	282500	379300	CY	Northern CY			01/01/1945	31/12/1955		Yes	Yes	Yes								
18	EAHLD14185	Penmaen Road	Monfa, Conway, Gwynedd	0		6905/0009	707	CL5E3	Hostyn Estates		Bonway Borough Council		SH	276900	378400	CY	Northern CY	13/06/1977	16/09/1992	31/10/1968	31/12/1977	Yes	Yes	Yes	Yes			Yes			Yes		
19	EAHLD14190	Valley Tip	Dolgarrog	0		6905/0013		CL5E5	Colwyn Borough Council				SH	278200	365800	CY	Northern CY			31/12/1956	31/12/1992			Yes	Yes			Yes	Yes		Yes		
20	EAHLD14273	Commins Coch	Powys	0		6850/0013		CS12/36	Montgomeryshire District Council				SH	283900	303100	CY	Northern CY			31/12/1954	31/12/1976	Yes	Yes	Yes	Yes	Yes					Yes		
21	EAHLD14337	Penrhyn Gerwyn	Furnace	0		6820/0017		NOW-110-L					SN	266800	294100	CY	Northern CY			31/12/1958	31/12/1989	Yes	Yes	Yes	Yes								
22	EAHLD14192	Llanwrst Urban District~Council Refuse Tip	Plas Yr Dre, Llanwrst, Gwynedd	0		6905/0012	585	CL5E10	Conwy County Borough Council		Llanrwst Urban district Council		SH	279500	361700	CY	Northern CY			31/12/1960	31/12/1973	Yes	Yes	Yes	Yes								
23	EAHLD14193	Felin	Pandy Tudur	0		6905/0020			H Roberts				SH	285800	364200	CY	Northern CY				Yes	Yes	Yes	Yes	Yes								
24	EAHLD14162	Cefnfaes Y Llyn	Penyfroes	0		6810/0004							SH	246900	352600	CY	Northern CY			31/12/1950	31/12/1959	Yes	Yes		Yes								
25	EAHLD14692	Part Of Field No.1238	Abererch Snads Caravan Site, Abererch, Pwllheli, Gwynedd	0		6810/0078		Jan-77	S F Pearson	Abersoch Sands Holiday Centre Ltd, Pwllheli			SH	239900	336000	CY	Northern CY	07/03/1977	30/09/1987	31/12/1947	30/09/1987			Yes	Yes						Yes		
26	EAHLD14693	Aluminium Corporation	Dolgarrog, Conwy, Gwynedd	0		6905/0001		CL5E6	Aluminium Corporation Limited				SH	277100	367600	CY	Northern CY	01/06/1977		31/12/1977	31/08/1993	Yes	Yes	Yes	Yes						Yes		
27	EAHLD14694	Nant Y Gamar	Llandudno	0		6905/0008		CL5E12	Hostyn Estates				SH	280100	381600	CY	Northern CY	13/06/1977	16/09/1992	01/01/1977	16/09/1992	Yes	Yes	Yes	Yes						Yes		
28	EAHLD14698	Ffridd Rasus	Harlech, Gwynedd	0		6905/0031		NOW-007-L	Gwynedd County Council				SH	257700	333700	CY	Northern CY	22/05/1979		31/12/1979		Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes		
29	EAHLD14659	Tyddyn Llwyd	Brynteg	0		6805/0026			R Hughes, Monumental Mason				SH	249800	382100	CY	Northern CY	31/12/1981		31/12/1981	31/12/1987	Yes									Yes		
30	EAHLD14665	Pant-Y-Cyff	Glasinfryn	0		6810/0032		314-32/92	Watkin Jones and Son Limited				SH	258600	368500	CY	Northern CY	29/06/1992		30/06/1992	30/06/1993	Yes	Yes								Yes		
31	EAHLD14668	Trawsfynydd Power Station	Trawsfynydd	0		6810/0051		Jan-77	Central Electricity Generating Board				SH	268900	338300	CY	Northern CY	13/06/1977	21/05/1993	14/09/1972	21/05/1993	Yes	Yes		Yes	Yes	Yes				Yes		
32	EAHLD14675	Part Of Field No.830	Tan Y Bryn, Abersoch	0		6810/0081		19/77	David Jones				SH	231700	330800	CY	Northern CY	24/05/1977	29/02/1988	31/12/1977	29/02/1988			Yes	Yes						Yes		
33	EAHLD14676	Part Of Headland~Adjacent To Field 733	Nant Y Big, Abersoch	0		6810/0082		17/77, 26/88	William J Jones	Nant-Y-Big, Cilan, Abersoch			SH	230800	324800	CY	Northern CY	20/05/1977	30/09/1987	31/12/1965	30/09/1987			Yes	Yes						Yes		
34	EAHLD14683	Field No.1155	Pant Farm, Bwlchtocyn	0		6810/0073		Aug-77	Mrs L E Williams				SH	230900	326200	CY	Northern CY	07/04/1977	30/09/1992	01/04/1977	30/09/1992			Yes	Yes						Yes		
35	EAHLD14684	Field No. 336a	Sarnly's Camping Site, Abersoch	0		6810/0085		28/29, 9/77	Mr R Griffith	Sarnlys, Sarn Bach, Abersoch, Pwllheli			SH	230300	326800	CY	Northern CY	10/08/1977	31/01/1994	01/06/1977	31/01/1994			Yes	Yes						Yes		
36	EAHLD14688	Llanddulas Quarry Phase 2	Llanddulas, Colwyn Bay	0		6810/0042		NOW-204-L	Greenways	The Ridge, Chipping Sodbury, Bristol			SH	290300	377400	CY	Northern CY	03/11/1992		01/08/1993		Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes		
37	EAHLD34515	Penygroes	Gwynedd	0									SH	247200	353300	CY	Northern CY								Yes							
38	EAHLD34508	Llandygai Gypsy Site	Bangor	0									SH	259100	371200	CY	Northern CY								Yes							
39	EAHLD34509	Plas	Dinas Mawddwy	0									SH	285900	315000	CY	Northern CY								Yes							
40	EAHLD34511	Tanygrisiau	Blaenau Ffestiniog	0									SH	269000	344700	CY	Northern CY								Yes							
41	EAHLD34512	Manod	Blaenau Ffestiniog	0									SH	270400	344300	CY	Northern CY								Yes							
42	EAHLD34446	Commins Coch	Powys	0									SH	283900	303100	CY	Northern CY															
43	EAHLD34519	Clogwyn - Dolgun	Dolgellau	0									SH	274000	318000	CY	Northern CY								Yes							
44	EAHLD13859	Eastern Quay	Port Penfhyn, Bangor	0		6810/0009							SH	259300	372800	CY	Northern CY	31/12/1977		31/12/1977	31/12/1978	Yes									Yes	Yes	
45	EAHLD13905	Tomen Lon Cab Bach	Pwllheli, Gwynedd	0		6810/0048							SH	237500	334500	CY	Northern CY						Yes		Yes							Yes	
46	EAHLD34440	Tan-y-Ffordd	Derwentas, Machynleth, Powys	0				CS12/38					SN	272200	299200	CY	Northern CY															
47	EAHLD14164	Glan Moelwyn	Llanrug	0		6810/0012			Gwyrfai Rural District Council				SH	253200	363300	CY	Northern CY			31/12/1960	31/12/1969	Yes	Yes	Yes	Yes	Yes							
48	EAHLD13897	Ffridd Y Glyn	Llanberis	0		6810/0011			Ministry of Defence and Bernard Wardle				SH	256500	360800	CY	Northern CY			31/12/1940	31/12/1974	Yes	Yes								Yes	Yes	
49	EAHLD13903	Tros Yr Afon	Brynrefail	0		6810/0027							SH	255900	362700	CY	Northern CY			31/12/1981	31/12/1982	Yes	Yes		Yes						Yes	Yes	
50	EAHLD13911	Gaewern Quarry	Cynwyd, Corris Uchaf, Corwen, Clwyd	0		6810/0058							SH	274500	308500	CY	Northern CY			31/12/1960	31/12/1980		Yes	Yes	Yes							Yes	
51	EAHLD13916	Old Harlech Disposal Site	Harlach	0		6810/0063							SH	258100	331400	CY	Northern CY			31/12/1960	31/12/1970	Yes	Yes	Yes	Yes							Yes	
52	EAHLD13857	Chwarel Goch	Betws Garmon, Caernarfon, Gwynedd	0		6810/0005			Welsh Water Plc				SH	255200	355200	CY	Northern CY	31/12/1978		31/12/1978	31/12/1980	Yes									Yes	Yes	
53	EAHLD14188	Isallt Farm	Llysfaen	0		6905/0022			Mr Jones				SH	289700	376400	CY	Northern CY			31/12/1990	31/12/1992	Yes		Yes	Yes						Yes	Yes	
54	EAHLD34498	Byrgoed	Llanddeiniolen	0									SH	299100	337100	CY	Northern CY								Yes							Yes
55	EAHLD34499	Tafarn Farch	Aberllefenni	0									SH	276200	310500	CY	Northern CY								Yes							Yes
56	EAHLD34500	Hen Domen Ysbwriel~Llanuwchllyn	Llanuwchllyn, Gwynedd	0									SH	286700	329800	CY	Northern CY								Yes							Yes
57	EAHLD34502	Braich Goch	Upper Corris	0									SH	274900	307900	CY	Northern CY								Yes							Yes
58	EAHLD34503	Dyffryn Ardudwy	Glan Morfa	0									SH	258200	323900	CY	Northern CY								Yes							Yes
59	EAHLD34507	Traeth Lafan Tip	Abergwyngregyn	0									SH	264600	373100	CY	Northern CY								Yes							Yes
60	EAHLD31208	Rhoselfain	Merioneth, Dolgellau, Gwynedd	0			2333						SH	257900	305300	CY	Northern CY								Yes							
61	EAHLD34510	Maes Arwerthiant~Charles Medforth	Caernarfon, Gwynedd	0									SH	253100	364700	CY	Northern CY								Yes							Yes
62	EAHLD34514	Llanegryn	Waenfach	0									SH	259300	304700	CY	Northern CY								Yes							Yes
63	EAHLD34516	Plas Gwyn	Pontrug	0									SH	251900	363300	CY	Northern CY					Yes										Yes
64	EAHLD34517	Old Pandy Railway	Tregarth	0									SH	258800	367800	CY	Northern CY				31/12/1988	Yes										Yes
65	EAHLD34518	Parc Uchaf	Llanrug	0									SH	254200	363300	CY	Northern CY					Yes										Yes
66	EAHLD35576	Gwernoer Farm	Penygroes, Nantlle, Gwynedd	37084	WU1/L/ARF002				Black R Hughes Brenda Margaret	Penygroes, Nantlle, Gwynedd	Black R Hughes Brenda Margaret	Penygroes, Nantlle, Gwynedd	SH	250157	352550	CY	North	26/11/1993													Yes		
67	EAHLD35593	Plas Meredydd Pet Cemetry	Abergele, Betws Yn Rhos, Conwy	37226	WU1/L/HUG001				Abergele, Betws Yn Rhos, Conwy		Abergele, Betws Yn Rhos, Conwy		SH	287281	372316	CY	North	03/05/2002	28/01/2008				Yes	Yes	Yes						Yes		
68	EAHLD13896	Cwm Y Glo	Caernarfon, Gwynedd	0		6810/0007			Gwyrfai Rural District Council				SH	255600	362400	CY	Northern CY			31/12/1955	31/12/1964		Yes		Yes								
69	EAHLD13904	Tyddyn Marthwyl	Criccieth	0		6810/0046							SH	249600	340300	CY	Northern CY			31/12/1965	31/12/1970		Yes		Yes								
70	EAHLD13906	Cae'r Plan	Penrhos, Pwllheli	0		6810/0049							SH	236200	334500	CY	Northern CY						Yes		Yes								
71	EAHLD14704	Wern Farm	Llandfrothen, Penrhywdeydraeth, Gwynedd	37090	WW1/L/WIL009	6830/0017		6810/0016, NOW -008-L, W/MER/00/1 /1	Mr G Williams	Bryngelynen, Croesor, Penrhyndeudraeth, Gwynedd			SH	262000	342000	CY	Northern CY	04/01/1994	09/03/2005	31/12/1960	31/12/1996	Yes	Yes	Yes	Yes						Yes		
72	EAHLD31176	Near Coed Ty-uchaf	Sarnau, Bala, Clwyd	0			126				Penllyn Rural District Council		SH	297300	339200	CY	Northern CY			31/12/1952				Yes	Yes								
73	EAHLD31177	Near Tyddyn Llywarch	Llanuwchllyn, Bala, Gwynedd	0			127				Penllyn Rural District Club		SH	286200	329100	CY	Northern CY			31/12/1964	31/12/1985			Yes	Yes								
74	EAHLD31268	Rhwngyddwyryd Refuse Tip	Garndolbenmaen, Pwllheli, Caernarfon	0			776				Lleyn Rural District Council		SH	249200	342500	CY	Northern CY			31/12/1951													
75	EAHLD31269	Butlin's Refuse Tip	Pen Y Chain Farm, Pwllheli, Gwynedd	0			778				Butlins Limited	Oxford Street, London	SH	242300	335600	CY	Northern CY			31/12/1946													
76	EAHLD31273	Lower Road	Minffordd, Penrhyndeudraeth, Gwynedd	0			804				Deudralth Rural District Council		SH	260100	338800	CY	Northern CY			31/12/1947	31/12/1982				Yes								
77	EAHLD14174	Moel Y Gest	Criccieth Road, Portmadoc, Gwynedd	0		6810/0047	871				Porthmadog Urban District Council		SH	255500	339200	CY	Northern CY			30/06/1961	31/12/1970	Yes	Yes	Yes	Yes								
78	EAHLD31271	Nant Rechwedd Refuse~Disposal Site	Penrhyndeudraeth, Gwynedd	0			802				Deudralth Rural District Council		SH	259100	331800	CY	Northern CY																
79	EAHLD14172	Prysgol	Prysgol Farm, Caernarvon, Gwynedd	0		6810/0033	835		Ferodo Limited		W J Williams	Prysgol Farm, Caernarvon	SH	251900	361800	CY	Northern CY			30/12/1964	31/12/1987	Yes		Yes	Yes						Yes		
80	EAHLD31272	Cefn-gallt-y-cwm	Trawsfynnyd, Gwynedd	0		6810/0023	803	6810/0057			Deudralth Rural District Council		SH	270200	334600	CY	Northern CY			31/12/1938	31/12/1980	Yes	Yes	Yes	Yes	Yes							
81	EAHLD31186	Abbey View	Dolgarrog, Llanrwst, Denbighshire	0			1452				Nant Conwy Rural District Council		SH	278500	365700	CY	Northern CY			30/06/1956				Yes									
82	EAHLD31211	Pant Dreiniog Quarry	Bethesda, Gwynedd	0			2436				Bethesda Urban District Council		SH	262200	367000	CY	Northern CY			31/12/1957				Yes									
83	EAHLD31171	Llanddulas Quarry	Old Colwyn, Colwyn Bay, Gwynedd	0			1172						SH	290000	378100	CY	Northern CY			01/04/1974		Yes		Yes									
84	EAHLD31258	Council Tip	Llandudno, Gwynedd	0			642				Llandudno Urban District Council		SH	278200	381300	CY	Northern CY			30/04/1955				Yes									
85	EAHLD31190	Pine Court	Llanwrst Road, Colwyn Bay, Clwyd	0			1625				Mr and Mrs K Hughes	Pine Court, Llanrwst Road, Upper Colwyn Bay, Colwyn Bay	SH	283800	378000	CY	Northern CY			31/10/1972													
86	EAHLD13918	Near Pen-y-Bont	Bala, Gwynedd	0		6810/0066	129				BALA Urban District Council		SH	293200	335300	CY	Northern CY			01/10/1963	31/12/1980	Yes	Yes	Yes	Yes								
87	EAHLD14191	Glan-Y-Mor Elias	Llanfairfechan, Conwy	0		6905/0004		CL5E1	Conwy County Borough Council				SH	266700	374400	CY	Northern CY			31/12/1935	31/12/1979	Yes		Yes	Yes		Yes						
88	EAHLD14048	Maesdu Tip	Llandudno	0		6905/0006		CL5E8	Llandudno Urban District Council				SH	278200	381300	CY	Northern CY			31/12/1965	31/12/1977	Yes	Yes	Yes	Yes						Yes		
89	EAHLD14051	Tyddyn Mawr	Llanrug	0		6905/0027		3/23/165	Mr David Meirion Hughes	Tyddyn Mawr, Llanrug			SH	253300	364000	CY	Northern CY	08/02/1979		31/12/1977	31/12/1984	Yes	Yes								Yes		
90	EAHLD14148	Clegir Mawr	Gwalchmai	0		6805/0003			Isle of Anglesey Borough Council		Rural District Council		SH	237400	377400	CY	Northern CY			31/12/1948	31/12/1988	Yes	Yes	Yes	Yes	Yes					Yes		
91	EAHLD14149	Hengae	Llangaffo	0		6805/0008							SH	243900	368900	CY	Northern CY			01/01/1960	01/01/1970	Yes	Yes									
92	EAHLD14151	Pen-Y-Foel	Llanerchymedd, Anglesey, Gwynedd	0		6805/0014	1608				Twrcelyn Rural District Council		SH	242400	384300	CY	Northern CY			31/12/1948	31/12/1975	Yes	Yes	Yes	Yes		Yes						
93	EAHLD14152	Porthamel	Llanedwen	0		6805/0015			Isle of Anglesey County Council		Isle of Anglesey County Council		SH	250700	367800	CY	Northern CY				Yes	Yes	Yes	Yes	Yes						Yes		
94	EAHLD14153	Railway Cutting at Pen-Ceint	West of Penmynydd, Isle of Anglesey	0		6805/0017			Isle of Anglesey Borough Council				SH	249100	375000	CY	Northern CY			31/12/1967	31/12/1970	Yes	Yes	Yes	Yes								
95	EAHLD14160	Gas Works Yard	Menai Bridge	0		6805/0007							SH	255300	371900	CY	Northern CY			31/12/1968	31/12/1970											
96	EAHLD14161	Bangor No.1	Caernarfon Road, Bangor	0		6810/0001			Bangor City Council				SH	256100	369800	CY	Northern CY			31/12/1960	31/12/1967	Yes	Yes	Yes	Yes								
97	EAHLD14166	Pantdreiniog	Bethesda, Bangor	0		6810/0018			Bethesda Urban District Council				SH	262300	367100	CY	Northern CY			31/12/1960	31/12/1970	Yes	Yes	Yes	Yes								
98	EAHLD14167	Peblic Mill Tip	Caernarfon, Gwynedd	0		6810/0021							SH	249100	361900	CY	Northern CY				31/12/1990	Yes	Yes		Yes								
99	EAHLD14168	Peblig Mill Tip	Caernarfon, Gwynedd	0		6810/0021							SH	249400	362100	CY	Northern CY			31/12/1981	31/12/1990	Yes	Yes								Yes		
100	EAHLD14170	Taldrwst Farm	Tansallt, Pen Y Groes, Caernarvon	0		6810/0026	404		Gwyrfai Rural District Council		Gwyrfai Rural District Council		SH	248200	352600	CY	Northern CY			31/12/1948	31/12/1974	Yes	Yes	Yes	Yes						Yes		
101	EAHLD14171	Nant Tip	Hendrewen Road, Bangor, Gwynedd	0		6810/0029	524		Arfon Borough Council		Bangor City Council		SH	257500	370800	CY	Northern CY			31/07/1963	31/12/1990	Yes	Yes	Yes	Yes						Yes		
102	EAHLD14274	Cwtws Helyg	Machynlleth, Powys	0		6850/0016		CS12/37	Mr Evans				SH	273900	301100	CY	Northern CY			31/12/1974	31/12/1979	Yes	Yes	Yes	Yes	Yes							
103	EAHLD14173	Rhwngyddwyryd	Garndolbenmaen	0		6810/0035							SH	249200	342500	CY	Northern CY			31/12/1990	31/12/1994	Yes	Yes	Yes	Yes	Yes					Yes		
104	EAHLD14176	Maesoglan Refuse Tip	Ceidio, Pwllheli, Caernarfon	0		6810/0053	777		Gwynedd County Council		Lleyn Rural District Council		SH	230100	337800	CY	Northern CY			31/12/1952	31/12/1990	Yes	Yes	Yes	Yes	Yes			Yes		Yes		
105	EAHLD14178	Twll Ballast	Nantlle, Caernarfon, Gwynedd	0		6810/0028		512	Greenways		Bernard Wardle and Company Limited		SH	250300	353300	CY	Northern CY			31/12/1963	31/12/1976	Yes	Yes			Yes					Yes		
106	EAHLD14184	Refuse Tip of Old~Conway Road	Old Conway Road, Colwyn Bay, Clwyd	0		6905/0007	1171	CL5E13	Conwy County Borough Council		Colwyn Bay Corporation		SH	282000	378200	CY	Northern CY			01/01/1955	31/12/1975		Yes	Yes	Yes						Yes		

107	EAHLD14186	Football Ground at Pen-y-Cae	Penmaenmawr, Conwy	0		6905/0010	CL5E2	Penmaenmawr Urban District Council			SH	272500	376900 CY	Northern CY			31/12/1949	31/12/1969	Yes		Yes		Yes										
108	EAHLD14187	Whinnacres	Conwy Morfa	0		6905/0014	CL5E4	Conwy County Borough Council			SH	277200	378300 CY	Northern CY			31/12/1963	31/12/1968	Yes		Yes		Yes				Yes						
109	EAHLD14189	Knowles Glan Hafod	Penmaenrhos, Old Conwyn	0		6905/0023		G W Knowles			SH	288200	378400 CY	Northern CY			31/12/1984	31/08/1986	Yes												Yes		
110	EAHLD14198	Twyn Trewan	Rhosneigr	0		6830/0014	NOW-107-L, YMBC/6	C and M Parry Plant Hire Limited	Garreg Fawr, Trearddur Bay, Holyhead, Ynys Mon, Gwynedd		SH	232000	374800 CY	Northern CY	21/09/1995		13/11/1995		Yes							Yes					Yes		
111	EAHLD14626	Pentrefoelas (Penlan)	Avondale Llanrwst, Gwynedd	0		6905/0011	CK5E19	Conwy County Borough Council		Local Authority	SH	287400	350900 CY	Northern CY			31/12/1960	31/12/1974	Yes		Yes		Yes								Yes		
112	EAHLD14627	Moelfre	Llety, Bugeiliad	0		6905/0025		Clwyd County Council			SH	296000	374300 CY	Northern CY				31/12/1990	Yes				Yes								Yes		
113	EAHLD14658	Tyn Rhos Caravan Site	Tyn Rhos	0		6805/0023		A Robertson			SH	249300	386600 CY	Northern CY	09/04/1981		31/12/1981	31/12/1984			Yes		Yes								Yes		
114	EAHLD14663	Bangor No.2	Caernarfon Road, Bangor	0		6810/0002	314/4	Hogan Brothers			SH	256000	369700 CY	Northern CY	17/02/1978		31/12/1976	31/12/1992	Yes	Yes											Yes		
115	EAHLD14664	Parcian Farm Tip	Caernarfon, Gwynedd	0		6810/0020	314/1	Ferodo Limited			SH	250300	365300 CY	Northern CY	20/06/1977		31/12/1976	31/12/1987	Yes	Yes	Yes		Yes	Yes	Yes						Yes		
116	EAHLD14669	Part of open land adjacent¯to Castellmarch Farmhouse	Abersoch, Pwllheli, Gwynedd	0		6810/0068	9/82, 25/88	Lemuel Egryn Jones	Castellmarch, Abersoch, Pwllheli		SH	231400	329700 CY	Northern CY	01/12/1982	21/07/1989	31/12/1965	21/07/1989			Yes		Yes								Yes		
117	EAHLD14670	Dwyros	Aberdaron, Pwllheli, Gwynedd	0		6810/0070	May-82	Gwilym Williams	Dwyros, Aberdaron, Pwllheli		SH	216700	326500 CY	Northern CY	01/12/1982	31/07/1987	01/06/1977	31/07/1987			Yes		Yes								Yes		
118	EAHLD14671	Field No.1154	Rhandir, Mynytho	0		6810/0072	Oct-77	G W Roberts	Rhandir, Mynytho, Pwllheli		SH	230600	329700 CY	Northern CY	11/10/1977	30/05/1993	31/12/1965	31/12/1992	Yes		Yes		Yes								Yes		
119	EAHLD14672	Parsel	Clynnog Fawr, Caernarfon	0		6810/0076	18/77	W Jones			SH	238600	347300 CY	Northern CY	30/06/1977	30/09/1987	01/06/1977	31/12/1994			Yes		Yes								Yes		
120	EAHLD14673	Old Quarry	Pant Gwyn Farm, Sarn Bach, Abersoch, Pwllheli, Gwynedd	0		6810/0077	1/82, 6810/0075, 16/77, 24/87	Derek L Wallis	Pant Gwyn Farm, Sarn Bach, Abersoch, Pwllheli		SH	230700	326400 CY	Northern CY	16/06/1977	31/07/1992	31/12/1960	31/12/1991	Yes		Yes		Yes	Yes							Yes		
121	EAHLD14674	Part Of Field No.476	Fron Hyfryd, Bwlchtolyn	0		6810/0080	Jul-77	R T Roberts			SH	231300	326500 CY	Northern CY	10/08/1977	30/09/1987	31/12/1976	30/09/1987	Yes				Yes								Yes		
122	EAHLD14677	Cefn-Nen	Groeslon, Llandwrog	0		6810/0003	314-13	E M Jones			SH	248100	355100 CY	Northern CY	07/03/1981	31/12/1992	31/12/1981	31/12/1991	Yes	Yes	Yes		Yes	Yes							Yes		
123	EAHLD14680	Tyddyn Llwyn	Morfa Bychan, Gwynedd	0		6810/0054	20/83	Mr David Thomas Beer	Tyddyn Llwyn Caravan Park, Portumadog, Gwynedd		SH	256000	338600 CY	Northern CY	04/10/1989		31/12/1977	31/12/1988			Yes		Yes								Yes		
124	EAHLD14681	Cookes Works	Penrhyndevraeth, Gwynedd	0		6810/0069	02/77, 6810/0014	Nobel's Explosives Company Limited	Cooke's Works, Penrhyndeudraeth, Gwynedd		SH	262000	339100 CY	Northern CY	29/07/1977		31/12/1945	31/12/1994	Yes	Yes	Yes		Yes	Yes							Yes		
125	EAHLD14682	Faerdre	Botwnnog, Pwllheli	0		6810/0071	23/77, 3/82	John Bakewell	Riverside Hotel, Abersoch, Pwllheli		SH	225300	330400 CY	Northern CY	22/12/1977	30/09/1987	31/12/1969	30/09/1987			Yes		Yes								Yes		
126	EAHLD14687	Llanddulas Quarry Phase 1a	Llanddulas, Colwyn Bay	0		6810/0040		Colwyn Borough Council			SH	290200	377800 CY	Northern CY	01/05/1984		01/01/1985	31/12/1991	Yes	Yes	Yes		Yes	Yes	Yes						Yes		
127	EAHLD14689	Part Of Field No.1476	Brynteg, Llanengan	0		6810/0079	13/77	Mr and Mrs R B Jones	Mynydd Du Farm, Caravan & Camping Site,		SH	229600	327400 CY	Northern CY	16/06/1977	30/09/1987	01/03/1954	30/09/1987			Yes		Yes								Yes		
128	EAHLD14691	Mynydd Du Farm	Criccieth	0		6810/0074	14/77	Richard H Williams	Cricieth, Gwynedd		SH	251500	339300 CY	Northern CY	16/06/1977	30/06/1982	31/12/1975	30/06/1982			Yes		Yes								Yes		
129	EAHLD14695	Bryn Rodyn	Old Colwyn	0		6905/0015	CL5E20	J Hefin Jones			SH	287700	376800 CY	Northern CY	30/06/1984		31/12/1975	30/11/1987	Yes	Yes											Yes		
130	EAHLD14696	Old Brickworks	Llandudno Junction, Llandudno, Gwynedd	0		6905/0016	708 CL5E11	Northern Land Agricultural Improvements Limited		British Domestic Appliances Limited	SH	279700	377600 CY	Northern CY	13/06/1977		31/12/1950	31/12/1989	Yes	Yes	Yes		Yes								Yes		
131	EAHLD14697	Fawnog Farm	Llanelian, Colwyn Bay	0		6905/0019		Clwyd County Council			SH	285100	374300 CY	Northern CY	31/08/1990	31/12/1993	31/12/1990	31/12/1993	Yes	Yes	Yes		Yes	Yes							Yes		
132	EAHLD14705	Bryn Bras	Corwen, Denbigshire	0		6830/0018	L/1/35, NOW-304-L	SITA Wastecare Limited	The Pickeridge, Stoke Common Road, Fulmer, Buckinghamshire	Glyndwr District Council	SJ	310000	345500 CY	Northern CY	31/12/1989		31/12/1989	31/12/1993		Yes	Yes		Yes								Yes		
133	EAHLD14792	Tan-Y-Ffordd	Derwenlas, Near Machynlleth, Montgomeryshire	37066	WW1/L/JON003	6850/0007	NOW-602-L, 11/93, 3/90	E and D Jones	Tan-Y-Ffordd, Derwenlas, Machynlleth, Montgomeryshire		SN	271800	299200 CY	Northern CY	21/07/1992	23/01/2006	28/03/1994		Yes							Yes	Yes				Yes		
134	EAHLD14800	Wernlerri	Borth, Cards, Dyfed	0		6820/0003	2947	Ceredigion County Council		Aberystwyth Rural District Council	SN	261200	289200 CY	Northern CY	13/06/1977	01/03/1996	31/12/1930	15/05/1994	Yes	Yes	Yes		Yes				Yes	Yes			Yes		
135	EAHLD31245	Bryn Bras	Merioneth, Corwen, Clwyd	0			402			Edeyrnion Rural District Council	SJ	310000	345400 CY	Northern CY			31/12/1964				Yes												
136	EAHLD31221	Cilgwyn Quarry	Upper Llandwrog, Caernarfon	0		6810/0006	2591	Caenarfon District Council		Gwyrfai Rural District Council	SH	249900	353800 CY	Northern CY			31/10/1973	31/12/1990	Yes	Yes	Yes		Yes		Yes								
137	EAHLD15083	Moel-Y-Ci	Tregarth	0		6810/0013	314-36/92	D Wooler			SH	259400	367900 CY	Northern CY	23/11/1992		01/05/1988	31/12/1994	Yes	Yes	Yes		Yes								Yes		
138	EAHLD15084	Old Railway Cutting at Pandy	Pandy, Tregarth	0		6810/0017	314-20	Gwynedd County Council			SH	259600	367900 CY	Northern CY	08/06/1982	31/12/1994	31/12/1975	31/12/1988	Yes												Yes		
139	EAHLD15087	Cefn Leisiog Farm	Plas Newydd, Morfa Nefyn, Dinas, Pwllheli, Gwynedd	37100	WW1/L/AMB001	6905/0028	NOW-012 L, DWY 004	W Ambrose Griffith and Sons	Plas Newydd, Morfa Nefyn, Pwllheli	W Ambrose Griffith and Son	SH	227400	337900 CY	Northern CY	01/11/1993	27/10/2004	31/12/1994		Yes												Yes		
140	EAHLD15089	Coed Bolyn Mawr Farm	Bethal, Caernarfon, Gwynedd	37017	WW1/L/JEN002	6905/0030	314-9/90, NOW-010-L	Jennings Plant Services Limited	Bod Hyfryd, Llysfaen, Colwyn Bay		SH	253700	365300 CY	Northern CY	25/10/1990	23/10/2002	01/06/1996	16/07/1996	Yes		Yes										Yes		
141	EAHLD34497	Ponc y Lon	Tal y Bont, Gwynedd	0							SH	260900	370600 CY	Northern CY									Yes										
142	EAHLD34501	Gerddi'r Ala	Penrhydlyniog, Gwynedd	0							SH	236700	334700 CY	Northern CY									Yes										
143	EAHLD34504	Pont Fron Goch	Blaenau Ffestiniog	0							SH	270200	345300 CY	Northern CY									Yes										
144	EAHLD34505	Y Traeth	Porthmadog	0							SH	257900	339800 CY	Northern CY									Yes										
145	EAHLD14177	Llanwddyn Tip	Powys	0		6810/0067	899 CS12/25	Liverpool Corporation		Liverpool Corporation	SJ	302100	318800 MI	Upper Severn MI			31/12/1920	31/12/1971	Yes	Yes	Yes		Yes										
146	EAHLD34506	Dol Hir	Dinas Mawddwy	0							SH	285200	315200 CY	Northern CY									Yes										
147	EAHLD14299	Llangynog Tip	Powys	0		6850/0021	898 CS12/15	Mr R Lewis		Llanfyllin Rural District Council	SJ	305000	325500 MI	Upper Severn MI			31/12/1966	31/12/1971	Yes	Yes	Yes		Yes	Yes									
148	EAHLD34513	Ynysgyffylog	Arthog	0							SH	263400	313900 CY	Northern CY									Yes										
149	EAHLD34450	Forge	Machynlleth, Powys	0			CS12/45				SH	276200	300100 CY	Northern CY																			
150	EAHLD32514	Bron Wylfa	Near Parc Glyn	0			387			Penmaenmawr Urban District Council	SH	276900	372700 CY	Northern CY			31/12/1938	31/12/1971			Yes												Yes
151	EAHLD13861	Pant yr Aur	Penychain, Pwllheli, Gwynedd	0		6810/0034	26/88	Butlins Limited			SH	242400	335600 CY	Northern CY	18/02/1988		31/12/1988	31/12/1994		Yes			Yes								Yes		Yes
152	EAHLD13863	Penllech Uchaf	Llangwnadl, Pnllheli	0		6810/0083	20/77, 6/82, 83	Messrs Griffiths Brothers	Penllech Wchaf, LLangwnnadl, Pwllheli		SH	220200	333800 CY	Northern CY	11/10/1977	30/09/1987	31/12/1977	30/09/1987			Yes		Yes		Yes						Yes		Yes
153	EAHLD13908	Aberdyfi	Aberdovey, Gwynedd	0		6810/0055					SN	259600	297300 CY	Northern CY			31/12/1960	31/12/1975	Yes	Yes	Yes		Yes	Yes									Yes
154	EAHLD13917	Near Sewage Works	Barmouth, Gwnedd	0		6810/0064					SN	260800	316400 CY	Northern CY						Yes			Yes										Yes
155	EAHLD13963	Disused Quarry	Pencoed Road, Bynea	0		6825/0106		E Pugh			SN	258600	299500 CY	Northern CY			31/12/1962			Yes			Yes										Yes
156	EAHLD13858	Dolafon	Cwm y Glo	0		6810/0008					SH	254800	363100 CY	Northern CY	13/12/1982		13/12/1982	31/12/1984	Yes												Yes		Yes
157	EAHLD13864	Penrallt	Bron-y-Gaer, Abersoch, Pwllheli, Gwynedd	0		6810/0084	02/77, 2/88	W and G Williams			SH	230100	328400 CY	Northern CY	19/09/1988	30/09/1993	31/12/1988	30/09/1993	Yes	Yes	Yes		Yes	Yes							Yes		Yes
158	EAHLD13900	Llanuwchllyn	Bala, Gwynedd	0		6810/0019					SH	286300	329300 CY	Northern CY			31/12/1941	31/12/1986	Yes	Yes	Yes		Yes						Yes		Yes		Yes
159	EAHLD13902	St Helens Road	Caernarfon, Gwynedd	0		6810/0025					SH	248200	361800 CY	Northern CY			31/12/1950	31/12/1960															Yes
160	EAHLD13907	Golan	Llwynafon	0		6810/0052	22/87	Highways and Transportation Department	Gwynedd County Council, Shire Hall Street, Caernarfon		SH	251500	342300 CY	Northern CY	10/03/1987			31/12/1990	Yes	Yes											Yes		Yes
161	EAHLD13909	Bwlchllyn Bach	Talyllyn	0		6810/0056					SH	275300	313500 CY	Northern CY			31/12/1988	31/12/1990	Yes	Yes	Yes		Yes	Yes									Yes
162	EAHLD13914	Garthangharad	Gathangharad	0		6810/0061		Gwynedd District Council			SH	266500	316500 CY	Northern CY			31/12/1952	31/12/1982	Yes	Yes	Yes		Yes								Yes		Yes
163	EAHLD13915	Gwalia Road	Tywyn	0		6810/0062					SH	258800	301600 CY	Northern CY			31/12/1970	31/12/1992	Yes	Yes	Yes		Yes										Yes
164	EAHLD13991	Ty Gwyn Farm	Henllan	0		6830/0005		Mr D E Jones			SJ	301600	368400 CY	Northern CY						Yes				Yes									Yes
165	EAHLD13992	Cambwill Quarry	Cambwill, Corwen, Clwyd	0		6830/0020		Clywd County Council			SJ	304400	351000 CY	Northern CY			30/09/1991	30/09/1995													Yes		Yes
166	EAHLD14052	Tyddyn Y Graig	Llanelian	0		6905/0032					SH	284900	374800 CY	Northern CY																			Yes

Appendix 4:

Outline Construction Traffic Management Plan (CTMP)

Visual Impact Provision (VIP) Snowdonia Project

Outline CEMP Appendix 2A: Outline Construction Traffic Management Plan

National Grid Electricity Transmission Plc

Project reference: Snowdonia VIP
Project number: 60566917

December 2019

Quality information

Prepared by	Checked by	Verified by	Approved by
			
L Peaker	L Jones	Duncan Carter	J Reader
Consultant	Senior Consultant	Principal Consultant	Regional Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
V1.0	04/02/2019	1st Issue		A Leary	Associate Director
V1.1	27/02/2019	Updated Project Description for Tender		A Leary	Associate Director
V1.2	03/07/2019	Updated to reflect most recent design information provided		A Leary	Associate Director
V1.3	19/07/2019	Advanced copy: Not for Planning		A Leary	Associate Director
V1.4	24/07/2019	Following Project Team Comments		A Leary	Associate Director
V2.0	08/11/2019	For Planning		J Reader	Regional Director

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1. Introduction

1.1 This Outline Construction Traffic Management Plan (Outline CTMP) has been prepared on behalf of National Grid Electricity Transmission (plc) (National Grid) for the Visual Impact Provision (VIP) Snowdonia Project (here on referred to as the 'Proposed Project').

1.2 A full description of the Proposed Project is provided in Chapter 2 of the Environmental Appraisal. This Outline CTMP should be read alongside Traffic and Transport Chapter 12 of the Environmental Appraisal and the Figures listed in Table 1-1.

1.3 This Outline CTMP describes and explains the approach undertaken to manage and mitigate the impacts of construction traffic arising from the Proposed Project, with specific reference to the construction and access strategy; the 'embedded mitigation' incorporated into the design of the Proposed Project and described in the Environmental Appraisal (Traffic and Transport Chapter 12).

1.4 Furthermore, the full list of measures presented in this report – the proposed mitigation during construction – has been informed by the findings of the assessment of construction traffic impacts carried out in the Environmental Appraisal Traffic and Transport Chapter 12. Subsequently, this Outline CTMP sets out the location-specific mitigation measures proposed alongside more generic mitigation measures to be adopted across the Proposed Project.

1.5 The recommendations within this Outline CTMP would be implemented by National Grid and the appointed contractor irrespective of an identified need from the Environmental Appraisal; rather, they are proposed to ensure that the impacts of construction traffic on the local community and other road users are minimised as far as reasonably practicable.

1.6 Table 1.1 lists the Figures referred to within this document, associated with the Environmental Appraisal.

Table 1-1: Figures

Figure Reference	Environmental Appraisal Chapter	Title
2.1	Project Description	Construction
2.2	Project Description	Operation
12.1	Traffic and Transport	Highway Link References
12.2	Traffic and Transport	Construction Traffic Routes
12.3	Traffic and Transport	Access Locations
12.4	Traffic and Transport	Traffic Survey Locations
12.5	Traffic and Transport	Public Rights of Way
12.6	Traffic and Transport	Cycle Routes
12.7	Traffic and Transport	Garth Visibility Splays
12.8	Traffic and Transport	Cilfor Visibility Splays

Background and Scope

1.7 The location and extent of the Proposed Project is presented in Figure 2.1 in Chapter 2 Project Description. The Proposed Project is to underground a 3.5km section of existing OHL (here on referred to as the VIP subsection) using a tunnel from a location close to National Grid's existing Garth Sealing End Compound (SEC) on the western side of the Dwyryd Estuary to Cilfor on the eastern side of the Dwyryd Estuary and remove the existing VIP subsection (pylons and conductors). Construction compounds, laydown areas, and temporary access tracks will be required to facilitate construction activities.

1.8 The Proposed Project extent is presented in the Traffic and Transport Figures (12.1 to 12.8) and is comprised of key elements set out under the subheadings below. Existing and proposed pylon references are presented in Figure 2.1 and Figure 2.2 in Chapter 2 Project Description respectively. Full detail of the project components described below is provided in the Project Description Chapter 2.

Table 1-2: Location of Project Components

Location	Proposed Project Components
Western Side of the Dwyryd Estuary (Planning Jurisdiction of Gwynedd Council)	• Diversion of third-party assets, including the undergrounding of an OHL away from the construction area in accordance with operator requirements
	• Reconfiguration of equipment at the existing Garth SEC (including removal of the gantry, there will therefore be no equipment greater than 10m high)
	• A tunnel head house (containing a tunnel shaft), with a permanent access road close to National Grid's existing Garth SEC. The ground will need to be raised out of the flood zone level. A permanent power supply will be required.
	• Underground buried cable to connect into the SEC from the tunnel head house
	• Removal of six pylons and associated foundation to 1.5m below ground level
	• Temporary access routes (with potential highways improvements or passing places) and laydown areas to facilitate construction activities
	• A section of cable tunnel (total length 3.3km long, with an internal diameter of up to 4.4m, at varying depths below the ground)
Location	**Proposed Project Components**
Eastern Side of the Dwyryd Estuary (Planning Jurisdiction Snowdonia National Park)	• Diversion of third-party assets including the diversion of a water pipeline away from the construction area in accordance with operator requirements
	• A new SEC near Cilfor (required to connect the new underground cable to the remaining existing OHL)
	• A tunnel head house (containing a tunnel shaft), with a permanent access road. The ground will be raised to create a working platform and will be regarded/ contoured. A permanent power supply will be required.

Location	Proposed Project Components
	• A section of cable tunnel
	• Removal and reinstallation of one pylon (Pylon 4ZC027) adjacent to the new Cilfor SEC
	• Removal of two pylons and associated foundation to 1.5m below ground level
	• Temporary access routes and laydown areas to facilitate construction activities
Location	**Proposed Project Components**
Dwyryd Estuary (Planning Jurisdiction of Natural Resources Wales)	• A section of cable tunnel
	• Removal of Pylon 4ZC030R, National Grid will also aim to remove all pylon structures including the foundation piles and cofferdam sheet piles; alternatively, foundations will be removed to the maximum depth possible by an excavator located on the working area
	• Partial removal of the foundations of the previously dismantled pylon 4ZC030
	• Removal of Pylon 4ZC031 and partial removal of its foundations
	• Temporary accesses associated with the removals noted above, as well as temporary access to enable the dismantling of Pylon 4ZC032 (although the pylon itself is within the terrestrial environment)

CTMP Objectives

1.9 This section outlines the objectives of this Outline CTMP and the purpose of the full CTMP to be developed by the contractor and maintained and updated throughout the construction phase of the Proposed Project. At the time of writing a contractor is yet to be appointed for the Proposed Project. Consequently, the Outline CTMP is intended to provide a framework for the appointed contactor to achieve the objectives contained within this document.

1.10 Once a contractor is appointed, it is intended that this document would form the basis of a comprehensive construction traffic management package which would be further developed and adhered to by the appointed contractor throughout the life of the Proposed Project.

1.11 This Outline CTMP establishes good practice principles to be implemented to mitigate, so far as reasonably practicable, the potential environmental effects of traffic during the construction phase of the Proposed Project. As a consequence, it is intended to consider the construction phase of the Proposed Project only; although reference is made to operation and maintenance activity and the decommissioning phase where relevant.

1.12 The key objectives for the Outline CTMP are shown in Table 1-3.

Table 1-3: Objectives of the Outline CTMP

Objective	Description
A	Ensure that movements of people, plant and materials are achieved in a safe, efficient, timely and sustainable manner.
B	Ensure that any impact to the local communities and local tourism industry is reduced so far as reasonably practicable.

Objective	Description
C	Ensure construction traffic levels are acceptable
D	Reduce and control construction vehicle trips where practical.
E	Ensure strategies and mitigation measures are implemented and adhered to through continued monitoring, review and improvement of the CTMP.
F	Limit the effects of construction traffic on the Local Road Network (LRN) and Strategic Road Network (SRN).

1.13 The measures included within this Outline CTMP are not intended to be exhaustive and the appointed contractor will be required to actively engage with National Grid and the relevant Highway Authority to ensure appropriate measures are implemented during the construction phase.

1.14 On this basis, and prior to the construction phase, the Contractor shall produce a detailed CTMP based on the outline plan which is to be implemented and monitored throughout the construction programme. The detailed CTMP shall ensure that all traffic associated with the project's construction works operates in a safe and compliant manner at all times and shall be signed by the appointed Contractor and the relevant Highway Authority.

1.15 Building upon the objectives and information contained within this outline CTMP, the detailed CTMP development by the appointed contractor shall include working procedures and measures to:

- *Ensure the effects on residents, properties, businesses and schools caused by construction traffic, where practicable, are kept to an absolute minimum;*
- *Maximise safety in all aspects of the project associated with the movement of traffic;*
- *Ensure all third-party traffic interfacing with the project are kept safe from the on-going works;*
- *Include clear liaison with the Local Authority regarding traffic caused by construction works;*
- *Identify suitable signage and traffic controls to be used for all access points; and*
- *Include a Driver Information Pack covering a variety of topics and providing information on the requirements of working on the project.*

Scoping and Consultation

1.16 The terrestrial element of the Proposed Project is located in the administrative boundaries of Gwynedd Council and Snowdonia National Park Authority. Activities within the Dwyryd estuary are within the planning jurisdiction of Natural Resource Wales.

1.17 In late 2017, consultation was undertaken with the Stakeholder Reference Group (SRG). At that time concerns were raised in relation to the potential volumes of additional traffic arising from an east-west direction of tunnel drive, and the potential impact upon Pont Briwet. As a consequence the west-east tunnel drive from Garth was explored, in the interest of minimising the impact of Proposed Project traffic along Pont Briwet.

1.18 Subsequently, consultation was undertaken with Gwynedd Council highways officers on the 8th August 2018 to discuss the construction traffic routing and access arrangements, the likely traffic effects arising from the Proposed Project and the requirement for traffic management and/or highways improvements across the LRN. Furthermore, public consultation events took place during late 2018. Members of the Traffic and Transport team attended an event in Penrhyndeudraeth in November 2018.

1.19 The scope and methodology of the Environmental Appraisal – including the provision of a CTMP to set out proposed mitigation measures – was submitted within the Screening and Scoping Report. A response to the Screening and Scoping Report was received in March 2019. Gwynedd Council Advised that:

"The LPA understands that the Traffic Unit is satisfied with the proposal and welcomes the mitigation measures proposed. You are advised to discuss traffic management further with the Development Control Senior Engineer (sic)"

1.20 Matters scoped out of assessment for the Proposed Project are listed in the Environmental Appraisal (Environmental Appraisal Process Chapter 3).

1.21 It will be necessary to ensure that consultation and stakeholder engagement would continue to be conducted beyond this by National Grid and the contractor in order to inform the detailed CTMP and associated traffic management measures.

1.22 The mitigation measures outlined in Section 7 of this Outline CTMP include the appointment of a Traffic Safety and Control Officer (TSCO). A key aspect of their role would be to act as a point of contact for the Proposed Project throughout the construction phase and to liaise with local people, the local planning authorities, and any other relevant stakeholders.

1.23 Further information of scoping and consultation is provided within the Environmental Appraisal Traffic and Transport Chapter 12.

Study Area

1.24 The 'Study Area' referred to henceforth in this Outline CTMP has been defined by identifying the links that construction traffic would be required to use in order to access the Proposed Project.

1.25 The most appropriate and likely routes for vehicles to access and egress the Proposed Project were identified considering their likely origins and destination points, the type of vehicles concerned, and the elements of the Proposed Project concerned. The Study Area assessed within this chapter is defined by a total of 15 highway links, comprising the Local and Strategic Highway Network. Section 3 of this Outline CTMP describes the routing strategy used to identify the prescribed highway links and associated Study Area.

1.26 In terms of highway links the Study Area commences from Porthmadog High Street and the A487 Porthmadog Bypass to the West and terminates on the eastern side of the Dwyryd Estuary, approximately 500m north and south of Cilfor, on the A496.

1.27 In addition to this, the Study Area was extended to encompass relevant BEIs and to consider non-motorised infrastructure relevant to the assessment - including the National Cycle Network and Public Rights of Way.

1.28 The Study Area for the assessment of Traffic and Transport impacts is presented on Figure 12.1 and Figure 12.2.

Project Timescales

1.29 At the time of writing the Proposed Project is anticipated to commence construction in 2021 and is scheduled for completion approximately five years later, in 2026. These dates are subject to change and will be periodically updated within the contractors CTMP during the construction phase.

1.30 Peak construction activity is anticipated to occur during the tunnelling phase, associated with the transportation of aggregate and is expected to last 17 months.

1.31 Removal of the VIP subsection ('OHL Removal) would take place following the completion of all tunnelling and associated works in mid-2026, lasting for approximately six months.

1.32 All construction work, including site dis-establishment is expected to be complete before the end of 2026.

2. Construction Vehicle Classification

2.1 A wide variety of vehicle types would be used for the construction of the Proposed Project. Vehicles would be required to transport people, equipment and materials including aggregate that will arise from tunnel excavation. Volumes of Light Goods Vehicles (LGVs) and Heavy Goods Vehicle (HGVs) associated with the construction phase of the Proposed Project are detailed and assessed in the Environmental Appraisal Chapter 12.

2.2 For the purposes of the assessment, construction vehicles have been classified as follows, in accordance with the Driver and Vehicle Standards Agency Lorry types and weights guide[1]:

- *LGV = Vehicles 3.5 tonnes (t) or below in gross weight; and*
- *HGV = Vehicles above 3.5 t in gross weight.*

2.3 Table 2-1 outlines the vehicle classification and typical vehicle types that would be required for the construction of the Proposed Project. These have been identified based on experience of those used for similar National Grid projects.

Table 2-1: Project Vehicle Classification

Vehicle Classification	Example
LGV (i.e. 3.5 t or below)	Car, van, 4x4 pick up, welfare van
HGV (i.e. over 3.5 t)	Excavator, HIAB/winch tractor, tractor and trailer, 10 m and 12 m rigid vehicles, 20 t tippers, concrete mixers, 14 m and 16.5 m articulated vehicles, low loaders, small and large cranes (250 t and 300 t)

2.4 Further information on the volume of traffic of each type forecast to be generated by the Proposed Project is contained within the Environmental Appraisal (Traffic and Transport Chapter 12). However, peak traffic volumes are described below in order to provide an indication of traffic volumes of HGVs and LGVs during construction.

2.5 The peak construction activity in terms of traffic generation is expected to relate to the excavation of rock and soil during tunnelling. Tunnelling works are expected to take place for approximately 17 months. Current forecasts indicate that tunnelling will generate in the order of 30 loads per day, (60 two-way HGV movements) undertaken by vehicles with a load carrying capacity of 15m3. During this period, worst-case forecasts indicate that tunnelling activities could generate 160 two-way Light Goods Vehicles movements spread across three shifts.

2.6 In addition to LGVs and HGVs The Proposed Project would require the movement of Abnormal Indivisible Loads (AILs) which are defined as vehicles which fall outside the provisions contained within The Road Vehicles (Construction and Use) Regulations 1986[2] and The Road Vehicles (Authorised Weight) Regulations 1998[3].

2.7 AIL movements are considered and detailed in the AIL report included in Annex A of this document. As part of the detailed CTMP, the appointed contractor will be required to ensure that all AIL movements can be accommodated with the most up to date Proposed Project design following the planning stage.

[1] https://www.gov.uk/government/publications/guide-to-lorry-types-and-weights
[2] The Road Vehicles (Construction and Use) Regulations 1986. SI 1986:1078 (as amended)
[3] The Road Vehicles (Authorised Weight) Regulations 1998. Si 1998:3111 (as amended)

3. Construction Traffic Routes

3.1 The highway network within the Study Area is comprised of the Strategic Road Network (SRN) and the Local Road Network (LRN). Away from the public highway, the Proposed Project will also be served by temporary access tracks, which would provide access to working areas.

Road Hierarchy

3.2 Welsh Government are responsible for managing the SRN within the Study Area and Gwynedd Council are responsible for managing the LRN.

3.3 In order to provide vehicular access and facilitate construction of the various elements of the Proposed Project there are three types of road network to be utilised (road hierarchy):

Table 3-1: Road Hierarchy

Type	Description
Type 1 – Strategic Road Network (SRN)	Within the Study Area, this comprises the A487 running east-west from the commencement of the Porthmadog Bypass to the north east of Penrhyndeudraeth.
Type 2 – Local Road Network (LRN)	Within the Study Area, this comprises the Gwynedd Council maintained LRN.
Type 3 – Temporary Access Tracks	Within the Study Area, this comprises a network of temporary and existing access tracks which link the Proposed Project to the LRN.

Strategic Road Network

3.4 Construction traffic would be required to enter and leave the Study Area network via the SRN. The LRN will provide access between the SRN and construction traffic access points. HGV and LGV construction traffic routes are presented in Figure 12.2, Traffic and Transport Chapter 12.

Local Road Network

3.5 Use of the LRN will be restricted for HGV traffic to a limited number of routes. Construction traffic routes have been identified in order to provide the most safe and suitable access for HGVs and LGVs along the LRN as far as reasonably practicable, with the intention of avoiding, for example, residential areas and sections of road sensitive to increases in traffic flows.

Temporary Access Tracks

3.6 Temporary access tracks will provide access to work sites from the LRN. The construction of temporary access tracks would be informed by ground conditions in each location and therefore would be tailored accordingly.

3.7 For example, at the western tunnel head house it is expected that the presence of peat will necessitate the use of a ‘floating’ temporary access track design although this would be confirmed and designed in detail by the appointed contractor. In general, preference will be given to using plastic or aluminium road panels to construct temporary roads as opposed to stone aggregate.

3.8 In the case of the access to the eastern tunnel head house, the temporary access track would be upgraded to a permanent construction for the operational phase following the construction phase. This is discussed further in Section 4 of this Outline CTMP.

3.9 Further information regarding the construction of temporary access tracks is provided in the Project Description Chapter 2.

Routing Strategy

3.10 The routeing strategy is based on the following key principles:

- *Provide safe and efficient construction access for the Proposed Project;*
- *Reduce, so far as reasonably practicable and mitigate to acceptable levels disruption to the public;*
- *Avoid use of the A497 through Porthmadog by HGVs;*
- *Prevent use of the northern section of the A496 by HGVs;*
- *Where practical use the shortest route between the access point and the SRN;*
- *So far as reasonably practicable avoid sensitive receptors; and*
- *HGV traffic will be required to enter the road network from the SRN (i.e. the A487). HGVs will then be required to follow prescribed routes to and from working areas. It should be noted that HGV routes would also be used by LGV construction traffic.*

3.11 HGV and LGV construction traffic routes are shown in Figure 12.2 in Traffic and Transport Chapter 12 of the Environmental Appraisal. Table 3-2 sets out the links that form part of construction traffic routes and their associated 'Link Reference'. These are presented in Figure 12.1, Traffic and Transport Chapter 12.

Table 3-2: Project Link References

Link Ref.	Road Name	Description	LRN/ SRN	HGV/ LGV
1	A487	Porthmadog Bypass	SRN	HGV
2	A497	Minffordd Roundabout to NCR8	LRN	HGV
3	NCR8	Between A497 and Existing Garth SEC Compound	LRN	HGV
4	A497	Britannia Terrace	LRN	LGV
5	A487	Between Minffordd Roundabout and Pont Briwet	SRN	HGV
6	A487	Between Pont Briwet and Cambrian View	SRN	HGV
7	Pont Briwet	Between Bron Meirion Surgery and A496	LRN	HGV
8	A4085	North of A487/ School Street Junction	LRN	LGV
9	A487	East of Cambrian View	SRN	HGV
10	Cambrian View	Between A487 and Pont Briwet	LRN	HGV
11a	A496N	North of Pont Briwet Junction to Access B9	LRN	HGV
11b	A496N	North of Access B9	LRN	LGV
12	A496S	South of Pont Briwet Junction	LRN	HGV*
13	A497	Porthmadog High Street	LRN	LGV
14	Unclassified Road	Serving Maes Hendre, Adwyddu, and Maes Teg	LRN	LGV
*Contingency Route: This link would only be used if all other possible construction traffic routes are unavailable for example due to an emergency event on the highway network.				

3.12 The contractor will ensure that HGV traffic will only use designated construction traffic routes during construction and provide details of how this will be enforced in the detailed CTMP. Notwithstanding that, the routes selected are generally the most direct, and therefore most likely to be used by HGV drivers which, it is anticipated, would minimise breaches of the prescribed routing and therefore the need for monitoring and enforcement.

Highways Constraints and Considerations

3.13 Site visits and audits have taken place along the proposed construction traffic routes and at construction access points. Matters which have been considered to inform the construction traffic routing are as follows:

- *Height and weight restrictions;*
- *Highway classification;*
- *Highway structures;*
- *Highway layout (width and horizontal/vertical alignments);*
- *Traffic calming measures;*
- *Built environment indicators (BEIs) adjacent to the highway;*
- *Visibility constraints;*
- *Speed limits and surveyed traffic speeds;*
- *PRoW; and*
- *Other road users (pedestrians, cyclists and equestrians).*

3.14 In order to minimise the potential environmental effects of the Proposed Project, and in accordance with the objectives set out in Table 1-3, mitigation measures were embedded into the design of the Proposed Project ('Embedded Mitigation'). A full list of Embedded Mitigation relating to traffic and transport is provided within the Environmental Appraisal, Traffic and Transport Chapter 12.

3.15 Table 3-3 details the existing highway constraints and considerations, how they have been mitigated at the construction traffic routing and access planning stage ('Embedded Mitigation') and further opportunities for mitigation during the construction stage.

3.16 Additional mitigation is proposed as a minimum, where the Environmental Appraisal has identified the need for intervention to mitigate environmental effects to an acceptable level. Notwithstanding that, the proposed potential mitigation during the construction phase of the Proposed Project highlighted in Table 3-3 and detailed in Section 7 of this report, includes additional best-practice measures to ensure effects across the Study Area arising from construction traffic are minimised so far as reasonably practicable.

3.17 All mitigation measures are discussed in more detail in Section 7 of this report.

Table 3-3: Road Network Constraints and Considerations

Stage of Mitigation	Constraint/Consideration	Potential Mitigation
Construction Traffic Routing and Access Planning Stage	Urban areas (villages, towns, schools)	Proposed construction traffic routes avoid sensitive areas so far as reasonably practicable.
	Narrow local roads and junction constraints	Avoid unsuitable LRN where practical. Suitable traffic management to be implemented at locations.
Construction Traffic Routing and Access Planning & Construction Stage	Existing highway conditions	Appropriate inspections and condition surveys to be agreed with Local Highways Authorities (Highway Authority).
	Existing highway structures	Structure locations identified and avoided where practical. Appropriate surveys to be undertaken (to be agreed with Highway Authority)
	Visibility at access points	Visibility based on Technical Advice Note (TAN) 18. Appropriate vegetation clearance, traffic management and speed reduction measures to be implemented to achieve safe access.
	Impact on pedestrians and cyclists	Construction traffic routeing strategy. Appropriate traffic management, signage and communications.
	Road safety	Construction traffic routes and temporary access design. Suitable traffic management, signage and communications. Road safety awareness amongst contractors and continued liaison with Highway Authority and emergency services.

Contingency Routes

3.18 In order to ensure that construction activities are not unduly disrupted by unforeseen events on the road network (e.g. closures and diversions) it is considered necessary to consider alternative routes for HGV construction traffic. Consequently, the southern section of the A496 (Link Ref 12) has been identified as a 'Contingency Route'.

3.19 Contingency routes would only be used if one of the preferred construction traffic routes became unavailable. A route is considered to be 'unavailable' if it is either closed (by the Highway Authority or the police) or becomes subject to a restriction making it unsuitable for construction traffic (for example a weight or height restriction). The HGV contingency route on the southern section of the A496 is shown alongside preferred construction traffic routes in Figure 12.2.

Workforce Travel & Parking

3.20 It is anticipated that a peak workforce of up to 100 personnel could be present on site across the Proposed Project during the busiest periods, including all contractors and sub-contractors.

3.21 The tunnelling phase is forecast to result in peak workforce numbers. It is currently anticipated that these activities at the Garth construction compound would take place over three shifts during a 24-hour period.

3.22 A dedicated staff compound and car park will be provided at each tunnel head house during the construction phase which would accommodate approximately 40 spaces at Garth (West) and 20 spaces at Cilfor (East). As these sites would be required to accommodate shift handovers, there would not be sufficient space for each member of staff to travel to these working locations by car alone.

3.23 Nonetheless it is expected that much of the workforce would be residing locally and would therefore share car journeys to site. Whilst it is not expected to occur, obstructive and inconsiderate parking by contractors and staff on adjacent highways would impede construction activities and cause inconvenience to local communities; it would therefore be enforced against as part of the management of each working location.

3.24 In order to manage staff, travel patterns, minimise the impact upon the LRN, limit the demand for on-site parking, and to avoid on-street parking near work sites, the contractor will be required to implement measures to minimise single-occupancy car trips to worksites. This might include, for example, a permit scheme, lift-sharing register, and offering minibus pick-ups for staff staying locally.

3.25 National Grid are currently exploring the potential of using a mini bus to transport construction workers to the site at shift changes; this vehicle is likely to be over 3.5 tonne and therefore considered to be an HGV. Should this mode of transport for construction workers prove viable, National Grid would request that this vehicle is excluded from any restriction on HGV movement so that traffic movements to/ from the site can be reduced.

4. Construction Traffic Access

Access Locations

4.1 Vehicular access associated with the Proposed Project is comprised of up to 13 temporary and permanent access locations, including those which will be used to facilitate OHL removal. All access locations are presented on Figure 12.3 Traffic and Transport Chapter 12 and listed in Table 4-1.

4.2 Temporary Access Locations and Permanent Access Locations associated with the Proposed Project are defined as follows:

- ***Temporary Access Locations -*** *those to be used exclusively during the construction phase by Proposed Project construction traffic.*
- ***Permanent Access Locations -*** *those to be retained and used for the operation and maintenance phase of the Proposed Project*

4.3 Accesses have been located and designed in order to reflect the type, and frequency, of vehicular access required during the construction and operation and maintenance phases of the Proposed Project.

4.4 Some access locations make use of existing access points; however, as part of the embedded mitigation, access to some work sites has been selected in some instances to avoid sensitive parts of the network and built environment indicators (e.g. settlements, schools) and to ensure that access is safe and fit for purpose.

4.5 Swept path analysis has been undertaken at each location for the largest anticipated vehicle type. The Proposed Project boundary therefore reflects the maximum extent it is expected that will be required in order to accommodate these vehicles. The contractor will be required to ensure that the design of each access is suitable to accommodate the type and frequency of vehicles associated with the construction element served by that access in consultation with National Grid and the Local Highways Authority.

4.6 Notwithstanding that, it is expected that traffic management measures could be implemented in many of the temporary access locations to minimise the need for the time and disruption associated with physical highway works. The approach to traffic management during the construction phase of the Proposed Project is discussed in detail in Section 5 of this Outline CTMP.

Project Phasing: Temporary and Permanent Access

4.7 All project access locations are presented in Figure 12.3 and in Table 4-1. Access points referred to as ‘A’ relate to tunnel construction and operation whilst those referred to as ‘B’ relate to OHL removal. In addition to stating whether the access location is temporary or permanent, Table 4-1 indicates where an access location is new or would involve the use of an existing access location.

4.8 Each of these access locations would serve one or more elements of the Proposed Project listed in Section 1 of this Outline CTMP. The following sub-section lists the key project elements and the proposed accesses expected to serve each element. For the purposes of this section, the key elements of the Proposed Project are:

- ***Tunnel head houses*** *(Garth and Cilfor);*
- ***Sealing End Compounds*** *(Existing and proposed permanent access, at Garth and Cilfor respectively); and*
- ***OHL removal*** *(Removal of the existing VIP subsection).*

Table 4-1: Construction Access Schedule

Ref	Element Served	Existing	Description	Status	Start Date*
A1a	Garth construction compound	No	New Access as per Environmental Assessment Figure 12.7	Temporary (New)	May 2021
A1b	Garth tunnel head house	No	During construction this access is subject to requirement; as presented on Figure 12.7, land has been allocated for up to two accesses during the construction phase. In the event that this access is created for the construction phase, the access will be upgraded / repositioned to provide access and egress to the tunnel head house during the operational phase. In any case, A1b would be constructed to provide access during the operational phase as per Figure 12.7.	Permanent (New)	May 2021
A1c	Garth SEC/ OHL Removal	Yes	Existing access to Garth SEC	Permanent (Existing)	June 2025
A2	Cilfor tunnel head house/ SEC/ OHL Removal/ Pylon Dismantling	No	New Access as per Figure 12.8. Upgraded access to be retained for operational phase.	Permanent (New)	August 2021
B1	OHL Removal/ Pylon Dismantling	Yes	Field Gate	Temporary (Existing)	April 2026
B2	OHL Removal/ Pylon Dismantling	Yes	Via Minffordd Station Car Park	Temporary (Existing)	April 2026
B3	OHL Removal/ Pylon Dismantling	Yes	Bellmouth on A487 approx. 50m east of Minffordd Roundabout	Temporary (Existing)	April 2026
B4	OHL Removal/ Pylon Dismantling	Yes	Field Gate	Temporary (Existing)	April 2026
B5	OHL Removal/ Pylon Dismantling	Yes	Field Gate from Pont Briwet (Opp. Cambrian View)	Temporary (Existing)	April 2026
B6	OHL Removal/ Pylon Dismantling	Yes	Bellmouth access on Pont Briwet	Temporary (Existing)	April 2026
B7	OHL Removal/ Pylon Dismantling	Yes	Existing Bellmouth	Temporary (Existing)	April 2026

Ref	Element Served	Existing	Description	Status	Start Date*
B8	OHL Removal/ Pylon Dismantling	Yes	Existing access opposite Welsh Water compound	Temporary (Existing)	April 2026
B9	OHL Removal/ Pylon Dismantling/	Yes	Field gate to A496N	Temporary (Existing)	April 2026

*Estimated start dates for use of the proposed access locations by construction traffic are approximates based on the most up to date construction programme and may be subject to change.

Access to Tunnel Head Houses

4.9 Tables 4-1 and Table 4-3 describe the temporary (construction phase) and permanent (operational) access arrangements for the tunnel head houses.

4.10 Subject to approval from the local Highway Authority, construction and operation access to the tunnel head houses is shown on Figures 12.7 and Figure 12.8 respectively.

Access to Sealing End Compounds (SECs)

4.11 Table 4-1 and Table 4-3 describe the access arrangements for the SECs during construction and operation.

4.12 Subject to approval from the local Highway Authority, temporary and permanent access to the SECs is shown on the Figures 2.1 and Figure 2.2 respectively.

OHL Removal

4.13 This section provides an overview of likely considerations relating to construction traffic with those works, access locations and working practices.

4.14 Accesses B1 to B9 ('OHL access locations') will be used for removal of the existing VIP subsection. It is anticipated that this would take place in 2026, following completion of the other elements of the Proposed Project.

4.15 These access points would provide direct construction traffic access to and from the LRN and SRN. As per Table 4-1, It is expected that all OHL access locations will make use of existing accesses. Notwithstanding that, physical improvements and/or traffic management will be implemented where necessary in order to help ensure their safe use by construction traffic.

4.16 As per Table 4-1, it is intended that these access locations would either be removed, permanently retained/ restored to their existing condition or retained with any physical improvements subject to agreement with the relevant Highway Authority and landowners. The locations of all access points are presented in Figure 12.3, Traffic and Transport Chapter 12.

4.17 It is anticipated that vehicles involved in pylon removal would typically include cars, vans, low loaders, cranes, 20t tippers and articulated HGVs.

Conductor Removal

4.18 Removal of the existing infrastructure (the VIP subsection i.e. removal of the OHL from Pylon 4ZC027 to 4ZC037) will take place following the installation and commission of the new underground cables.

4.19 The process of conductor removal requires crossing over existing roads, railway lines, and PRoW. Various levels of protection would be required at all crossing locations.

4.20 It is understood at the time of writing that there could be a requirement for temporary road closures/ diversions on the LRN associated with the removal of conductors.

Scaffolding

4.21 Where scaffolding adjacent to the carriageway is required for OHL works then a site-specific risk assessment and method statement would be undertaken to determine appropriate traffic management, signage, safety clearance and level of protection.

Strategic Road Network Crossings

4.22 Discussions with Welsh Government will need to be undertaken to determine the most suitable traffic management to be implemented in order to facilitate this element of the Proposed Development. The responsibility for this lies with the contractor appointed to undertake OHL removal works.

Local Road Network Crossings

4.23 Traffic management requirements on the LRN for scaffolding and netting will be determined by a site-specific risk assessment to be arranged by the contractor and agreed with the relevant Highway Authority prior to commencement of works. Traffic management such as temporary traffic signals, stop/go boards or traffic marshals could be used where appropriate to minimise disruption and delay on the LRN.

Railway Line Crossings

4.24 The Proposed Development would require crossings of the Ffestiniog Railway Line and the Cambrian Line via access B2, B5, and B6. Appropriate applications, risk assessments and method statements would be undertaken in accordance with Network Rail's requirements prior to commencement of works.

Visibility Splays

4.25 Details of visibility splays at the Garth and Cilfor tunnel head houses for construction and operational access are presented in Figure 12.7 and Figure 12,8. In the interest of highway safety, the contractor will be required to ensure that visibility splays are managed and maintained in accordance with the approved plans.

4.26 In the event that there are locations where visibility standards cannot be met or where other environmental consideration are required to be taken into account (e.g. loss of habitat/ vegetation clearance), the contractor will be required to provide mitigation in agreement with the relevant Highway Authority.

4.27 OHL removal activities are not forecast to take place until 2026 and they are expected to be used for construction activities for a short, temporary period. Furthermore, many of these locations are currently used for inspection and maintenance activities associated with the existing VIP subsection. As a consequence, it is considered that it would be proportionate and appropriate to implement temporary traffic management measures to safely control construction traffic movements during this phase of the Proposed Project.

4.28 Notwithstanding that, as part of the ongoing liaison and consultation between National Grid, the appointed contractor and the Highways Authority it is considered that the opportunities to provide or maximise existing visibility could be agreed and, where deemed necessary, be implemented to the satisfaction of the Highways Authority.

Temporary Access Tracks

4.29 Temporary access tracks will be provided as required between access points and working areas; namely each tunnel head house, the new SEC at Cilfor, and to provide access during pylon and OHL removal. The appointed contractor will be responsible for ensuring the management and safe operation of vehicular movements along these access tracks.

4.30 Traffic management along temporary access tracks is discussed in more detail in **Section 5.**

Operational Traffic Access

4.31 As mentioned earlier, activities during the operational and decommissioning phases are outside the scope of the CTMP. However, in order to demonstrate the significantly reduced volumes of traffic during operation and decommissioning and to demonstrate the suitability of permanent access points, typical maintenance activities associated with the Proposed Project elements have been extracted from the Environmental Appraisal Project Description Chapter 2 and presented in Table 4-2.

Table 4-2: Operation: Typical Maintenance and Inspection Activities

Project Element	Typical Maintenance/ Inspection Activities	Frequency
Headhouse/above ground structures	• Head House Routine - above ground only; includes site care, security and environmental routines. Inspection and basic maintenance	Monthly

Project Element	Typical Maintenance/ Inspection Activities	Frequency
	tasks (e.g. check operation, clean/replace filters, report defects). Walk of fenceline. • Weekly remote check of system/alarms (action as necessary).	Weekly(remotely)
Below ground infrastructure	• Civil inspection of shaft and tunnel lining, base slab, cover slabs etc (outside lower doors), crane or davit arm required. • ME and structure of, pressurised stairwell, including sump pump (not outside lower doors)	3 Yearly 6 Monthly (reviewed if strategy amended)
Underground high voltage system	• Visual inspection of HV system and cleats, SVL tests and replacement as necessary. Oversheath tests only where cable has semi-conductive oversheath.	6 Yearly
Pre-inspection checks	• Prep for monthly & Routine; check training and safety inspections up-to-date and all equipment available and within inspection dates.	6 Monthly
Terminal Pylons	• Infrequent visits for replacement of pylon fittings/ anti climbing devices (ACDs), pylon steelwork / bracing. Vans would be used to carry workers in and out of site and trucks would be used to bring new materials and equipment to site and remove old equipment (using permanent SEC access road). • Painting pylon steelwork.	As required Every 10-17 years

4.32 As Table 4-2 demonstrates, maintenance and inspection activities associated with the Proposed Project are typically very infrequent and are associated with considerably less vehicular traffic than the construction phase.

4.33 Notwithstanding that, these activities do require the use of large vehicles and plant such as mobile cranes. Hence these accesses have been assessed for their ability to accommodate these vehicles. Furthermore, and as discussed earlier in this section, visibility splays would be provided at the permanent access locations at the tunnel head houses as per Figure 12.7 and Figure 12.8 (subject to agreement with the Highway Authority).

4.34 Furthermore, it is expected that the use of some of the mitigation measures set out in Section 7 of this Outline CTMP would be relevant the maintenance and inspection activities during the operational phase.

Access Summary

4.35 Table 4-3 provides a summary of proposed access arrangement for each element of the Proposed project during construction and operation.

Table 4-3: Project Elements: Construction and Operation Access

Project Element	Phase	Location / Pylon Reference	Access	Description
Tunnel head house	Construction	Garth	A1a	Temporary access at the Garth tunnel head house and construction compound would be provided by new accesses onto Link Ref.3.
Tunnel head house	Construction	Garth	A1b	As per Figure 2.1 and 12.7, up to two access may be required in order to serve the Garth compound. Consequently, A1b represents a potential second access during construction. If implemented during construction this access would be repositioned to act as permanent access to the tunnel head house during operation.
Tunnel head house	Construction	Cilfor	A2	At Cilfor, access to the tunnel head house would be provided via a newly formed access (Access A2) to the A496N (Link Ref 11). The access would operate as right-in/ left-out only for HGVs in accordance with the designated construction traffic routes. Appropriate signage would be installed, along with Traffic Marshalls (as required) to ensure compliance and the safe movement of vehicles.
Tunnel head house	Operation	Garth	A1b	At Garth, the temporary construction access A1a would not be retained for the operation and maintenance phases and would be removed and restored to the requirement of the local Highway Authority. Permanent access to the tunnel head house would be provided via access A1b, located to the east.
Tunnel Head House	Operation	Cilfor	A2	Access to the east tunnel head house at Cilfor would be provided via upgrading of the temporary construction access and access track used during construction.
SEC	Construction	Garth	A1a/A1b	Access to the SEC for reconfiguration works would be taken via the Garth compound access during the construction phase.
SEC	Construction	Cilfor	A2	Access to the new SEC at Cilfor would be provided via access A2 as presented in Figure 12.8
SEC	Operation	Garth	A1c	During the operational phase, access to the reconfigured Garth SEC would revert back to the existing arrangement.
SEC	Operation	Cilfor	A2	Access A2 would be retained permanently to provide access to the new Cilfor SEC along with the tunnel head house.

Project Element	Phase	Location / Pylon Reference	Access	Description
OHL Removal	Construction	4ZC037	A1c	Access for OHL removal/ pylon dismantling via existing access to Garth SEC.
OHL Removal	Construction	4ZC036	B1	Pylon access via existing field gate east of existing Garth SEC. Traffic management implemented as required to facilitate HGV movements.
OHL Removal	Construction	4ZC035	B2	Pylon access via Minffordd Station Car Park. This would require crossing of the Ffestiniog and Welsh Highland Railway. Traffic management implemented as required to facilitate vehicle movements.
OHL Removal	Construction	4ZC035	B3	Requires use of the bellmouth on A487 approx. 50m east of Minffordd Roundabout. Traffic management implemented as required to facilitate HGV movements.
OHL Removal	Construction	4ZC034 & 4ZC033	B4	Each pylon access via an existing access track adjoining Link Ref 14. Traffic management implemented as required to facilitate HGV movements at the junction with unclassified road and A487.
OHL Removal	Construction	4ZC032 & 4ZC031	B5	Access from Pont Briwet. Traffic management implemented as required to facilitate HGV movements; however, swept path analysis indicates that left turn in/ right turn out only would be feasible. Appropriate signage and traffic management measures required to minimise interaction with PRoW users. This access also requires crossing of the Cambrian Railway Line.
OHL Removal	Construction	4ZC030R (Dwyryd Estuary)	B6	Bellmouth access on Pont Briwet. Traffic management implemented as required to facilitate HGV movements to ensure the safe crossing of the adjacent Cambrian Railway Line and minimise interaction with PRoW users.
OHL Removal	Construction	4ZC029	B7	Pylon access via Existing bellmouth south east of Llandecwyn station. Traffic management implemented as required to facilitate HGV movements.
OHL Removal	Construction	4ZC027R	B8	Pylon accessed via the existing access opposite Welsh Water compound. Where possible, access A2 would be used for access to avoid interaction with Talsarnau FP52. Notwithstanding that, if required, Traffic management implemented as to facilitate HGV movements at the access and minimise interaction with PRoW users.
OHL Removal	Construction	4ZC028	B9	Existing field gate north of Welsh Water site on A496N. Traffic management implemented as required to facilitate HGV movements.

5. Traffic Management

5.1 There will be a requirement for traffic management and control methods in order to help meet the objectives of the CTMP. Traffic Signs Manual Chapter 8 states:

'The complexity of traffic management arrangements varies from scheme to scheme but the primary objective is;

- *to maximise the safety of the workforce and the travelling public.*

The secondary objective is;

- *to keep traffic flowing as freely as possible*[4]*.*

5.2 Where constraints on the highway network have been identified, and to reflect scoping discussions with the Local Highway Authority, traffic management has been identified as the preferred solution across the project rather than, for example, physical highway works or the removal of trees and hedges.

5.3 Traffic management on all routes would comply with the UK Government's Code of Practice 'Safety at Streetworks and Roadworks' (DfT, 2013)[5] or other relevant legislation and guidance as appropriate at the time of implementation. The appointed contractor would agree traffic management and control methods with the relevant Highway authority prior to the commencement of any works.

5.4 Traffic management signage would be in accordance with the Traffic Signs Regulations and General Directions (TSRGD) 2016 and Traffic Signs Manual Chapter 8.

5.5 Traffic management associated with the Proposed project would comply with all requirements of the relevant Local Authority and the Police. The works would be organised so that the interference with vehicles and pedestrians using the highway and footpaths is kept to a minimum. Traffic management measures would provide, maintain and remove adequate protection in the form of barriers, hoardings, lights, etc. in accordance with the requirements of the local authority. Lighting and warning notices for vehicles and pedestrians would be provided as reasonably required by the local authority.

5.6 Contractor's vehicles and other vehicles would not be permitted to obstruct the highway by parking or waiting outside the site. Vehicles crossing footways to enter or leave the site would only be permitted to do so under supervision of a suitably trained Traffic Marshal. All vehicles over 3 tonnes (gross vehicle weight) on site which are required to reverse would be fitted with reversing cameras, visual and audible alarms. This would also be a requirement of all subcontractors' and suppliers' vehicles.

5.7 On-site speed limits would be implemented to minimise the risk associated with interaction between workers and site traffic.

5.8 All temporary traffic signs and road markings required would be installed prior to work taking place on site and non-illuminated signs would be reflective and maintained in a clean state throughout the period of works. Care would be taken to reposition, alter, or remove any signs and markings which become obsolete due to the appointed contractor's operations, and appropriate new signs and markings would be provided on reinstatement of working areas.

5.9 All vehicles would be required to be reverse parked. The site gates would be set back such that encroachment of traffic onto the public highway would not occur at any time.

[4] Traffic Signs Manual Chapter 8
[5] Department for Transport (2013) 'Safety at Street Works and Road Works; Code of Practice'. Available from: https://www.gov.uk/government/publications/safety-at-street-works-and-road-works

5.10 The contractor would be required to keep private driveways free of contractor's equipment, vehicles and traffic and to ensure that any gates would not open outwards onto the highway and kept locked when not in use.

Construction Traffic Routes and Access Signage

5.11 As part of the requirements of the detailed CTMP set out in Section 1 of this report, the Driver Information Pack would include a copy of the access route plans (Figure 12.2, Traffic and Transport Chapter 12) which would be provided to all suppliers and haulage operators by the contractor when orders are placed to ensure that drivers are fully briefed on the required routes to take. The supplier would be made aware that these routes are required to be followed at all times unless agreed or alternate diversions are in place, for example the use of the contingency route along the A496 S (Link Ref. 12).

5.12 Temporary signs providing route information for contractors would, with permission of the Highway Authority, be erected at key locations along the proposed construction traffic routes on the LRN and the SRN. Project information boards could be erected and, if required, would include important project information for the public and relevant contact details.

5.13 The design and location of route information signs and project information boards would be agreed with the relevant Highway Authority prior to installation. Signs would be bi-lingual, with messages written in Welsh above English on the sign face.

5.14 Consistent signage at access locations would be installed during use in order to provide relevant warnings and information to other road users of the presence of construction traffic. If required by the Highways Authority, these signs can be removed or covered when the temporary access is not in use.

Temporary Access Track Signage

5.15 The contractor would be required to provide signage along off-road temporary access tracks to assist the appointed contractor to operate safely and efficiently. Signage on the temporary access tracks would include information such as: safety messages; advisory speed limits; typical and site-specific hazards; distance to the LRN; area of potential vehicle conflicts; and the presence of nearby Public Rights of Way (PRoWs).

5.16 Details of any signage required along these routes to alert site traffic and users of any nearby PRoWs would be agreed in consultation with relevant authority in advance of works at a given location.

Location-Specific Traffic Management

5.17 Access locations have been identified where it may be necessary to introduce specific traffic management as additional mitigation. The locations have been identified based on the Environmental Appraisal (Traffic and Transport Chapter 12), on-site and desktop observations, and early discussions with the Highways Authority.

5.18 The locations, along with potential requirements for traffic management, are discussed further in this section.

5.19 The type of traffic management required at each location is dependent on a number of factors including traffic type, speeds and volume, road widths, visibility and site characteristics; traffic management could, for example, take the form of traffic control by marshal, priority signs, stop/go boards or portable traffic signals along with additional approach signage to reduce speeds where required.

Garth Tunnel Head House And SEC

5.20 NCR8 (Link Ref 3) will operate as the route for the transportation of aggregate arising from tunnelling activities. Link Ref 3 adjoins the A497 east of Porthmadog and would provide access to the Garth construction compound (Via accesses A1a and A1b) during the construction phase and the tunnel head house during the operational phase (access A1c).

5.21 Consequently, the route is anticipated to see regular movements of HGVs, particularly during the tunnelling phase of construction work, which represents the peak traffic-generating period of the construction phase. It is expected that movements would predominantly be 20t tipper vehicles for transporting aggregate to and from site.

5.22 Desktop and on-site assessments, along with the Highway Safety assessment contained within the Environmental Appraisal have:

A) Indicated that the swept path of vehicles turning out of NCR8 (Link Ref. 3) onto the A497 (Link Ref. 2) crosses the centre line of the A497;

B) Indicated sections where the carriageway falls below 6.0m; and

C) Highlighted the presence of a cluster of reported collisions on the A497 on approach to its junction with NCR8 Link Ref. 3).

5.23 It is therefore considered that mitigation will be required to minimise the impacts of the forecasts increases in volumes of HGV and LGV traffic associated with the tunnelling phase in particular.

5.24 The additional traffic may increase the risks associated with turning HGV traffic and mainline traffic on the A497 and, separately, between HGVs travelling in opposing directions along NCR Link Ref 3. It is therefore expected that mitigation measures will be required to minimise the risk of conflict between HGVs from the junction with the A497 and on sections along this route (NCR8, Link Ref 3).

5.25 As discussed earlier within this Outline CTMP, traffic management is the preferred project solution wherever reasonably practicable and it is considered that the use of traffic management would appropriately mitigate the identified risks.

5.26 Whilst the contractor would be responsible for developing, agreeing with the Highways Authority, and implementing the specific traffic management measures to mitigate this risk, measures might include the use of traffic marshals to communicate with site to ensure that vehicles are held on sections wide enough for two HGVs to pass safely (or on site) using temporary traffic signals for example, to allow priority working.

5.27 The appointed contractor would be responsible for identifying and implementing a method of mitigating any identified hazard in consultation with the relevant Highway Authority. In addition to traffic management arrangements, other mitigations measures, including physical highway improvements and HGV safety features would be implemented. Further detail of proposed mitigation measures along this route, and across the Proposed Project, is provided in Section 7.

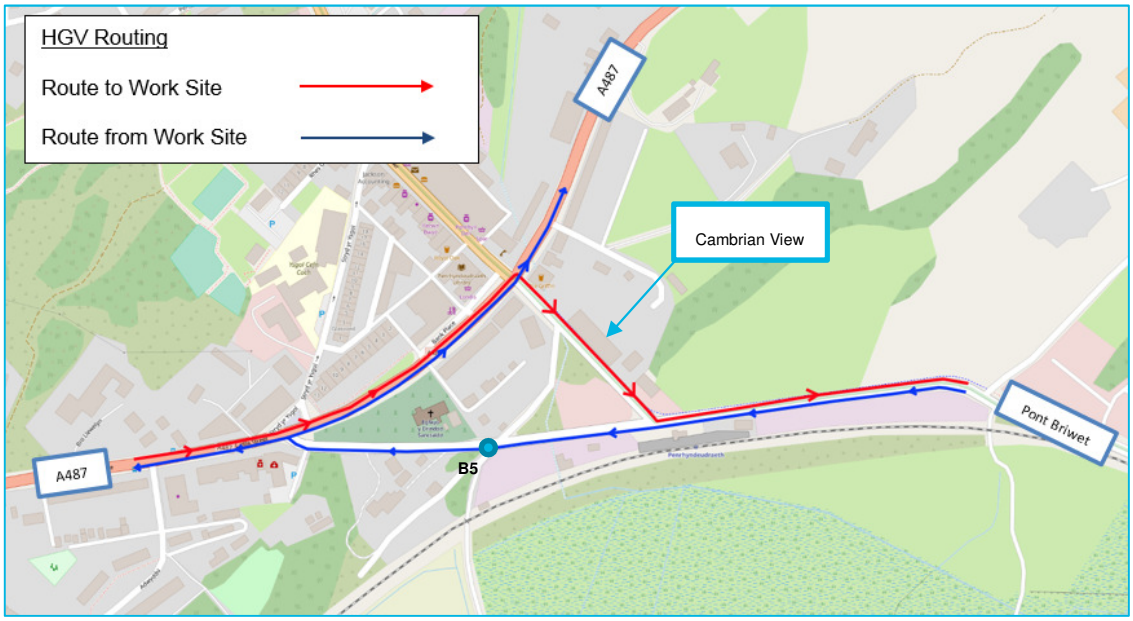
A487/ Pont Briwet/ Cambrian View

5.28 On-site observations have identified that the route from Pont Briwet (Link Ref 7) has a reduced carriageway width approximately 50m east of the Bron Meirion Surgery.

5.29 Whilst it is noted that HGVs currently use this route, a proposed alternative route could be considered using Cambrian View (Link Ref 10) to minimise the potential risk of conflict between HGVs along this section. It is proposed that this routing would apply for all HGVs travelling to work sites east of the Cambrian View/ Pont Briwet Junction. The proposed routing is presented in Inset 1.

5.30 In this arrangement it is proposed that all HGVs travelling eastbound on the A487 would turn right into Cambrian View, rather than Pont Briwet (Link Ref 7). These vehicles would then turn left from Cambrian View along Pont Briwet. Vehicles travelling westbound would then be required to join the SRN via Pont Briwet, at its junction with the A487 adjacent to Bron Meirion Surgery.

5.31 The proposed routeing has been fully assessed within the Environmental Appraisal Traffic and Transport Chapter 12. On this basis the peak year increases in LGV and HGV traffic along this route are not forecast to result in any significant environmental effects.



Inset 1: Potential HGV Routing via Cambrian View

5.32 This proposed routing would not apply to traffic associated with OHL removal accessing Pylon 4ZC032 and 4ZC031.

5.33 Access to these pylons would require HGVs using access B5 to turn right out of the site; swept path analysis indicates that a left turn out of the access would not be possible by some HGVs.

5.34 OHL removal activities associated with B5 would involve a modest volume of HGVs and would take place following tunnelling activities, which generates the peak volume of HGV during construction of the Proposed Project.

5.35 It is intended that traffic movements would be subject to monitoring by the contractor over the construction period and route amendments implemented as necessary by the contractor in consultation with the relevant Highway Authorities and/or through feedback from local stakeholders.

Temporary Road Closures and Diversions

5.36 It is understood at the time of writing that there could be a requirement for temporary road closures or diversions associated with the Proposed Project during OHL removal, although this is subject to confirmation by the appointed contractor.

5.37 Should a temporary road closure and/or diversion be considered to be required, then the contractor must engage with the relevant Highway Authority to discuss their requirements and associated mitigation.

Working Hours

5.38 Tunnelling activities will be a continuous operation seven days a week (24 hours a day). Tunnelling activities will involve above ground plant and equipment, tunnelling means testing of machinery, excavation and operation and maintenance of the TBM and excavation systems and plant.

5.39 National Grid request that work may take place between 0700 and 1900 Monday to Saturday and between 0900 and 1700 on Sunday (the core working hours), unless otherwise approved by the

relevant planning authority. No excavated material shall be disposed off-site outside of these core hours.

5.40 National Grid also request that the following operations may take place outside the core working hours referred to above (exempt activities):

- *completion of operations commenced during the core working hours which cannot safely be stopped;*
- *any highway works requested by the Highway Authority or requested by third parties such as network rail;*
- *security monitoring;*
- *the completion of works delayed or held up by severe weather conditions which disrupted or interrupted normal construction activities; and,*
- *cable jointing and installation and associated works inside the completed shaft and tunnel.*

5.41 The core working hours referred to above include start up and close down activities up to one hour either side of the core working hours. In all instances there will be no movement of excavated material offsite during weekends and no deliveries outside of the core working hours unless deliveries are specifically required to carry out those exempt activities listed above, which may take place outside of the proposed core working hours.

5.42 For appraisal purposes it has been estimated that three shift changeovers will be required during tunnelling activities with less people working on-site over the evening / night-time shift patterns.

6. Non-Motorised Users

Public Rights of Way

6.1 Figure 12.5 presents the Public Rights of Way (PRoW) within the Study Area. PRoW expected to directly interact with construction activities are summarised in Table 6-1.

Table 6-1: PRoW Interaction with Proposed Project

PRoW	Project Element	Description
Penrhyndeudraeth Restricted Byway 26	OHL Removal, Trackway Installation, Access Track Upgrade	Access to pylons for dismantling and OHL removal on the Dwyryd Estuary (Pylon 4ZC032, 4ZC031 and 4ZC030) requires the use of Penrhyndeudraeth Restricted Byway 26 and Penrhyndeudraeth Footpath 26, including the installation of trackways and upgrading of Access Tracks.
Penrhyndeudraeth Footpath 26	OHL Removal, Trackway Installation, Access Track Upgrade	
Penrhyndeudraeth Footpath 24	OHL Removal, Pylon Foundation Removal, Access Track Upgrade	Penrhyndeudraeth Footpath 24 crosses the proposed working area for OHL removal between Pylon 4ZC032 and 4ZC033.
Talsarnau Footpath 52	OHL Removal, Pylon Foundation Removal, Access Track Upgrade, Puller/ Tensioner Platform	Talsarnau Footpath 52 is located adjacent to Pylon 4ZC027. The proposed working areas for dismantling of 4ZC027 and installation of the replacement terminal pylon 4ZC027R are expected to interact with this PRoW

6.2 It is anticipated that a temporary closure of each PRoW may be required in order to facilitate resurfacing and widening of the access tracks, installation of temporary trackway to provide access to these Pylons, and during OHL and foundation removal (Figure 2.1). Notwithstanding that, it is expected that there may be opportunities to adopt alternative approaches to minimise the duration of closures.

6.3 Where possible and safe to do so, to minimise disruption to PRoW users, effort will be made to limit the duration of temporary closures. In these instances, alternative approaches such as diversion routes and management of the PRoW will be discussed and agreed in consultation with Gwynedd Council PRoW officers.

6.4 Where activities affecting PRoWs are of a sufficiently short duration or where temporary access tracks follow an existing PRoW, management might include the use of contractor staff to hold PRoW users for short periods (a few minutes) while construction vehicles pass or while construction activities are undertaken.

6.5 All locations where a PRoW would be impacted by the Proposed Development would have appropriate signage, which would advise of dates and hours affected together with signs warning drivers of construction vehicles using the temporary access track of the likely presence of PRoW users crossing the temporary access track. The location of signs providing information on temporary diversions and closures would be discussed with the PRoW Officer. Where applicable; maps showing temporary diversions and alternative PRoW would be provided at the site. Signage erected would be bilingual in Welsh and English.

6.6 Aside from these locations the Proposed Project, and associated construction traffic is not expected to interact with any other PRoW. No permanent closures or diversions are proposed as a consequence of the Proposed Project.

Wales Coast Path & Other Recreational Routes

6.7 Sections of the Wales Coast Path (WCP) are located within the Study Area, namely along Pont Briwet (Link Ref 7) and the A487 (Link Refs 5,6, and 9)

6.8 Despite the proximity to the Proposed Project, it is not expected that construction traffic will directly interact with users of the WCP during construction. Where access points are located along links shared with the WCP, route information signs, project information boards and any Chapter 8 signage associated with traffic management would be in place to alert pedestrians to the presence of HGVs. Additionally, traffic marshals could be used in such location to hold site traffic as required.

6.9 It is also noted that a number of other recreational long-distance walking routes are located within the Study Area, including Snowdonia Way, Taith Ardudwy Way, O Fon I Fynwy, Mawddach-Ardudwy Trail, and Meirionydd Coast Walk.

6.10 Where these routes are located along existing PRoW closures would be required as described above or, where possible, managed to minimise disruption and inconvenience to tourists and the local community. Local walking groups and other relevant stakeholders would be informed of any planned closures or diversion and signage would be located along the routes in advance of any nearby works, closures, or diversions to ensure that any changes are communicated well in advance.

Cycle Routes

6.11 National Cycle Route 8 (NCR8) and NCR82 are located within the Study Area. In parts, they are located along designated construction traffic routes.

6.12 The extent of NCR8 and NCR82 within the Study Area are presented in Figure 12.6 Traffic and Transport Chapter 12.

NCR8

6.13 NCR8 is located along a number of the links within the Study Area. The route is comprised of sections of shared routes and sections where cyclists and vehicular traffic are segregated.

6.14 NCR8 is located along a number of links within the Study Area. The route is comprised of sections of shared routes and section where cyclists and vehicular traffic are segregated. Figure 12.6 distinguishes between segregated and unsegregated section of each of the cycle routes within the Study Area.

6.15 Link Ref. 3 - the route to the Garth tunnel head house - is used by both cyclists and walkers. Cyclists and walkers are not segregated on this route and share the carriageway with vehicular traffic. This link is proposed to be used as an HGV route, particularly during the peak year tunnelling phase of the construction programme where it would be trafficked by HGVs transporting spoil away from the drive site. Baseline levels of HGVs are currently very low, and the Proposed Project would therefore result in a notable increase in HGVs during the tunnelling phase of the Proposed Project.

6.16 Classified Automatic Traffic Counts were undertaken over two-week periods in August 2016, in order to capture the peak local tourist period. These provided data on the number of cyclists using this route. A summary is presented in Table 6-2.

Table 6-2: ATC Cyclist Data - NCR8 (Link Ref 3)

Date	Weekday Average (Cycles)	7-Day Average (Cycles)	Daily Maximum (Cycles)	Hourly Maximum (Cycles)
August 2016	31	30	41	5

6.17 It is considered that Proposed Development traffic, particularly HGVs, can be managed alongside the existing volumes of cyclists.

6.18 NCR82 is located along the northern section of the A4085 (Link Ref. 8), adjoining NCR8 via an unclassified road to the west of the A4085. The A4085 (Link Ref. 8) is designated as an LGV route. Cyclists are not segregated from vehicular traffic on this route.

6.19 The presence of cycle routes, and quality of cycle infrastructure on them, has been used to inform the identified link values in Traffic and Transport Chapter 12.

6.20 HGVs used for the construction of the Proposed Project would be to the required Euro Class and could have additional cycle friendly measures such as cameras, sideguards, full length door windows, blind spot warning systems and additional mirrors (Class V and Vi).

NCR82

6.21 This route is located along the northern section of the A4085 (Link Ref 8) within the Study Area. This route is designated as an LGV route and is expected to cater for minimal increases in traffic as a consequence of the Proposed Project. No specific measures are therefore proposed on this route.

Mitigation for Non-Motorised Users

6.22 The appointed contractor will be required to implement appropriate mitigation measures along NCR8 (Link Ref. 3) to help ensure safety of cyclists is not compromised. Section 7 outlines measures that may be implemented to minimise the potential effects of Proposed Project construction traffic on cyclists on these routes.

6.23 Mitigation relating specifically to cycling would (in agreement with Gwynedd Council) include but not be limited to:

- *Signage alerting cyclists/walkers to the present of HGVs along the route to the tunnel head house;*
- *Widening of the carriageway along NCR8 to provide passing places;*
- *Use of traffic marshals and radio-communication between the NCR8/ A497 junction and tunnel head house access to hold on site traffic where cyclists are using the route; and*
- *If required, the introduction of a temporary speed limit reduction along the route.*

6.24 Further information on the assessment of this route is provided within the Environmental Appraisal (Traffic and Transport Chapter 12). A full list of potential and proposed measures is provided within Tables 7-1 and 7-2 respectively.

7. Mitigation Measures

Proposed Mitigation Measures

7.1 This section sets out the mitigation measures identified for the Proposed Project that the contractor will be required to implement in agreement with the Highway Authorities and relevant stakeholders. Table 7-1 sets out the mitigation measures which would be required as part of the contractor's responsibility under the CTMP. These are aligned to the objectives of the CTMP as set out in Table 1-3.

7.2 As described earlier in this Outline CTMP, mitigation is either defined as 'Embedded' (i.e. incorporated into the design of the Proposed Project) or 'Proposed' (i.e. measures that will be implemented and measures that could be implemented to mitigate the impact of additional construction traffic).

Table 7-1: Mitigation Measures

Mitigation Measure	Ref.	Outline CTMP Objective
Prescribed HGV Construction Traffic Routes	1	A/B
Only prescribed construction traffic routes are to be used for the construction of the Proposed Project.		
Appropriate self-enforcement and monitoring measures to reduce the need for the Highway Authority and NWP to enforce and monitor would be included within the conditions of contract and penalties would apply for non-compliance.		
Physical Highway Improvements	2	F
Physical highway improvements to be implemented where considered necessary at access locations including, for example, amendments to existing accesses to accommodate the swept path of construction vehicles and road widening to facilitate two-way HGV flows.		
Road Safety Information	3	A/B
National Grid, in consultation with the Highway Authority, would promote and publicise appropriate road safety information during the construction of the Proposed Project		
Community Engagement and Public Information	4	B/D
Information regarding construction traffic activities and movements would be provided to the public. The means of communication could include online updates, letter drops, information boards and details of key contacts.		
Traffic Management and Diversion Routes	5	A/B/F
Where required, suitable traffic management would be implemented to ensure safe operation and to reduce as far as reasonably practicable the impact of construction vehicles on the highway network. If and where road closures are required, diversions would be put in place with suitable signage and monitoring.		
Temporary Traffic Regulation Orders	6	A/B/F
Temporary Traffic Regulation Orders may be proposed to allow enforcement of reduced speed limits, road closures and parking restrictions.		
Vegetation Management	7	A/B/F

Mitigation Measure	Ref.	Outline CTMP Objective
Where deemed hazardous, overgrown vegetation and grass verge encroachment onto the edge of carriageway along key construction traffic routes would be managed during construction traffic route use in consultation with the Project Ecological Clerk of Works.		
Wheel Cleaning Facilities	8	F
Appropriate facilities would be installed at access locations to allow removal of debris from construction vehicles before they are allowed to egress.		
Street Cleaning Schedule	9	F
The use of road sweepers throughout the construction of the Proposed Project would be agreed with the relevant Highway Authority.		
Delivery Management System	10	ALL
Delivery records would be kept at the construction compounds at Garth and Cilfor. Delivery records would allow vehicular activities to be recorded, monitored and managed throughout the construction of the Proposed Project to ensure compliance with the Outline CTMP.		
HGV Traffic Movement and Timing Restrictions	11	C/D/F
These may be necessary following the completion of the Environmental Appraisal in order to mitigate potential traffic effects and could include:		
• Timing restrictions, for example on routes close to schools during school drop off and pick up times;		
• Restrictions on the number of HGV movements in addition to those required at weekends (Paragraph 5.41), for example the AM or PM peak hour		
• Restriction of certain movements at certain locations to accommodate local special events.		
Details in terms of when and where restrictions may be required would be determined as necessary and monitored during the construction of the Proposed Project.		
HGV Emissions and Safety Features	12	A/B
Typical HGVs used for the construction of the Proposed Project would be to the required Euro Class and could have additional cycle friendly measures such as cameras, sideguards, full length door windows, blind spot warning systems and additional mirrors (Class V and Vi).		
Abnormal Indivisible Loads (AILs)	13	A/B/E/F
Temporary traffic management would be provided during AIL delivery where required, along with appropriate communications with the local community.		
Department for Transport ESDAL system would be used for notifications.		
Night deliveries would be undertaken where required, to reduce disruption and maintain safety on the LRN.		
Traffic Marshals	14	A
If necessary, suitably qualified personnel would be present at key locations and times during construction to guide traffic and to enhance safety.		
Highway Condition Surveys, Maintenance and Repair	15	F

Mitigation Measure	Ref.	Outline CTMP Objective
A highway inspection, monitoring and repair strategy, to be deployed during the construction of the Proposed Project, would be agreed in advance with the relevant Highway Authority.		
Traffic Safety and Control Officer (TSCO)	16	A/B/F
The contractor(s) would appoint a TSCO for the duration of the construction of the Proposed Project. This might be carried out, for example, by the Environmental Manager or the Safety Officer for the Proposed Project. Their details would be provided to the Highway Authority prior to the commencement of the project. They would be responsible for updating the CTMP and would act as the main point of contact with the Highway Authority and emergency services and undertake the following duties:		
• Check and approve all traffic management drawings prior to issue.		
• Ensure sufficient resource available to maintain traffic management on site.		
• Monitor traffic management to ensure effectiveness and safety to workers and public.		
• Communicate with Highway Authority officers and emergency services, potentially via the TLG.		
• Provide a visible presence at site.		
Staff Travel Planning	17	C/D/F
National Grid would require the appointed contractor to introduce measures to reduce the volume of traffic travelling to work site. These measures might include the use of minibuses to collect workers from local accommodation, a lift sharing scheme, and reduced/ controlled parking at work sites.		

7.3 Table 7-1 contains both embedded mitigation (i.e. mitigation by design) and all other mitigation measures that are proposed or would be proposed during construction in consultation with the highways authorities and other stakeholders. In some locations, the environmental appraisal has identified a need for location specific measures. These are detailed in the subsequent sub-section.