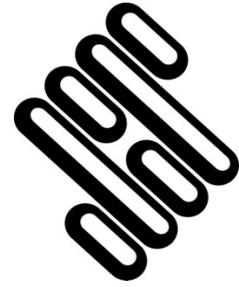


**STRUCTURAL SOILS LIMITED
ENVIRONMENTAL MANAGEMENT PLAN (EMP)**



JOB NO: 733127

DRAFT Revision 01

Contract: Wylfa Newydd – A5025 Off-line Highway Improvements GI

Date: March 2018

DOCUMENT ISSUE RECORD

Contract No: 733127

Client: Horizon Nuclear Power Wylfa Limited

Contract: A5025 Off-line Highways Improvements

Document: Structural Soils Limited Environmental Management Plan (EMP)

Prepared by: A Dingle / R Cox



Reviewed / Approved by: M Owens



Date: 7 March 2018

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1 Project Details

1.1 Purpose

Structural Soils Limited (SSL) have been employed by Horizon Nuclear Power Wylfa Limited (HNP) to undertake a further package of ground investigation works relating to the A5025 Off-line Highway Improvements Project. This Environmental Management Plan (EMP) has been written in accordance with the HNP Highways (WN0100) A5025 Offline Road Improvements *Project Environmental Management Plan* (PEMP) (WN02.05.01-S4-OS-PMP-00001). This EMP details an approach which avoids, minimises and mitigates the impacts of the *A5025 Off-line Highway Improvements GI* on the environment in terms of:

- Resource use – water and energy
- Ground quality (contaminated land)
- Waste management
- Storage, handling and use of hazardous materials
- Noise and vibration
- Conservation, Heritage and Archaeology
- Livestock
- Ecology
- Traffic
- Recreation
- Pollution

It must be considered in conjunction with the following documents:

- HNP A5025 GI Works Ecological Method Statement (2015)
- HNP Bio security Guidance and Generic Risk Assessment for Terrestrial Ecology (2015)
- SSL A5025 Off-line Improvement GI Site Waste Management Plan (SWMP)
- SSL RAMS042 Traffic Management

This EMP will be briefed to all staff at the pre-works induction. Relevant tool box talks are to be delivered throughout site works to assist with raising environmental, ecological, archaeological and pollution prevention and control awareness.

Specific talks and RAMS will be delivered to operatives at a point in time close to a proposed task (i.e. close to the commencement of the potentially impacting activity rather than many weeks before).

The risk assessment tables in Section 3.1 provide details of environmental effects, mitigation required and risks. The tables also incorporate recommended pollution prevention and control measures.

1.2 Project Description and Scope

The purpose of the investigation is to provide additional information for design works relating to sections of the off-site development projects; namely improvements to the existing A5025. The geological, hydrogeological and geo-environmental ground models will be developed such that significant geotechnical and geological risks that may affect the development are identified and understood.

The work within the two sites will comprise intrusive geotechnical/hydrogeological works including borehole drilling, in-situ testing, geotechnical and geo-environmental laboratory testing, and preparation of factual reports.

Works within this project will incorporate the requirements of the Clients Project Environmental Management Plan (PEMP)

1.3 Existing Site Environment

1.3.1 A5025 Sites

Details on each of the two sites are given in the tables below.

Site 1: Junction 3 A55 Valley Improvements;

National Grid Reference	229909 379382
General arrangement	Site 1 covers an approximate area of 85 hectares and currently comprises open farmland, used for both arable farming and pasture. The site is located immediately north-east of the village of Valley, Isle of Anglesey, North Wales, north east of the junction of the A5 Holyhead Road and the A5025 north. A location plan for the Site 1 is presented in Appendix A
Access	Works to be undertaken within fields. Access to be arranged through farm gates as agreed with landowners. Access routes across fields to be agreed with landowners and temporary trackway installed as required.
Height / width restrictions	No known height and access width restrictions known.
Overhead services	Overhead cables and power supply cables are noted where known to be present upon constraints drawings.
Buried utility apparatus	Service information to be supplied by the Client The Contractor will be responsible for the location, avoidance and protection of buried utility apparatus throughout the investigation.
Topography	Ground levels vary across the site, with the central part of the site highest at approximately 14m above Ordnance Datum (AOD), gently sloping down to approximately 2m AOD along the southern boundary with the A5 and along the western boundary with the A5025. The land rises gently towards the north-east off site to approximately 22m AOD. The wider surrounding area is gently undulating with low hills generally not exceeding 15-20m AOD. The wider regional topography slopes gently down to the west and south and the Irish Sea.
Surface covering	Farmland.
Current use	Arable & grazing land.
Former use	Arable & grazing land.
Site classification	The site is assumed to be Greenfield based on land use; no specific sources of potential contamination have been identified.
Anticipated Geology	The geological sequence of the area is understood to be one of igneous and meta sediments including schist's and psammities with igneous intrusions including gabbro, diorite and extrusive lava deposits. Periods of glaciations have eroded the bedrock and much of the area is covered by Till. Near shore land is generally covered by Tidal Flat Deposits and Alluvium is present along surface water streams.
UXO Risk	Low – No special Measures required.

Site 2: Llanfachraeth Improvements;

National Grid Reference	231665 382646
General arrangement	Site 2 is located near the residential village of Llanfachraeth, Isle of Anglesey, North Wales. Site 2 covers an approximate area of 102 hectares and currently comprises open farmland, used for both arable farming and pasture, with the village of Llanfachraeth located on the A5025, in the centre of the site. Other small residential buildings are located within the site, predominantly along the A5025. A location plan for Site 2 is presented in Appendix A.
Access	Works to be undertaken within fields. Access to be arranged through farm gates as agreed with landowners. Access routes across fields to be agreed with landowners and temporary trackway installed as required.
Height / width restrictions	No known height and access width restrictions known.
Overhead services	Overhead cables and power supply cables are noted where known upon constraints drawings.
Buried utility apparatus	Service information to be supplied by the Client The Contractor will be responsible for the location, avoidance and protection of buried utility apparatus throughout the investigation.
Topography	The topographic levels to the site appear to vary, with the north eastern part of the site highest at approximately 40m above Ordnance Datum (AOD). The site appears to have low gently sloping hills of 30 - 40m height, with very low topography in the valleys in the east of the site, whereas the topography toward the west of the site appears to be much lower. There do not appear to be any extreme changes in topography. The topography typically gently slopes between low hills of 30-40m AOD to approximately 5m AOD near streams and the Afon Alaw.
Surface covering	Farmland.
Current use	Arable & grazing land.
Former use	Arable & grazing land.
Site classification	The site is assumed to be Greenfield based on land use; no specific sources of potential contamination have been identified.
Anticipated Geology	The geological sequence of the area is understood to be one of igneous and meta sediments including schist's and psammities with igneous intrusions including gabbro, diorite and extrusive lava deposits. Periods of glaciations have eroded the bedrock and much of the area is anticipated to be covered by deposits of Till. Alluvium is expected to be present close to surface water streams.
UXO Risk	Low – No special Measures required.

1.3.2 Public Rights of Way

The majority of the land within the investigation is privately owned, however there are several public foot paths that cross the fields around the works site at Llanfachraeth. There are no PRoW within or crossing the Valley investigation area. Plans detailing the Public Rights of Way (PRoW) are contained in Appendix A.

The Contractor shall identify the routes of PRoW in the area in advance of commencing work. The borehole equipment associated with the ground investigation works shall not be stored, however temporarily, in such a manner as to obstruct the route of any PRoW.

1.4 Reference Documents

- TECHNICAL SPECIFICATION: *A5025 Ground Investigation Tender* September 2017
- HNP Highways (WN0100) A5025 Offline Road Improvements Project Environmental Plan (PEMP) (WN02.05.01-S4-OS-PMP-00001).
- HNP A5025 GI Works Ecological Method Statement (2015)
- HNP Bio security Guidance and Generic Risk Assessment for Terrestrial Ecology (2015)
- HNP Discharge of Uncontaminated Water to Land DCRM Ref No: HNP-S3-EWM-PRC-00007. Revision 2.0
- SSL Construction Phase Plan
- SSL A5025 Off-line Improvement GI Site Waste Management Plan (SWMP)SSL Quality Plans and Quality Programme
- SSL RAMS012 Re-use and disposal of water to ground
- SSL RAMS042 Traffic Management

1.5 Relevant Environmental Legislation & Guidance

- The Pollution Prevention and Control Act 1999 Amended by The Environmental Permitting (England and Wales) Regulations 2016 (2010 No. 1154).
- Environmental Protection Act 1990 Part III, (Statutory Nuisance) Amended by Clean Air Act 1993 (Smoke control)
- The Air Quality Standards Regulations 2010 (SI 2010/1001)
The Air Quality Standards (Wales) Regulations 2007 No. 717.
- Climate Change Act 2008
- Guidance on CRC Energy Efficiency Scheme- Annual Report
Footprint Report and others
- Simplifying the CRC Energy Efficiency Scheme: Next Steps
- Green Deal
- Water Industry Act 1991, s74.
- Water Resources Act 1991
- Water Act 2014
- Waste (England and Wales) Regulations 2011
- Controlled Waste Regulations 2012
- The Hazardous Waste (England and Wales) Regulations 2005
- Finance Act 2011
- The Environmental Permitting (England and Wales) Regulations 2016 - Schedule 10 Provision in relation to landfill
- Waste Batteries and Accumulators Regulations 2009 (SI 2009/890)
- Defra Guidance (PB13813): Guidance on the legal definition of waste and its application (August 2012)
- Highways Act 1980
- New Roads and Street Works Act 1991
- The Noise Emission in the Environment by Equipment for Use Outdoors Regulations 2001
- Wildlife and Countryside Act 1981 (as amended)
- Protection of Badgers Act 1992
- The Town and Country Planning (Tree Preservation)(England) Regulations 2012 No. 605
- Weeds Act 1959
- Infrastructure Act 2015
- Environmental Damage (Prevention and Remediation) (Wales) Regulations 2009 (SI 2009/995 W81)
- The National Planning Policy Framework
- The Natural Resources Body for Wales (Establishment) Order 2012 (WSI 2012/1903)
- The Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulation 2016
- Natural Environment and Rural Communities Act 2006
- –Countryside and Rights of Wat Act 2000
- Hedgerows Regulations 1997
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017
- The Conservation of Habitats & Species Regulations, 2017
- Schedule 9 of the W&CA 1981 (as amended)

2 Company Information

2.1 Environmental Policy

SAFETY, HEALTH AND ENVIRONMENTAL POLICY

RSK Group provides safety, health, environmental, geosciences, engineering, remediation and related contracting and consultancy services. The Group recognises that the protection of the environment and the safety and health of its employees, its sub-contractors and of any others affected by its operations are integral parts of the Company's business performance and are a management priority. For all areas where we operate, including activities undertaken both in the UK and Internationally, RSK is committed to:

- Achieving a high level of safety, health and environmental (SHE) performance, promoting the concept of sustainability, a safe and healthy working environment, and maintaining our certification to ISO 9001: 2015, ISO 14001:2015 and OHSAS 18001:2007 and including provision for particular industry requirements.
- Preventing human errors and improving the safety culture within the Group by implementing a behaviour-based safety system. Implementing this Policy through improving continually our integrated SHE and quality management system (SHEQMS); including in co-operation with other interested parties, so that work-related ill health and accidents and environmental pollution (including emissions and waste) can be prevented, as well as enhancing our environmental performance e.g. the reduction of energy consumption
- Communicating the requirements and needs of our safety, health and environment management system to all and to facilitate understanding, including 1) the proper assignment of organisational roles, responsibilities, and authorities, via the most senior levels of management, and 2) those to which work is sub-contracted to enable continuity of safety process across all premises, projects and activities
- Working with our clients to optimise health, safety and environmental performance on their projects
- Consulting with and involving our employees by holding regular SHE meetings and monitoring the health of those who may be exposed to significant work-related health risks or sensitisers
- Requiring all employees and sub-contractor employees to work safely and use error prevention techniques and other leading indicators in order to develop business SHE maturity, including due consideration of the health and safety of themselves and others and for protecting the environment
- Providing adequate supervision, behaviour observations, and appropriate training
- Requiring all employees, clients, managing contractors and sub-contractors stop work if they have concerns over safety
- Assessing all SHE hazards, risks, and opportunities (including those associated with security) and managing these effectively so they are eliminated or reduced as far as is reasonably practicable
- Complying - as a minimum - with legislation, other requirements (including life cycle perspectives, where appropriate), the needs of interested parties, and associated codes of practice (including environmental best practice) and improving on such performance standards where it is reasonably practicable and cost effective for RSK or its clients to do so across all our operations
- Co-operating fully with relevant enforcement agencies and non-statutory bodies
- Requiring our contractors and suppliers to accept the same standards of SHE management and encouraging third parties to do the same (where possible)
- Not allowing drugs (other than prescription and retail medicines), alcohol, and weapons in all RSK's premises and operations
- Measuring, monitoring, and reviewing performance in SHE management
- Conducting audits to demonstrate compliance and to provide observations to continually improve performance
- Promoting the open, "blame free" sharing of the lessons learned from incidents, near misses and positive interventions including those learned and discussed with us whilst working with clients, subcontractors and suppliers
- Ensuring the Policy is understood and implemented effectively at all levels of the Group, and also made available to interested parties, upon reasonable request

The Directors and I will at least annually:

- Review this Policy to ensure it is effective (with the help of the SHEQ Director)
- Review responsibilities and procedures for SHE management
- Set clear SHE objectives and targets, monitor and measure performance and communicate the results, and
- Ensure adequate resources are made available to implement the Policy.

Signed on behalf of the Board of Directors

Dr Alan Ryder
Group Managing Director
10th April 2018

Revision 11

Organisation Organogram

The project organogram structure is contained within Appendix C

2.2 Roles and Responsibilities

Principal Engineer and Director in overall charge of project

- Direct and manage Quality, Health and Safety and Environmental practices
- Provided support in the instance of an environmental event
- Monitoring of the project Key Performance Indicators
- Liaison with all other specialists instructed as part of the site investigation

Geo-Environmental Manager

- Liaison with Client on site specific issues
- Ensure compliance of all parties to the site investigation with the requirements of the Environmental Management Plan and Site Waste Management Plan.
- Co-ordination and communication with site agents and subcontracted services such as waste carriers,
- Ensuring that the site crews strictly adhere to any site specific access routes, permitted access areas and other site specific restrictions
- Ensuring that personnel are adequately briefed on environmental incident response procedures
- Ensuring all staff are briefed regularly on matters of environmental management, delivering tool-box talks on relevant issues
- Ensuring that all GI locations are adequately provisioned with appropriate pollution prevention measures (e.g. silt fencing).

Site Engineers / Drilling Crews

- Ensuring that the method statements and environmental risk assessments/preventative procedures are adhered to at all times
- Provision of preventative inspection services, under PUWER requirements for the drilling equipment to reduce the risk that the hoses will rupture under pressure due to seeps or weaknesses in the structure, through visual inspection
- Ensuring access routes and site specific requirements are understood and are adhered to at all times
- Raising any environmental concerns immediately with the site Geo-Environmental Manager.

All site based personnel

- Ensuring that the method statements and environmental risk assessments/preventative procedures are adhered to at all times

2.3 Training and/or Experience

Role	Relevant Training and/or Experience		
Project Director	Waste Management Training	Asbestos in Soil and Asbestos Awareness training	
Geo-Environmental Manager	Environmental and Ecological Impacts and Assessment Waste Management	Contaminated Land and Preliminary Risk Assessment Asbestos in Soil and Asbestos Awareness training	Environmental Inspection and Audit
Ecologist	Environmental and Ecological Impacts and Assessment	Invasive Plant Identification and Control	
Site Engineers	Project specific Pollution Prevention Training (e.g. silt fencing use)	Asbestos in Soil and Asbestos Awareness training	

2.4 Permits and Authorisations

Permit systems and/or authorisations will be in place, as required, for all works relating to:

- Digging, Hot Works, Confined Spaces (not anticipated for the scope of works)
- Permit to commence site works will be in-line with the current TOCOP arrangements for each in individual intrusive location, signed by the appropriate HNP environmental representatives, prior to commencement.
- Water abstraction for drilling purposes will be from a licensed stand pipe or by abstraction from the Afon Alaw (limited to <20m³/day); subject to agreement with NRW (Contact with NRW to be through HNP).
- SSL 's method statement for the re-use and disposal of water to ground –RAMS 012.
- Works within 120m of SSSI will not commence until RAMS approval is granted by NRW (submission to NRW will be by HNP).
- *Flood Risk Activity Exclusion 13: Site investigation boreholes and trial pits* will need to be applied where relevant.

3 Environmental Aspect, Impacts and Mitigation

The following table provides a general environmental risk assessment for aspects of the proposed works.

Where the aspect relates to normal working conditions this is shown in black text. Where the aspect relates to an emergency / incident condition this issue is shown in red / bold.

3.1 Environmental Risk Assessment, incorporation Pollution Prevention and Control Measures

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
1	Drill Flush	Contamination of groundwater	<ul style="list-style-type: none"> o Use of clean water as drill flush, use air mist to minimise clean water required and for less of an impact on the surrounding area. 	High	Low	During siteworks	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
2		Contamination of surface water	<ul style="list-style-type: none"> o Compliance with relevant Environment Agency Pollution Prevention Guidance, including that on the siting of chemical/fuel storage facilities, use of bunding, handling protocols and spill response plans (e.g. GPP2; GPP5: PPG6; GPP21, PPG22 & PPG26): it is noted that the above mentioned 'PPG' protocols have now been withdrawn but the approach that is described in these documents would be suitable for this site to prevent oil contamination of surface water, the ground surrounding the bunded fuel tank and preventative measures during refuelling to prevent a major incident – in line with the bulk fuel delivery method statement o Water collected in recirculation tanks during drilling. o All flush waters will be disposed of off-site. o Ensure water hoses are sound and do not leak o Use of sea water as a flush medium is prohibited o Lubricating oils on casing to be bio-degradable and non-toxic o Establish Groundwater control measures at borehole locations. o Ensure recirculation tanks are used during the drilling process 	High	Low	During siteworks	
3	Drilling plant and vehicles	Greenhouse gas generation	<ul style="list-style-type: none"> o Ensure vehicles and plant are regularly serviced and use of fuel efficient diesel vehicles promoted o Minimise fuel expended in travelling to site by minimising the number of vehicles travelling to and from site on a daily basis. 	Medium	Low	Before siteworks	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
4	Made ground/ contaminated ground	Exposure of contaminated ground/ contamination of ground surface	<p>Limited made ground and contaminated arisings are anticipated since the proposed borehole locations are in a Greenfield setting. Should unexpected made ground be encountered the following measures should be employed.</p> <ul style="list-style-type: none"> o Ground surface at borehole locations on contaminated land to be protected from contaminated arisings via sheeting, boarding and bunding. o Samples to be stored in airtight containers until results of contamination testing available. o All contaminated arisings and contaminated spoil shall be sampled to determine waste classification and be managed in accordance with the SWMP. Any waste deemed Hazardous shall not be removed from site unless approved by Horizon Site Environmental Lead. 	Medium	Low	Before site works start/ during site works.	
5		Contamination of ground water	<ul style="list-style-type: none"> o Compliance with relevant Environment Agency Pollution Prevention Guidance, including that on the siting of chemical/fuel storage facilities, use of bunding, handling protocols and spill response plans (e.g. GPP2; GPP5: PPG6; GPP21, PPG22 & PPG26: it is noted that the above mentioned 'PPG' protocols have now been withdrawn but the approach that is described in these documents would be suitable for this site) o Use of potable water or river water as drill flush, ensure flush returns are collected and recirculated o Water collected in recirculation tanks during.. 	Medium	Low	Before site works start/ during site works.	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
6		Contamination of surface water	<ul style="list-style-type: none"> Compliance with relevant Environment Agency Pollution Prevention Guidance and in accordance with the HNP Ecological Mitigation Plan, including that on the siting of chemical/fuel storage facilities, use of bunding, handling protocols and spill response plans (e.g. GPP2; GPP5: PPG6; GPP21, PPG22 & PPG26: it is noted that the above mentioned 'PPG' protocols have now been withdrawn but the approach that is described in these documents would be suitable for this site) Management of rainwater run-off from storage areas for contaminated or potentially contaminated soil, wastes, and materials by way of weather proof coverings, covered skips. Flush return should not be allowed to run-off to any nearby surface water. The water should be collected, tested and then disposed of accordingly. Should the activity generate dust, the area will be damped down to prevent windblown spread of dust into locations where subsequent washing into surface drains/ditches would be likely. Where necessary water used to suppress dust to be collected for disposal. 	Medium	Low	Before site works start/ during site works.	
7		Down hole/ cross hole contamination of natural ground	<ul style="list-style-type: none"> Compliance with British Standard 5930 (Code of Practice for site Investigations) and BS10175 (Investigation of Potentially contaminated Sites – Code of Practice). Compliance with EA Technical Report P5-065/TR (Technical Aspects of Site Investigation) Management of rainwater run-off from storage areas for contaminated or potentially contaminated soil, wastes, and materials by way of weather proof covering, covered skips. 	Medium	Low	Before site works start/ during site works.	
8	Waste Generation, Management and Disposal	Unsustainable waste disposal practice	<ul style="list-style-type: none"> Refer to SSL site waste management plan for all waste generation, management and disposal. All staff shall be briefed on the SWMP and the requirement to collect all their waste and segregate into bins/skips those wastes that have been identified for recycling 	Medium	Low	During Siteworks	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
9	Hazardous Materials / Waste	Contamination of ground or injury to operatives or other site users/ wildlife H&S Plan	<ul style="list-style-type: none"> o Refer to SSL Site Waste Management Plan for all hazardous waste generation, management and disposal o Follow advice of COSHH assessments in H&S Plan o All cement and bentonite products will be kept in sealed bags until their time of use. o Hydraulic fluids (if required) and biodegradable greases will be stored within sealed containers appropriate for use within a designated area in accordance with EA GPP2, PPG6, PPG26 and The Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulation 2016. o MSDS sheets to be provided to HNP and to the relevant authority (NRW/LA) in the event of a significant contamination event (e.g. rupturing of a 1000L diesel tank). o Waste waters from washdown areas (related to INNS) to be disposed of off site. Records to be retained as part of the SWMP. 	Low	Low	During Siteworks	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
10	Fuel/Oil Spillages or Leaks	Contamination of ground or water	<ul style="list-style-type: none"> ○ All fuel stored in bunded fuel bowzers or sealed containers designed for fuel storage. Fuel storage to be within a designated area within the site compound. Flammable liquids will be stored in a lockable container in the site compound (GPP2, PPG6, PPG26, The Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulations 2016. ○ All vehicles and rigs fitted with drip trays or plant nappies. Checks to be undertaken to ensure drip trays are regularly cleared to avoid overtopping. ○ Spill kits to be available at all borehole locations during hole formation in case of fuel or hydraulic leak (PPG 22). ○ Hydraulic hoses to be visually checked for leaks/ signs of weaknesses/ loose connections on a daily basis. ○ Spill kits to be available during any refuelling operations; funnels and drip trays to be used during transfer into equipment (PPG22) – See 11 below. ○ Spark arrestors will be fitted to all drilling rigs. ○ All cloths used to wipe down drips from containers will be segregated from other wastes and disposed of as hazardous waste using appropriate hazardous waste consignment notes. ○ MSDS sheets to be provided to HNP and the relevant authority (NRW/LA) in the event of a significant contamination event (e.g. rupturing of a 1000L diesel tank). 	Medium	Low	During Siteworks	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
11	Fuel Spillages or Leaks during refuelling procedures	Contamination of ground or water	<ul style="list-style-type: none"> ○ Refuelling of drilling rigs will be undertaken at the ToCoP works location using the following spill mitigation measures: <ol style="list-style-type: none"> 1. Plant nappy will be in place beneath the drilling rig. 2. Drilling rig to be refuelled from designated bowser with auto-cut-off feature or from 20L storage container with funnel. 3. Spill kit pads will be placed around the filler neck of the drilling rig during the operation. 4. Spill granules to be carried with the refuelling bowser. 5. Spill kit to held with the drilling dig (PPG22). ○ Refuelling of vehicles and mobile plant will be undertaken at the designated refuelling area within the contractors compound using the following spill mitigation measures: <ol style="list-style-type: none"> 1. Plant nappy will be in place beneath the vehicle/plant. 2. Vehicle/plant to be refuelled from designated bowser with auto-cut-off feature. 3. Spill kit pads will be placed/held around the fuel cap neck of the vehicle during the operation. 4. Spill kit and spill granules to be maintained with the refuelling bowser when in its designated static storage area (PPG22). 	Medium	Low	During Siteworks	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
12	Noise	Noise pollution	<ul style="list-style-type: none"> o Any silencing equipment to comply with noise regulations (BS5228). o Equipment to be switched off when not in use and not left idling o Designated site contact to which complaints/queries about site investigation activity can be directed – any complaints to be investigated and action taken where appropriate. o Local residents informed in advance of exceptional activities. o No potentially significant external working outside of normal working hours without prior agreement with local authority. 	Low	Low	During Siteworks	
13	Vibration	Disturbance via vibrations	<ul style="list-style-type: none"> o Silencing equipment to comply with vibrations regulations (BS7385). o Equipment to be switched off when not in use and not left idling o Designated site contact to whom complaints/queries about site investigation activity can be directed – any complaints to be investigated and action taken where appropriate. o Local residents informed in advance of exceptional activities o No potentially significant external working outside of normal working hours without prior agreement with local authority. 	Low	Low	During Siteworks	
14	Archaeological features on site	Damage to any potential features	<ul style="list-style-type: none"> o If the location of an exploratory hole is within an archaeologically sensitive area SSL or HNP will arrange and provide a watching brief as required. 	Low	Low	During Siteworks and prior to siteworks	
15	Disturbance to land	Compression and damage to site soils due to heavy tracking of vehicles	<ul style="list-style-type: none"> o Trackway may be installed to protect soft ground from rutting. SSL will be responsible for keeping all vehicles on the trackway. This will be briefed to all staff during the SSL induction on to site. 	Low	Low	During siteworks	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
16	Livestock	Stray animals	<ul style="list-style-type: none"> o Tenants Farmers are being communicated with in order to ensure that livestock aren't present in the vicinity of the areas under investigation. Staff to keep lookout for stray animals during site works. o If any stray animals are found they are to be reported to the site manager who will then contact the farmer. 	Low	Low	During Siteworks	
17	Fauna which constitute site integrity	Potential disturbance to reptiles	<ul style="list-style-type: none"> o Reptile habitat is characterised by long grass, but will also include wood/scrub edge and other semi-natural habitat. o Long grass in reptile habitat areas should be strimmed back by SSL around the boreholes and along the access routes to ensure no reptiles are present just in advance of the works after assessment by the ecologist. o Reptiles removed by Ecologist to a safe refuge in suitable habitat outside the working area. Suitable receptor site should be clearly identified before commencing with the work. o Where works are undertaken during the reptile/amphibian hibernation season (typically November to February inclusive, but dependant on local temperatures), no features suitable for use by hibernating reptiles of amphibians will be disturbed by the works o Ensure movement of site vehicles is restricted to a narrow corridor which is clearly defined and strimmed to reduce the risk of disturbance to the adjacent habitats. Tool box talks will be carried out regularly to highlight issues and for staff to identify reptiles likely to be found on site. 	Medium	Low	Before Siteworks start and during siteworks.	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
18	Fauna which constitute site integrity	Potential disturbance to Breeding Birds	<ul style="list-style-type: none"> o It is recommended that any work which may impact nesting birds should be completed outside the recognised bird nesting season, the guidance of the site ecologist should be adhered to. o Habitats of concern are hedgerows, scrub, trees and high sward height ground vegetation (long grass/bracken etc) o Where works will impact these habitats, both directly or by creation of access routes (i.e. vehicles driving through areas of long grass, cutting of gorse to create vehicle access track), if the works are to take place during the nesting season the impacted areas must first be thoroughly searched by a experienced ecologist. o Should a nest be located then it will be noted and its location communicated to the HNP site team and either the works may need to be delayed until the young have fledged or the access route altered to avoid conflict. o It may be possible to create access routes and clear work areas outside of the nesting season, prior to the start of task order works, i.e. tracks may be mown and scrub cleared preventing any later issues o Ensure movement of site vehicles is restricted to a narrow corridor which is clearly defined and strimmed to reduce the risk of disturbance to the adjacent habitats. 	Medium to Low	Low	During siteworks	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
19		Potential disturbance to Amphibians	<ul style="list-style-type: none"> o Movement of site vehicles should be restricted to a narrow working corridor (which should be clearly marked and strimmed), in order to reduce the risk of disturbance to the adjacent habitats; o In order to avoid contamination of riparian areas EA guidelines should be adhered to with regard to working in proximity to water; o Great Crested Newts (GCN) have been recorded in the area of the site. The SSL site ecologist will advise and if a GCN is found during works, it must be left alone (as long as it is in a safe location) and the HNP Environmental team contacted immediately (tool box talks on GCN and other protected species will be given). o Tool box talks will be carried out regularly to highlight issues and for staff to identify amphibians likely to be found on site. Ensure movement of site vehicles is restricted to a narrow corridor which is clearly defined and strimmed to reduce the risk of disturbance to the adjacent habitats. o No work will be under taken within 500m of GCN suitable habitat without client approval. o RAMS will be shared with NRW in advance of any GI works within this 500m zone. o Work in accordance with HNP Biosecurity Reference Document 	Medium	Low	Prior to siteworks and During siteworks	
20		Potential disturbance to Mammals	<ul style="list-style-type: none"> o No works will be undertaken between dusk and dawn in the vicinity of watercourses that may support otter and/or water vole. Works will not disrupt otter commuting routes, which must be maintained at all times. o The working areas will be checked for potential bat roosts by the SSL ecologist although none are anticipated to be present. 	Medium	Low	During siteworks	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
21	Flora which constitute site integrity	Vegetation i.e. grassland habitats	<ul style="list-style-type: none"> ○ SSL, ER and HNP will walk the access routes to each exploratory hole location to determine if ground protection measures are required. ○ 'Bog mats' will be employed in the first instance. ○ On the instruction of HNP Trackway (i.e. plastic or aluminium) will be laid in the vicinity of sensitive habitats ○ Borehole arisings will be kept adjacent to the borehole and backfilled on completion. 	Low	Low	During siteworks	
22		Ditches	<ul style="list-style-type: none"> ○ Water collected in recirculation tanks during drilling without olfactory or visual contamination will be put to ground in accordance with the methodology specified in the approved HNP document and in the pre-agreed specified areas this document describes. This is to avoid potential impact to surface waters including ditches and related flora, particularly owing to contamination with silt. 	Medium	Low	During siteworks	
23	Invasive non-native Species	Spread of invasive species through site activities (in accordance with HNP Biosecurity Document Reference)	<ul style="list-style-type: none"> ○ A site walkover will be undertaken prior starting works on site. If INNS is recognised on site, control measures will be put in place (fence off the area etc.). The SSL Ecologist and SSL Geo-Environmental Manager will be on site and assess the site conditions prior commencing works. ○ Installation of a washdown area for plant and vehicles that access and egress the area ○ All works will adhere to the Horizon Biosecurity Risk Assessment (App D) and site specific Biosecurity RAMS for plant and vehicle 'wash-down'. 	High	Low	Before and During siteworks.	
24	Flora and fauna which constitute site integrity	Any other encountered fauna or flora (particularly protected species and habitats across the site)	<ul style="list-style-type: none"> ○ An on-site SSL staff person will carry out a regular check on all positions to ensure that the mitigation measures laid out in this management plan are followed and correctly implemented. ○ Should any doubt arise, the site ecology team should be consulted. 	Medium to Low	Low	During siteworks	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
25	Trees and Hedgerows	Damage to Trees and Hedgerows	<ul style="list-style-type: none"> o Careful operations near trees and hedgerows o Any vegetation clearance to be carried out in the presence of a qualified ecologist after they have checked for nesting birds (within the relevant season as outlined previously). The appropriate checks re any requirement for consents e.g. tree felling licences or hedgerow removal notices (not considered likely to be necessary), must be made early in the project. o Work near trees to be carried out in accordance with BS 5837 and any required root protection zones to be checked and implemented where required. o No ancient woodland is believed to be present in the working area. 	Medium	Low	During Siteworks	
26	Satellite compound positioning	Mobile satellite compound potentially in proximity important ecological features.	<ul style="list-style-type: none"> o The satellite compounds will consist in one or more mobile groundhog unit, which will be moved during the ground works to be close to the drilling activity. o During the positioning of the unit, special care will be taken to avoid damaging any ecological/archaeological feature and the Horizon Environment & Waste Management Team and/or site ecologists will be consulted on its positioning. o Restricted vehicular access will be allowed. o The generator engine will be in a bunded section of the unit, ensuring any refuelling spillages will be contained. Spill kits will also be available. 	Medium	Low	Before siteworks	
27	Vehicular movement around sites.	Damage to surfaces in proximity of borehole and trial pit locations	<ul style="list-style-type: none"> o Turf at the immediate hole location to be excavated as part of hand-pitting and set to one side during drilling for those holes without installations and replaced on completion. o Mats and boards laid out for drilling rigs to protect the ground surface. 	Low	Low	During siteworks	
28	Roads	Tracking of mud across hard surfaced areas/ off site	<ul style="list-style-type: none"> o Those vehicles moving from site areas to roads will be scraped of mud and where necessary to avoid tracking mud off-site. (PPG 6). o A road sweeper will be used as required to clean the access / egress locations on the public carriageway. 	Low	Low	During site works	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
29	Public footpaths	Disruption to public footpaths	<ul style="list-style-type: none"> o Access to public footpaths to be maintained for duration of works. o Appropriate signage to be employed (Dual language) o Speed limit on sites to be 10mph. o Site staff will be made aware of the footpath routes across the site during the site induction. o All exploratory holes will be fenced off over night. o No exploratory holes will be positioned on footpaths. 	Low	Low	Before/ during site works	Disruption to public footpaths
30	Use of fuel driven plant and equipment	Elevated vapour/air pollution	<ul style="list-style-type: none"> o Ensure equipment is correctly serviced and maintained o Turn off engines whenever possible; don't leave vehicles idling or e.g. unnecessary plant running overnight o Avoid unnecessary journeys where possible o Avoid carrying excess weight in vehicles 	Low	Low	During site works	
31	Accidental fire	Damage to plant and flora / fauna	<ul style="list-style-type: none"> o No smoke or naked flames outside of designated smoking areas. Naked flames subject to hot works permit (as required) o All flammable waste products to be disposed of in a responsible manner – sand buckets provided for cigarette ends, sealed metal container for disposal of spill kit materials. o MSDS for all chemical products to be held on site to be provided to the emergency services if required o Fire extinguishers to be maintained in the compound, works locations and site vehicles, and to be of the correct type for the likely fire to be encountered. 	Medium	Low	During site works	

Ref	Issue	Effects	Mitigation/Actions Required	Risk Before Mitigation	Risk after Mitigation	Timing	Comments /Verification
32	Where inadvertent discharge occurs to a water course,	Siltation of watercourses and aquifers	<ul style="list-style-type: none"> o the operation will be ceased forthwith and silt prevention measures deployed o Silt fences will be deployed as a preventative measure o Ongoing monitoring for any breach of the silt fence by the supervising engineer o The HNP Environment team (Lorna Cary (Site Environmental Lead)/Dave Harries/Steve Roberts) will be informed by telephone or in person and the incident reported to the NRW Hotline by Horizon as and when/if required. o Emergency sandbags will be on site to lay down in the event of an inadvertent discharge which breaches the silt fences. 	Medium	Low	During site works	
33	Investigation works within a flood plain	Damage to plants and flora / fauna if vehicles / plant flooded	<ul style="list-style-type: none"> o Site staff will be briefed on the location of their works relative to potential flood plain areas. o Weather reports will be given daily at the project morning briefing; highlighting rain and high tides (if relevant). o Works supervisors will check-in with the site staff at the location periodically during the day. o All plant and vehicles will be removed from the location as quickly as possible should flooding event occur) o If the plant cannot be removed it will be isolated and secured prior to staff leaving the works area. o The works will comply with FRA Exclusion 13. 	Medium	Low	During site works	

4 Environmental Protection Requirements

4.1 Waste and Materials Management

All waste will be managed according to the project specific Site Waste Management Plan (Document 2). All transfer notes and hazardous waste consignment notes shall include the correct address and correct SIC code, as follows:

Structural Soil Ltd

c/o Horizon Nuclear Power

SIC Code: 43120

Wylfa Newydd Site Office

HWRR: CAI120

Cemaes Bay

Anglesey

LL67 0AA

These documents shall be kept in the contractor's site file and copies issued to Horizon as required.

Hazardous waste shall not be removed from site unless approved by Horizon Site Environmental Lead.

4.2 Water Management

Water for use in the drilling process will either be drawn from a hydrant, using a licensed standpipe, or by abstraction from the Afon Alaw.

All waste water from drilling operations will be recorded as part of the site waste management plan.

Silt fences will be deployed, as required by the ecological assessment, on the downward slope of exploratory holes to prevent run off of surface water from the work site.

4.2.1 Ditches

Ditches, including those not currently containing water shall be treated as inland watercourses. Where drilling is to take place in proximity of ditches, the flush returns must be collected at the drilling location using recirculation tanks. The water and separated silt collected is to be stored and processed in accordance with the SWMP.

No drilling will take place without prior determining and recording the proximity of the drilling rig to a watercourse and determining if protection measures are required.

Any solid silt residue will be collected prior to disposal via a licensed carrier and consignee. Records of all discharges and disposals will be held by the contractor and available for inspection by Horizon and NRW.

4.2.2 Flood Risk Activity Permit

A flood risk activity permit will be required if the conditions presented within 'Flood risk activity Exclusion 13 – Site Investigation Boreholes and Trial Pits' cannot be met. In order to comply:

- The activity is not carried out in or within 100m of a main river that is classified high morphological status.
- The works are more than 5 metres from any culvert, remote defence or flood defence structure on the main river and from any sea defence.
- The works are more than 8 metres from the banks of a non-tidal main river.
- The works are more than 16 metres from the banks of a tidal main river.
- Works must be completed, including refilling of the borehole or pit within 48 hrs

SSL will ensure all drilling rigs and associated equipment will be removed from the floodplain upon completion of the works.

Copies of the NRW Flood Risk Maps are contained in Appendix E

4.3 Ecology

Each exploratory hole location will be assessed in relation to any potential ecological issues by the SSL site ecologist prior to commencement of works.

The site ecologist shall undertake pre-works ecological assessments of works areas to identify notable species / habitat constraints and to inform any requirements for exclusion / buffer zones, sensitive vegetation clearance methods and/or ecological watching brief.

Further details on site constraints, species, and designated areas discussed in the following sections.

Site Constraints

- For works within habitat within 500m of suitable terrestrial GCN, appropriate working methods to avoid offences will be described within a set of RAMS. These documents will be shared with NRW (via HNP) in advance of any works located within this 500m zone. Works will not commence until NRW have had an opportunity to review these documents.
- Timing of works to avoid sensitive periods within sensitive areas (i.e. avoid nesting season).
- Maintenance of at least 5m buffer zones (for all boreholes, laydown and plant tracking) from designated sites, watercourses with connections to designated sites.
- Works within 120m of SSSI will not commence until RAMS approval is granted by NRW (submission to NRW will be by HNP).
- *Flood Risk Activity Exclusion 13: Site investigation boreholes and trial pits* will need to be applied where relevant (see Section 4.2.2. above for further details).
- A buffer of 2m of undisturbed ground will be left on either side of hedgerows to protect the immediate margins.
- Use of silt fencing to reduce the risk of polluting designated sites, water courses and the coastline where surface release of drilling water or groundwater is anticipated (see silt fencing section below).

Protected species (Specification Clause 3.7.4)

For these works, relevant species include (but are not necessarily limited to):

- Bats
- Red squirrel
- Badger
- Water vole
- Otter
- Nesting birds
- Reptiles
- GCN – Llanfachraeth.
- Brown trout

Suitable reptiles and Great Crested Newt (GCN) habitat was identified by qualified ecologists employed by Horizon Nuclear Power (HNP) as part of ecological baseline surveys.

Survey data shows that GCN may be present in the area of Llanfachraeth.

The mitigation measures agreed with the Horizon with regards to reptiles and GCN include ensuring that any areas of long vegetation upon which a trackway is to be laid are inspected for reptiles/GCN (and nesting birds) by a suitably qualified and experienced ecologist. The long grass will then be strimmed, to minimise risk of reptiles/GCN being present in the area of the trackway and this will assist with visually inspecting for reptiles prior to the trackway starting to be laid. Work will then be allowed to proceed in those locations. The A5025 GI Works PEMP will be followed.

Where works are undertaken during the reptile/amphibian hibernation season (typically November to February inclusive, but dependant on local temperatures), no features suitable for use by hibernating reptiles or amphibians will be disturbed by the works

The works have the potential to attract reptiles such as adders or lizards to the areas where staff are working, as such species can choose to bask upon warm metal and dark materials which heat up well in the sun i.e. stored metal casing or the aluminium track-way where implemented. Adders are venomous; a toolbox talk will be given to all site operatives about their presence on site, consideration to adders will also be included within the procedural note as shown in Appendix B. Should any reptiles be seen within a working area, the workers will be advised to continue making their usual level of noise, but in no circumstances will they approach and/or touch the animal. The adder should leave of its own accord once it realises it has been discovered. Vibrations across the ground from vehicles close by etc will also encourage reptiles to move away, but workers should be aware that reptiles may return to the area once the noise/vibrations cease. The HNP Environmental Team will have identified a suitable reptile receptor site in order to translocate such individuals if required. If a reptile or amphibian does not move after a reasonable amount of time, HNP will be notified, and the work in that area will halt until either the animal eventually disappears, or preferably, the site ecologist has translocated it to the suitable and safe receptor site.

GCN may be present on sites during the works. All site operatives will be given a toolbox talk, and should any be observed, SSL are to inform HNP and the site ecologist as soon as possible. Should GCN be discovered at any stage during the works, all work should stop immediately and HNP will discuss the approach with NRW. A licence is required in order to handle a GCN, so workers will not attempt to move them if any are found during the works.

Breeding Birds

Ideally, the ground investigation works would take place outside of the bird breeding season (1st March to 31st August), therefore minimising the risk of disturbing nesting birds. In order to ensure no harm is done to any nesting birds, the site ecologist will check for the presence of nesting birds, particularly in relation to those which could potentially nest on the ground.

Should any nest be identified during the establishment of working areas, the access will be rerouted according to the advice provided by the ecologist in order to avoid the nest and also to avoid disturbance to the birds (adult and young). The nest will also be flagged up, and all site operatives instructed to stay away from it.

Where it is not possible to avoid works at the nest location, the works will be delayed until the nesting attempt has concluded.

Mammals

Otters and water voles have been identified within the areas of the Valley and Llanfachraeth sites. No works will be undertaken within 15m of suitable habitats identified by the SSL Ecologist.

No ground investigation works will be carried out between dusk and dawn near watercourses which may support otter and/or water vole, and otter commuting routes will be maintained at all times and not disrupted by the works.

Ditches

A number of ditches on and around the site are historically known to have been used by water voles. The mitigation measures with regards to water voles are similar to those for the reptiles in that the ecologist will need to inspect the area to be used for access in the proximity to ditches for water vole use and particularly for existing tunnels, and matting for vehicle access will be laid down strictly in areas that will not disturb water voles. Other ditches on-site including those nearby the proposed works have been identified as having a high potential as possible habitat for water voles. Any work in proximity to these ditches will need the site ecologist to inspect the ditch for water vole use including any tunnels prior to commencement of the works. If water voles are found to be present within the area to be worked then a Method Statement will need to be prepared by the ecologist and strictly followed by the contractors undertaking the work.

Silt Fencing

All exploratory holes will be located in accordance with the site constraints listed above, and with the agreement of the SSL Ecologist. Consideration will be given to the distance from any sensitive receptor, topography, and investigation technique.

Silt fencing will be employed on the down slope side of the rotary cored exploratory holes in locations where surface release and runoff of drilling water (which may include groundwater lifted to the surface by the drilling process) is considered a risk to a water course or designated area. In general this will not apply to cable percussion or window sample boreholes as these drilling techniques are 'dry' (i.e. they do not use any form of water drilling flush).

Installation of the silt fencing will be as per the manufacturer's instructions, and positioned by the SSL Ecologist in consultation with the lead driller (i.e. discussion of rig orientation, position of recirculation tanks etc).

Trees Hedgerows

A buffer of 2m of undisturbed ground will be left on either side of hedgerows to protect the immediate margins. Care will be taken when working near hedgerows to avoid damage.

Invasive Non-native Vegetation Species

A site walkover will be undertaken prior starting works on the A5025 sites in the presence of the HNP Environmental Site Lead and SSL Ecologist & Environmental Manager & Supervising Engineer to assess the site conditions. If INNS is recognised on site, control measures (fence off the area, construction of wash-down areas etc.) and guidance identified in the following documents should be followed.

- HNP A5025 GI Works Ecological Method Statement (2015)
- HNP Bio security Guidance and Generic Risk Assessment for Terrestrial Ecology (2015)
- SSL Biosecurity Management Plan(2018)

4.4 Archaeological Features

Boreholes 01 – 05 at Valley and 102, 103 and 104 at Llanfachraeth sit within fields designated for archaeological watching brief (i.e. archaeological monitoring of all penetrative groundworks). Accordingly, SSL shall first excavate a 1m x 1m area onto the archaeological layer (c.0.60m depth) at each of these borehole locations. SSL shall employ (or be provided with the service of via HNP) a suitably qualified archaeologist to monitor this excavation and then examine the exposed layer to identify any features that are present and record them if there are. The Contractor shall only commence the borehole works once the archaeologist has confirmed they can proceed.

Should any feature be encountered, the archaeologist will advise Structural Soils Ltd on the action to take.

4.5 Noise Mitigation / Listed Buildings

Isle of Anglesey County Council have requested that noise mitigation measures shall be put in place such that works near any sensitive areas; such as cemeteries is limited to Monday to Friday 08:00-17:00.

4.6 Air Quality and Dust

All materials and arisings (dampened with water as required) are stored with tarpaulin covers/in secure storage where the wind and dry conditions could cause airborne dust nuisance.

4.7 Noise and Vibration

Noise

- All equipment will be fitted with the manufacturers silencing equipment.
- Equipment to be switched off when not in use and not left idling
- The HNP site contact to which complaints/queries about site investigation activity can be directed – any complaints to be investigated and action taken where appropriate.
- Local residents informed in advance of exceptional activities.
- No potentially significant external working outside of normal working hours without prior agreement with local authority.
- Works in the vicinity of sensitive environmental receptors e.g. designated sites and the site bat mitigation buildings and/or structures will be guided by the Horizon site ecologist

Vibration – Rotary Drilling

Drill String Vibration

Drill string vibration represents a portion of the energy that is dissipated and not used to create the borehole and can create issues with equipment, drilling performance and borehole quality.

Vibration consists of unwanted and uncontrolled axial, torsional and lateral movement, as a result of the drilling bit engaging the rock head.

Selection of the correct drill bits, drilling fluids and flush medium

To ensure that drilling proceeds with an efficient and high recovery rates, reducing the damage to the drill bit and maximising the progress the following guidance will be followed:

The following factors may be considered as noise and vibration variables and should be controlled as tabulated:

Variable	Primary Controlling Factors	Methods of improving recovery
Ground Conditions	Existing geology	Adapt drilling technique according to ground conditions. Use of inert drilling muds and polymers to improve flush viscosity and temporarily line hole with “filter cake” to stabilise borehole walls.
Cut Quality	Bit type and drilling technique	Select bit based on geology and flush medium. Generally, impregnated bits will give a finer, cleaner cut in harder rock. Soft ground is better drilled with PDC and TC bits. Selection of appropriate speed and load for bit type is critical, and likely to vary over the run of hole.
Bit wear	Ground conditions, flush type, loading, bit selection	Worn bits lead to uneven cut which in turn may lead to uneven core resulting in breakages and core loss. Selection of the correct bit for the ground is critical in maximising bit life. Water/mud flush clear abrasive fines from the cutting face to protect both bit and core. High temperatures can cause the bit to lose teeth (particularly PDC and TC bits, which are brazed), so a high SHC flush medium is imperative.
Flush return	Flush medium, pumps, ground fracturing	Flush return must be sufficient to circulate fresh flush medium and raise fines to surface, clearing the hole in order to moderate the above factors. Selection of an appropriate mud will also help prevent fluid loss through existing ground fracturing.
Drilling technique	Machine and operator	Staff must be experienced and well briefed, but above all adaptive. Changes may be necessary during a given run of core in order to maximise recovery. Knowing when to increase/decrease flush, pull back, load and increase/decrease speed is an essential drilling skill. Reading the hole is critical. The machine must have a range of operational characteristics suitable for the depth and diameter of hole required.
Catcher Assembly	Quality of tool, ground type	Different grounds will require different catchers. Rock can be caught using smooth springs (appropriate for very hard or highly abrasive rock), serrated springs (softer rock) or finger springs (unconsolidated materials, highly fractured rock). Catchers prevent the core from dropping free of the barrel. They must be checked and thoroughly cleaned between each run and the spring checked to ensure it is moving freely within the catcher box.
Liner	Quality of tool, ground type	Liner is used where rock is expected to be fractured or where mineralisation must be preserved. It can also be used to run dual-tube core barrels through sands, gravel and overburden. It contains the core enabling a full run of unconsolidated material to be retrieved and boxed at surface. Use of liner can mean the difference between retrieving a full core and no core. Liner must be used in conjunction with appropriate core springs and boxes, as above, although it is also critical to check the diameter of the box against the liner, since liner will snag on the core and cause a blockage if the box is too wide

Additional Control Measures

- Equipment to be switched off when not in use and not left idling.
- Local residents informed in advance of exceptional activities

4.8 Lighting

No artificial lighting will be used on the contract. On the remote occasion when night working is required for example on a drilling rig repair overnight then the Horizon Site Environmental Coordinator will be consulted.

4.9 Traffic and Transport

All site traffic will drive at 10mph or less around the work sites. Access off the haul roads will only be permitted on routes authorised by the Horizon Site Environmental Coordinator.

Consideration will be given to reducing the number of journeys required across site eg two way radios and mobile telephones will be used to request day to day site information and issue ongoing instructions.

4.10 Landscape

- No archaeological impacts are anticipated in the proposed working areas.
- Within specific sections of the site SSL will be installing trackway to protect soft ground from rutting if required. SSL will be responsible for keeping all vehicles on the trackway. This will be briefed to all staff during the SSL induction on to site.
- Any rutting of the ground within areas where trackway is not employed will be made good on completion of the investigation works.

4.11 Contaminated Land

If unexpected potential contamination is encountered within a borehole it will be suspended and HNP and the SSL Geo-Environmental Manager notified. Should there be a significant risk of a pollution incident and HNP is not contactable then all necessary steps will be taken to prevent a pollution incident, including abandonment of the borehole.

Additional risk assessment will be undertaken prior to continuing. Control measures to be employed may include the following:

- A hydrated bentonite seal and reduction in casing size will be employed to prevent down hole/cross strata migration of contamination where required.
- Where contamination has been encountered the drilling and sampling tools and testing equipment should be decontaminated with clean water between each exploratory hole.
- Where the contamination varies with depth it may be necessary to wash the tools and sampling equipment as a borehole is progressed.
- A designated wash down area will be established for drilling equipment and all wash water and sludge stored and tested prior to appropriate disposal.
- The wash down will comprise a tank, either an IBC cut in half or a drill through tank. Tools, equipment and casing can be placed inside the tank, or on a mesh spanning the tank to enable cleaning. Loose material will be removed using brushes and bagged. The minimal volume of water required to clean the equipment will be used. Wash water will

be pumped during washing to a storage container (bunded IBC or similar). Wash water will not be allowed to drain to ground/water. Clean water and dirty water containers will be labelled as such.

- It is essential that contaminated arisings from the exploratory holes do not contaminate the ground surface or surface water. Polythene sheeting will be placed over the rig working area prior to commencement to protect the ground surface. The sheeting will be free from damage or tears such that contaminated soil or water could penetrate. The edges of the sheeting will be raised, or a suitable bund placed on top to prevent the loss of contaminated water and create a collection point for pumping. Alternatively a tray may be used to collect liquid arisings and pumped to a container for appropriate disposal. If hydrocarbons are encountered the use of absorbent sock may be required. Turf mats or roofing felt may be used to reduce slip and trip hazards.
- For cable percussion boreholes a tray or bund will be used to collect liquid arisings and pumped to a container for appropriate disposal.
- For rotary drilled holes a drill through tank or tray placed around the borehole will be used to collect arisings. Liquid arisings and sludge will be pumped to a storage container for appropriate offsite disposal.
- All solid arisings will be bagged and removed for appropriate off-site disposal. Contaminated spoil will be segregated in order to minimise potentially hazardous waste volumes.

4.12 Drill Flush

Any stored waste water generated by drilling (i.e. collected in recirculation tanks) will be assessed for visual or olfactory indications of contamination by the SSL Geo-environmental Manager. Where the criteria of the HNP Discharge of Uncontaminated Water to Land (DCRM Ref No: HNP-S3-EWM-PRC-00007. Revision 2.0) document are satisfied, discharge of the drill water may be undertaken within a pre-agreed location.

Where the visual and olfactory assessment indicates the presence of possible contamination, the water will be sampled and analysed for the analytical suite presented in RAMS012. If no contaminants are present above the limits given in RAMS012 (EQS values) then the water may be suitable to put to ground.

Contaminated water not suitable to put to ground will be classified by the SSL Geo-environmental Manager (to determine correct classification (non-hazardous / hazardous)) after laboratory analysis, and the water will then be removed from site by a licensed waste carrier as detailed in the Site Waste Management Plan.

It is not expected that contaminated water will be encountered in the areas in which boreholes are to be drilled.

4.13 Pollution Prevention and COSHH

Storage of Chemicals, Fuels, Oils and Other Contaminants on Site

Minimal fuel and chemicals will be stored on site. However, there will be dual bunded purpose built fuel cubes/ bowsers, hydraulic oil and other chemicals stored in cans in the compound to

enable the plant and machinery to function. Any hazardous substance will be accompanied by a COSHH assessment sheet and Material Safety Data Sheet, will be clearly identifiable and in line with the relevant pollution prevention guidance note and/or Oil Storage Regulations as applicable. They will all be stored in double bunded containers, with sufficient spill kits available nearby and relevant staff trained in their use and in controlling a pollution incident.

Any plant such as the drilling rigs will have drip trays or plant nappies installed below their tanks and any other location where leaks may happen once they are in position. All hydraulic hoses will be maintained in good condition and inspected daily for any defects, eg a seepage that could be indicative of an imminent failure point.

In the main, refuelling of the plant at each borehole location will be carried out from a mobile fuel bowser with a pump drip free delivery nozzle. Drip trays will be used for the refuelling activities and suitable and sufficient spill kits will be available and relevant staff trained in their use.

All vehicles used on site, such as the SSL Land Rovers and Toyotas will only be refuelled in the main site compound, in the dedicated refuelling area, with drip trays and spill kits to be available during re-fuelling). All site vehicles and plant will carry an oil spill response kit that is of sufficient size to respond to a small spill (e.g. hydraulic hose leak).

The oil used on the drilling rods will be entirely biodegradable.

Any leak or spillage will be inspected, photographed and collected using spill kits including absorbent granules by the SSL staff at the location, and any such incident will be reported by telephone as soon as possible to Horizon Site Environmental Coordinator. This will be followed by a written incident report.

A regular inspection of all the measures in place to avoid spillages will be undertaken by a SSL supervising engineer, and a final visit of each position, once the drilling rig has been demobilised, will be carried out to ensure no spillage or leak has gone unnoticed.

Use of Consumables – Cement & Bentonite Products

Bentonite and cement products will be required for use on site. They will be stored in a designated area. Bentonite pellets will be provided in sealed plastic bags. Bentonite grout and cement products may be supplied in paper bags and will require protection from water by use of secured polythene sheeting. Consumables should be covered during storage.

Cement and bentonite will be supplied in 25kg bags and will be added to the mixer by hand. Any spillages of cement or bentonite will be immediately cleaned up and bagged.

Should bentonite pellets be approved for use in backfilling the boreholes then these will be introduced to the top of the casing by hand and poured slowly to prevent bridging. The same method will apply when installing a bentonite seal to prevent down hole contamination. The borehole will be dipped routinely to determine the depth of pellets. The measures in place during drilling to prevent loss of arisings between the outside of the casing and the moon pool will remain in place during grouting/backfilling operations.

Polythene sheeting will be used beneath grouting plant. The edges will be raised to prevent any spillage to land or water. Grouting will be carried out using a tremmie lowered to the base of the hole and raised as grout is pumped in. Grouting will not commence until the tremmie is at the required depth.

Equipment used in the installation of cement based products will be washed out in a designated 'bath' with the waste water collected for disposal off site.

4.14 Sustainability and Resource Use

Use of local approved suppliers for deliveries directly to sites/compounds, to reduce the mileage any consumables ordered are transported, including sand, gravel, cement and bentonite.

Overnight accommodation for personnel working on site, using local small business such as B&B accommodation, whenever possible, rather than large chain hotels.

Use of local labour – eg JCB operators, waste management companies and local labour agencies, for site supply chain management roles, reducing the overall impact of fuel, mileage and in support of local businesses.

For each site, the project secretary will receive a list of requirements and will source these based on the delivery address via a network of approved suppliers and quality assessed service providers. These will be agreed with Horizon Nuclear Power in advance of deployment, where the service is to be provided on site.

The main site compound will have recycling facilities for both site office and site waste streams to ensure that wastes are removed into reuse and recycle waste streams wherever they exist locally. In support of the legal requirements for the production and disposal of waste, the required hazardous waste producer licence and licensed waste carrier documentation is maintained, to enable site staff to transport waste from source to the site compound on highways.

All staff are required to support the recycling facilities provided, this requirement is briefed at site induction training and promoted via internal site meetings and site documentation, as a mandatory requirement for all operations:-

- The re-use or recycling of waste paper and toner cartridges
- The recycling of recyclable waste streams they bring to work, wood, cardboard, aluminium cans, batteries, glass jars, plastic drinks bottles and steel food tins into the receptacles provided (subsequently separated by the waste carrier after collection)
- Printing hard copy of documentation such as email only when required and where electronic copy will not suffice
- Segregation of hazardous from non-hazardous wastes, ensuring these are appropriately contained to prevent escape or chemical reaction and labelled prior to disposal from site works
- Separation of site waste streams and the return of these items to the office for disposal in the recycling facilities, creating a reduction in the quantity of items/materials placed in the general land fill skip
- Consumable materials delivered in excess to site, will be returned to the office base for reuse
- Broken wooden core boxes to be repaired whenever possible, all sourced from FSC approved certified sources – therefore able to move into waste streams with full certification
- Client driven recycling on site is fully supported where access is available eg for large spoil heaps and stockpiles of removed material

Sustainable Purchasing

- All staff are required to ensure that when procuring consumable items, for site use, that the quantities purchased can be utilised prior to the expiry date.
- Correct storage is implemented, to prevent deterioration in quality and protection from damage through moisture, extreme temperature exposure, ultraviolet light sources or humidity. On this site, this will require a storage container for all plastic liner and installation materials eg cement, to reduce damage through deterioration.

Sustainable Transport

- SSL will endeavour to reduce the total number of person vehicle journeys throughout the project by way of vehicle sharing, and use of multi-person vehicles (MPV's) where multiple staff members are from the same office/location.
- 4WD vehicles, where possible, will remain on site with travelling being undertaken in 'road' vehicles and cars.

5 Implementation, Monitoring and Measurement

Implementation of the Environmental Management Plan (EMP) will be supported by the sign off by all relevant parties at review stage and the briefing of all staff and subcontractors at site induction phase. The Geo-environmental manager is responsible for the implementation of the contents, with duties and responsibilities across all site based personnel.

Monitoring of the performance of the EMP will take place during the weekly site SHE inspections, alongside the incident register – all findings will be recorded and robustly closed out, the effectiveness of the actions will be reviewed at the next site SHE Inspection.

Measurement of the effectiveness of the project objectives and targets will take place on a regular basis, to ensure that the target zero approach is being met and any events are thoroughly investigated by the Project Director and the Associate Director for SHEQ. A weekly report on the progress of the environmental performance will form part of the weekly Client facing report.

Once per month, a joint environmental inspection will be undertaken by SSL and HNP's site environmental lead. Subsequent to this inspection a weekly environment, waste and sustainability performance report will be issued to HNP as part of the weekly progress report.

Control of Records

All environmental documentation is subject to document control and version control is recorded on the WSF000 Master Document Control Register.

6 Incident Response

See Pollution Prevention Plan, also to be attached as Appendix B and kept on site as a hard copy.

Once the situation has been made immediately safe, initial notification will be made to Horizon Site Contact. See Appendix B – Pollution Prevention Plan.

7 Reporting

The site waste management plan and incident records in relation to environmental events, will form permanent records of the site activities for the duration of the contract. These records will be maintained by the Geo-Environmental Manager and reviewed by the Project Manager.

The records will be copied to the Client at the completion of the project – for the waste management data and quantities.

8 Sub-contractor Management

All vendors who are quality, safety or environmentally critical on the project, will be approved prior to use by the Client. Vendor approval processes will be followed – these are defined for each type of service provided and documentation is reviewed prior to appointment

Appendix A

(i) Exploratory Hole Location Plans

(ii) PRow Plans

Appendix B

(iii) Pollution Prevention Plan

(iv) TBT Adders

Appendix C

(i) Organogram

Appendix D

(i) Biosecurity and Ecology

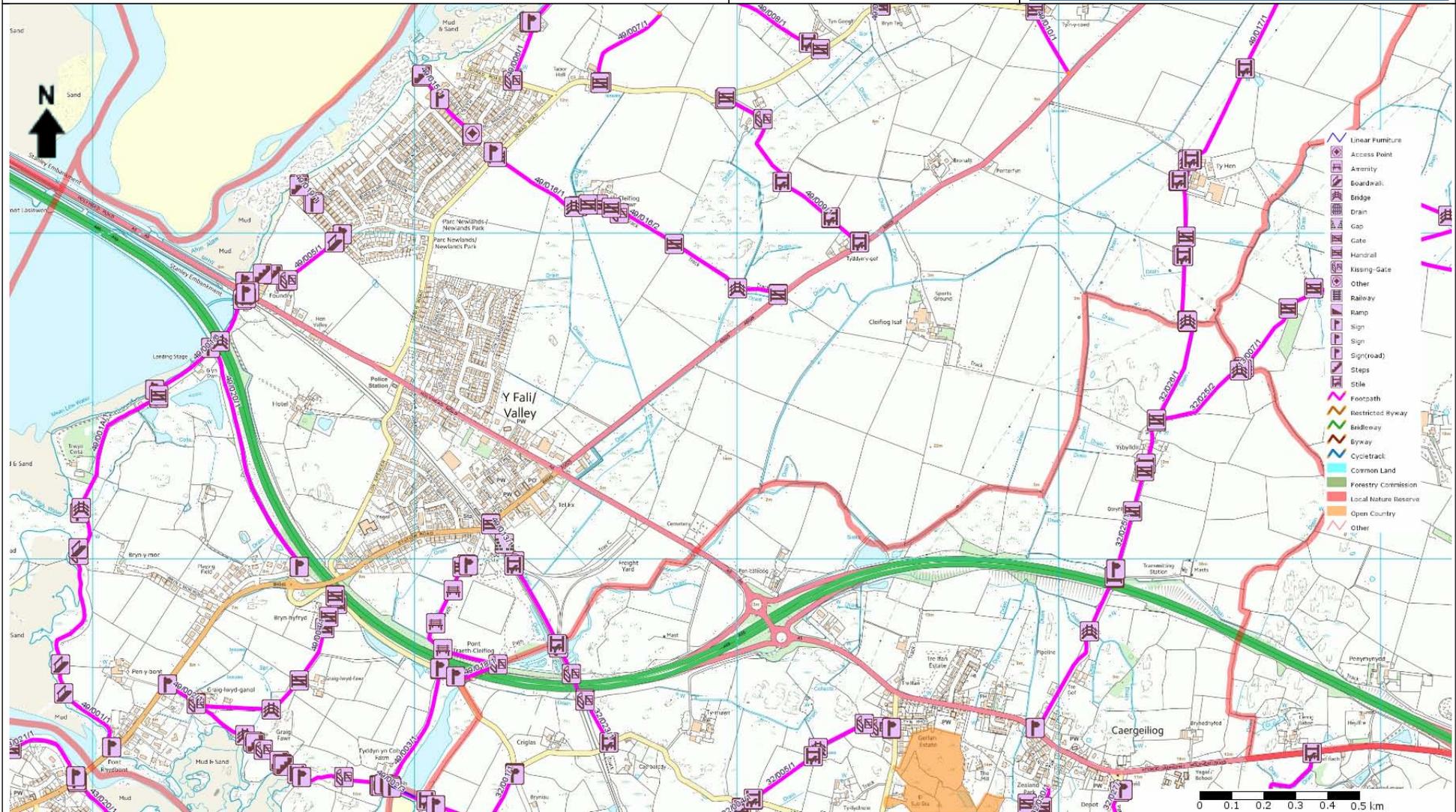
Appendix E

- (i) NRW Flood Risk Maps

Valley PRow Plan

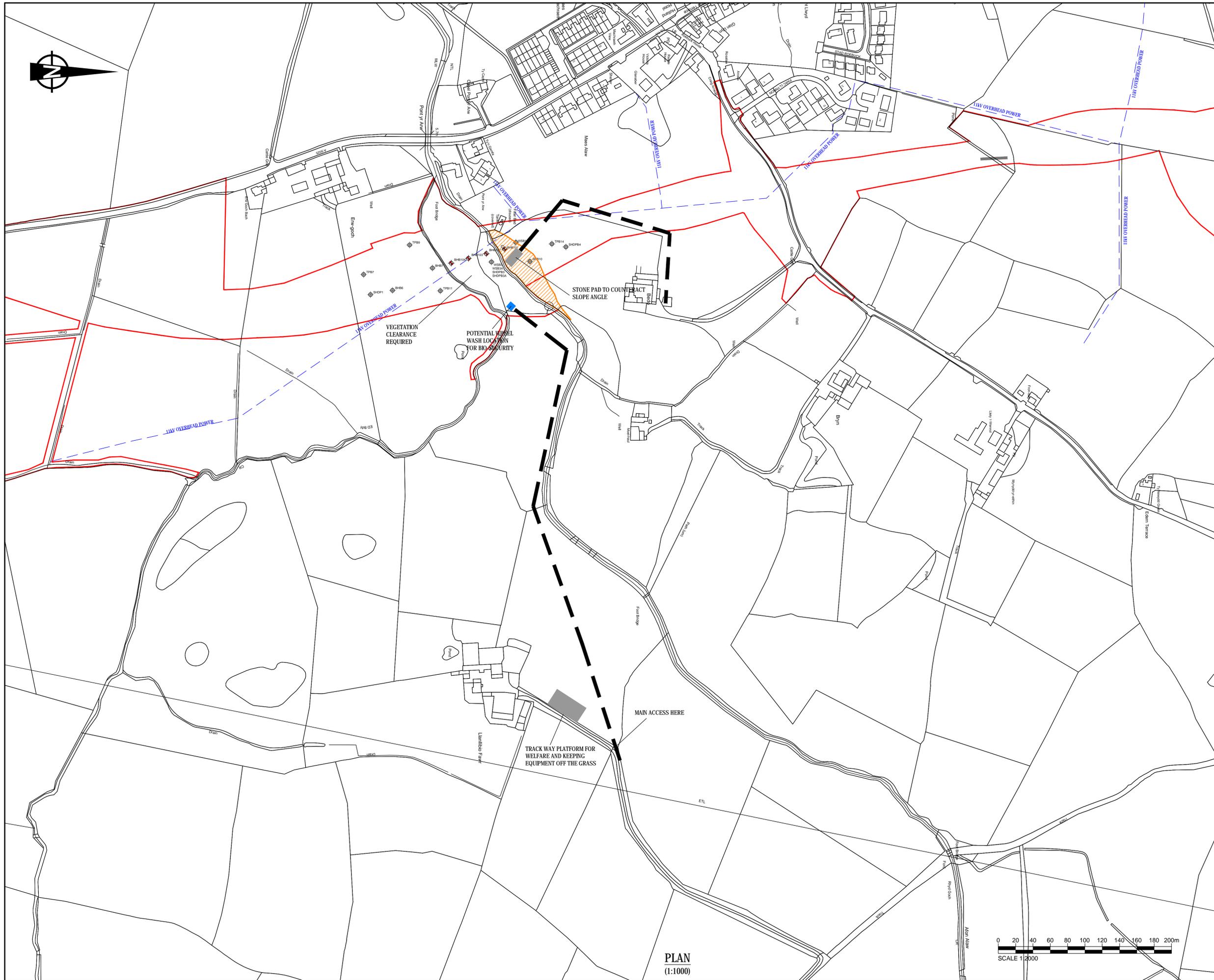
The purpose of this map is for guidance only. Due to the changing nature of the countryside, actual conditions encountered may differ from some of the information shown. This is not a legal record of Public Rights of Way.
Date created: 22/03/2018

Isle of Anglesey County Council
Council Offices
Llangefni
Anglesey
LL77 7TW



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Produced from Anglesey Rights of Way and Access Management System



PLAN
(1:1000)



PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS

CLIENT



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Sunrise House, 1420 Charlton Court,
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CONSULTANT
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Bridgewater House, Whitworth Street,
Manchester, M1 6LT
0161 907 3500 tel 0161 907 3599 fax
www.aecom.com

- KEY**
- PLANNING APPLICATION RED LINE BOUNDARY
 - EXISTING WATERCOURSE
 - PROPOSED BOREHOLE LOCATION
 - APRIL 2016 GI BOREHOLES
 - - - ROUTE OF TRACK WAY
 - - - OVERHEAD LINE

BOREHOLE	EASTING, NORTHING
BHB101	231770.5408, 382225.4496
BHB102	231775.5137, 382204.0599
BHB103	231781.0826, 382183.4949
BHB104	231786.6596, 382163.6144

- NOTES**
1. DRAWN AT SCALE 1:1000 @ A1.
 2. ALL EARTHWORKS BATTER SLOPES ARE SHOWN AT A GRADIENT OF 1 IN 2.5.
 3. EXISTING GROUND LEVELS BASES ON TOPOGRAPHICAL SURVEY INFORMATION FROM 'RSK' SURVEYS UNDERTAKEN IN DECEMBER 2014.
 4. THE PROPOSED CARRIAGEWAY WIDTH IS 7.3m WIDE WITH 1.0m HARDSTRIPS ON BOTH SIDES OF THE CARRIAGEWAY PROVIDING A 9.3m TOTAL PAVED WIDTH.
 5. ROAD ALIGNMENT GEOMETRY HAS BEEN DESIGNED IN ACCORDANCE WITH DMRB TD 9/93.
 6. ROUNDABOUT GEOMETRY DESIGNED IN ACCORDANCE WITH DMRB TD 16/07.
 7. FOR DETAILS OF PROPOSED DRAINAGE REFER TO DRAWINGS WN02.05-ACM-S5-05-DRG-001 & 002.

ISSUE/REVISION

NO	DATE	DESCRIPTION
P3	29.01.18	THIRD ISSUE
P2	26.01.18	TRACK WAY UPDATED
P1	18.01.18	FOR INFORMATION
I/R	DATE	DESCRIPTION

PROJECT NUMBER
60506637

SHEET TITLE
SECTION 3 - LLANFACHRAETH
TRACK WAY - PROPOSED LAYOUT,
AND OTHER CONSTRAINTS

SHEET NUMBER
WN02.05-ACM-00-SCH-10014 P3

Reptiles and Amphibians of the UK

[Homepage](#)
[RAUK e-Forum](#)
[On-line record submission form](#)

Species native to the United Kingdom
 Introduced or alien species
 Alien species that present a threat to wildlife

Adder or Viper - *Vipera berus* - Native

Identification

Reptile - Venomous Snake

Distinct "V" or "X" shaped marking on head, also occasionally described as a "M" or "H" shape.

Vertically slit pupil

Dorsal surface and flanks, Very characteristic indented or zigzag stripe on the back, flanks usually have a row of dark oval spots.

The background colour is variable, from whitish or pale grey through yellows and to brown or brick red.

May appear very dark before skin shedding (sloughing)

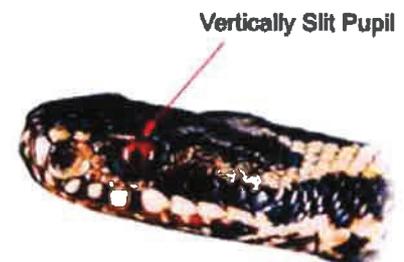
Ventral surface, usually black, though may appear grey/brown or bluish.



Original Image © Tony Phelps
 Reptile Research & Imagery



Male Adder



Original Image © Tony Phelps
 Reptile Research & Imagery

Some colour variation occurs, the most distinctive features of the Adder are the dark or black zigzag stripe along its back and its squat or heavy bodied appearance.

Length: Typically males reach 60 cm Females 75 cm in the UK. It is often stated by observers that Adders appear larger than they actually are.

Sexing

Males typically have a grey, creamy white or steely grey background colour. Females range from browns and yellows to brick red. Females are larger than Males.

Male Adder guarding his mate, showing colour difference and larger size of the female.



© Tony Phelps Reptile Research & Imagery

Breeding and young

Males appear from hibernation in early spring, the females follow approximately a month later. Mating occurs in the later part of April and the first half of May. Males are territorial at this time and may occasionally be seen to duel or "dance" as a show of strength. Adders do not lay eggs, but give birth in late summer to approximately 8 live young that measure 15 - 20 cm. The young are contained in a membrane that breaks immediately after they are born. Adders usually only reproduce every other year in the UK.

Male Adders dueling in the Spring.



© Tony Phelps Reptile Research & Imagery

What else could it be?

This snake maybe confused with the Grass Snake (*Natrix*

natrix). The Grass Snake is a far more slender species and lacks the characteristic zigzag stripe of the Adder. The Adder may also be distinguished by its vertically slit pupil.

Sometimes the Adder is confused with the Slow-worm (*Anguis fragilis*), which is a leg-less lizard and not a snake at all. The Slow-worm is a smaller creature (40 - 45cm) with a glassy grey/brown appearance.



© Alan Hyde

Where will I see an Adder and is it dangerous?

The Adder has a wide spread distribution throughout the UK. Usually associated with open heathland in the southern regions, it also often occurs in dense woodland and in particular open areas within wooded regions, where sunny patches occur.

The Adder is the UK's only native venomous snake. **Seeing an adder is no cause for alarm**, these snakes are very placid and retiring creatures. People are usually only bitten during attempts to catch or handle them.

The venom is rarely fatal, the bite should however be taken seriously, and one should **seek prompt medical attention** if bitten by an Adder. Symptoms such as dizziness, vomiting and painful swelling and loss of mobility of the affected limb are not uncommon within hours of the bite. **Do not attempt any form of first aid** either on yourself or a victim of an Adder bite. The only helpful action is to immobilise affected limbs if possible and **keep the victim calm and reassured**, whilst medical attention is sort.

Adder bites are sometimes though rarely fatal to pets. Recent evidence suggests that the snakes venom is more potent during March/April after the animals leave hibernation, so extra caution should be taken when walking dogs at this time. Wear suitable footwear, keep dogs on leads and take care when sitting down in areas where Adders are known to occur.

The Adder is not a common garden visitor, though occasionally if conditions suit them they will take up residence.

MOST IMPORTANTLY - DO NOT TRY TO HANDLE ADDERS OR PROVOKE THEM IN ANY WAY.

Adders are protected under the Wildlife and Countryside Act 1981.

It is an offence to kill, harm or injure them

sell or trade them in any way

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**RESPONSE PLAN FOR EMERGENCY/INCIDENT/POLLUTION PREVENTION
RESPONSE**

Site: A5025 Off-line Highways Improvements

Contract No : 733127

March 2018

STRUCTURAL SOILS LIMITED
The Old School
Stillhouse Lane
Bedminster
BRISTOL
BS3 4EB

Tel: 0117 947 1000

DOCUMENT ISSUE RECORD

Contract No: 733127

Client: Horizon Nuclear Power Wylfa Limited

Contract: A5025 Off-line Highways Improvements

Document: Pollution Prevention Plan

Prepared by: A Dingle

Checked by: M Owen

Date: 05.03.2018

REVISION RECORD

Revision	Date	Description	Prepared by
0	05.03.2018	Draft Issue	A Dingle

STRUCTURAL SOILS LIMITED
The Old School
Stillhouse Lane
Bedminster
BRISTOL
BS3 4EB

Tel: 0117 947 1000

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- 2. Supervision and labour
 - 2.1 Structure and organisation, project level organogram
 - 2.2 Corporate level organogram showing key roles and contact details
- 3.0 Situations
 - 3.1 Elevated gas levels
 - 3.2 Encountering asbestos
 - 3.3 Service Damage
 - 3.4 Discovery/breakage of unknown services (tar pipe, tar tank, water tank)
 - 3.5 Contamination discharge
 - 3.6 Encountering of protected flora and fauna
 - 3.7 Elevated Noise
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 - 3.20 UXO management
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- 4. Personnel to be contacted

Introduction

This document should be used in conjunction with the Site Waste Management Plan, Health and Safety Plan and Environmental Management Plan where applicable. The disaster recovery plan for Structural Soils Limited may also be referenced.

1.0 Scope of Document

This document is to provide the basic plan for a series of events that have been deemed possible at the site following a review of the site and laboratory works to be undertaken.

2.0 Supervision and Labour

Project specific organogram

Person with overall responsibility for the site and laboratory works with regards to Environmental and Health and Safety Issues

Adrian Barby-Moule

Tel: 0117 9471000

Mobile: 07976 833616

3.0 Situations

3.1 Elevated gas levels

Site Works shall have gas monitoring equipment present if elevated levels are detected then the following actions shall be undertaken:

Stop Work Immediately

Move away from the area affected and monitor levels

After a period of time reassess levels (whilst wearing appropriate PPE), if gas generation is still occurring then install a gas control system (use of water plug, gas membrane) to reduce the amount of vapour being released.

3.2 Encountering Asbestos

Personnel are trained to identify potential asbestos containing materials (ACM) and will undertake the following procedure if a suspected asbestos containing material is identified.

Stop Work Immediately

Dampen down the area using clean water

Cover the work area with a sheet

Inform the personnel listed in section 4

Proceed only with suitable PPE and with correct containers eg red asbestos bags and labels, to collect samples only for asbestos identification, if instructed to do so the Senior Project Engineer.

3.3 Service Damage

Guidance note G5.15 Guidance on the avoidance of underground services will be followed on all borehole positions.

Should a known or unknown service be identified this will be recorded on the site reports and the client advised. An alternative location must be requested.

Should a service be damaged during the contract:

Stop work immediately

Ensure that the area is safe

Call the appropriate utility company to inform them of the incident, details are held in the Health and Safety Plan for Gas, Electricity, Telecommunications and Water. Contact details below.

Emergency Contact Details

Gas Leak Emergency 0800 111 999

Electricity

East Midlands - Central Networks: 0800 056 8090

Eastern Region - EDF Distribution: 0800 783 8838

London - EDF Distribution: 0800 028 0247

Manweb – Scottish Power: 0845 272 7999

Midlands - Central Networks : 0800 328 1111

Northern Electric - NEDL : 0800 668 877

Norweb - United Utilities : 0800 195 4141

Scottish Power – Scottish Power : 0845 272 7999

Scottish Hydro-Electric - S&SE : 0800 300 999

Seeboard - EDF Distribution: 0800 783 8866

Southern Electric - S&SE: 08457 708 090

**South Wales - Western Power Distribution: 0800
052 0400**

**South West - Western Power Distribution: 0800
365 900**

Yorkshire Electricity - YEDL: 0800 375 675

3.4 Discovery/breakage of unknown service

Should a known or unknown service be identified then this shall be recorded on the site reports and an alternative borehole location must be requested from the client.

Should an unknown service be damaged:

Stop work immediately

Ensure that the area is safe

Set up barrier system to prevent the spreading of fluids.

Ensure gas monitoring equipment is used to detect vapour release

Use spill kits to clean up small seepages

Contact Adrian Barby-Moule for further advice

If liquid is continuing to drain then contact suction tanker company to undertake removal of the liquid

Arrange repair

Dispose of waste as per the guidance given by the owner of the service

Complete relevant paperwork

Notify relevant authorities

3.5 Contamination Discharge

Material Safety Data Sheets for all chemical products and substances will be held on site by the supervising engineer, to be given to the emergency services, Environment Agency and any other governmental bodies involved in the pollution incident clear up procedures, where the volume involved requires a large scale clean up. Eg rupturing of a diesel tank – 1000-10,000 litres. All minor spillages will be dealt with using site spill kits.

Should any fluid be discharge beyond the spill trays in use for the drilling rigs the following procedure will be followed.

Ensure all drains are protected using spill kits

Use spill kit pads or granules to collect spilled contaminant

Contained material will be suitably bagged and removed from site for correct disposal

Site address/location:

Suspect contaminant – tell HNP what has been spilled; HNP will inform NRW

Approximate volume of contaminant – eg 10,000 litre diesel bowser ruptured

Adrian Barby-Moule will be informed of the incident as soon as is practicable.

Tel: 0117 9471000

Mobile: 07976 833616

All relevant paperwork will be completed and held on file.

3.6 Encountering Protected flora/fauna

Use the vehicle pack colour pages to assist with field identification of flora and fauna

Stop work upon positive or unconfirmed finding

Contact RSK Carter Ecological for advice, with photographs where possible

Contact Adrian Barby-Moule

Move borehole positions and follow advice given

3.7 Elevated Noise

Ensure all equipment has been maintained correctly prior to mobilisation

Identify the source of the noise, repair or abate as practicable

Ensure all noise abatement practices are in place

Contact Adrian Barby-Moule for advice

3.8 Elevated Dust

Dust suppression should be undertaken using a water bowser where appropriate

Indoors all available windows, doors and other openings to outdoors should be opened, checking that natural air flow is not making more dust airborne

Ensure all materials and arisings are stored correctly with tarpaulin covers

Ensure that drains are covered and that any water used for dust suppression is collected into suitable containers using a pump for correct disposal

Contact Adrian Barby-Moule for advice

3.9 Elevated Vapour/Air Pollution from equipment

Ensure equipment is maintained correctly prior to mobilisation

Turn off engines whenever possible, balance switch off against start up

Consider using white diesel rather than red diesel to reduce smoke

Maintain correct usage of equipment at all times, ie use the correct tool for the job

Avoid unnecessary journeys and maximise the use of multi-person vehicles

Avoid carrying excess weight in vehicles

Consider filtered fume extraction where required

3.10 Accidental Fires and Subsequent Damage

Do not smoke or use naked flames anywhere on the site

Dispose of all waste products which maybe flammable in a responsible manner eg extinguish cigarettes in sand buckets

Select lower flammability products wherever possible in the smallest practicable quantity

Material Safety Data Sheets for all chemical products and substances will be held on site by the supervising engineer, to be given to the emergency services if required.

Ensure any fire extinguishers are of the correct type before use, see MSDS for detailed information, when in doubt/if untrained – deploy a fire blanket for a small fire

3.11 Personal Injury

The first aider will immediately assess the situation, on going site works should be shut down/made safe as required to ensure that a pollution incident does not occur whilst dealing with an emergency.

3.12 Elevated Odour

At any time if the smell originating from the works becomes unidentifiable, is stronger than usual or is causing concerns to anyone in the vicinity the following procedure will be followed.

Gas readings will be undertaken, to check for unexpected contaminants

Site works will be stopped, if the smell is sinister or readings on the gas meter indicate a potential risk

The source of the smell will be identified if possible

If the source cannot be identified a check of the surrounding area will be undertaken to ensure the cause for concern is site based

Advice will be sought from Adrian Barby-Moule

3.13 Vibration

All equipment should be checked prior to use for any damage in transit and regularly maintained

Unusual vibrations may be caused by the positioning of the equipment and by assessing the source of the vibration a reduction in the effect maybe made

All staff will be aware of the effects that severe vibration may have on unstable structures and services, therefore will use dampening materials such as sand bags/straw to reduce this effect

3.14 Litter

All staff will be briefed aware of the environmental approach to litter (to prevent vermin), recycling and the need to remove all waste products to the site specific waste storage area, for segregation and correct disposal.

Extensive recycling facilities will be put in place on site, including: Plastics, wood, cardboard, metal, hazardous chemical waste and spill kits, paper, food waste.

Structural Soils is a licensed waste carrier Ref: CBDU135289.

3.15 Tracking of mud from site onto roads

Vehicles will be assessed prior to entering on to highways to ensure that where necessary the wheels and equipment are suitably clean.

Wheel washes and pressure wash areas will be provided as deemed necessary, with the appropriate interceptor facilities.

Where this is not possible, road sweepers will be hired in at regular intervals.

3.16 Unexpected contamination

The unknown nature of unexpected contamination with require notification of the engineer in charge of works immediately, with work ceasing in that area until decisions can be made to increase contaminated investigation procedures.

The new risks must be assessed and changes to working procedure implemented, all staff must be informed of the changes to status for the borehole/trial pit position.

The CDM co-ordinator will be informed as quickly as practicable to ensure that they have the opportunity to liaise with all other subcontractors who may be affected by the changing status of the location.

3.17 Invasive Plants

All staff must report findings of invasive plants (photos to assist with field identification are in the vehicle packs) to ensure that the spread is not accelerated or caused by the site operations.

Staff will be advised at the site briefing of any findings, with areas of restricted access, to prevent tubers and plant fragments entangling in the vehicle and equipment.

For sites with invasive plants known to be present, the guidance of an ecologist may be taken as to whether vehicle inspections would be required, where particularly problematic a reassessment as to the required presence of a field ecologist may be considered.

3.18 Infectious Diseases

Any area deemed under the control of FERA/DEFRA due to an outbreak of infectious diseases will be consulted prior to any site works commencing. Sprays for wheels using the official vibacide/bactericide will be obtained and carried on all vehicles. Guidelines will be given to staff as to how frequently and in what quantities the sprays should be used.

3.19 Lighting

Suitable lighting will be used to ensure that the site can operate safely, however consideration will be given to directional output and light outputs as low as feasible. In the event of light pollution causing concerns for local businesses, places of worship and other groups from the general public, consideration will be given to moving the lighting to reduce this impact.

3.20 UXO – High risk specific method statements and risk assessments apply if required.

3.21 Site specific pollution potential

No site specific pollution potentials have been identified at contract planning stage, however they will be listed here if uncovered during mobilisation or the duration of the site works.

4. Personnel to be contacted

SITE MANAGER:

Adam Dingle – M: 07817 686740

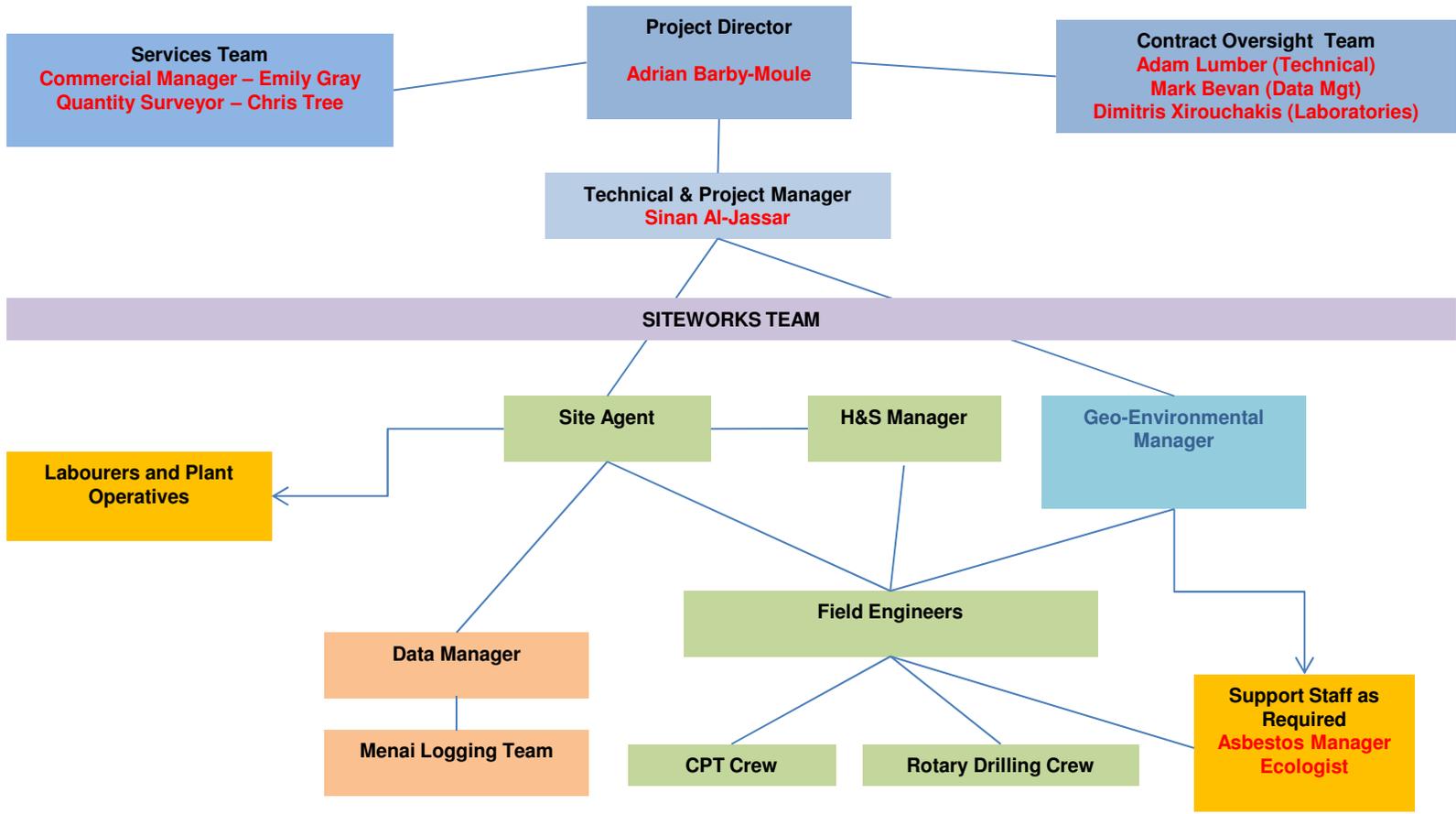
INCIDENT SUPPORT:

Rosalyn Cox – Environmental Engineer T: 01928 728080

Michael Owens – Environmental Engineer T: 01928 728080 M: 07793 365858

H&S MANAGER:

TBC – M: tbc





Biosecurity Guidance and Generic Risk Assessment for Terrestrial Ecology

WYLFA NEWYDD PROJECT

DCRM Ref Number: WN03.03.01-S5-PAC-REP-00025

Jacobs Ref Number: 60PO8033/TER/REP/002

Revision: 0.1

Additional Requirements or Controls		
LISTED READERS ONLY		LEGALLY PRIVILEGED

Comments:

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Approved by	EMT Representative			

HORIZON COMMERCIAL

Biosecurity Guidance and Generic Risk Assessment for Terrestrial Ecology	DCRM Reference No	Revision:	0.1
	WN03.03.01-S5-PAC-REP-00025	Issue date:	30/06/2015

Revision History				
Date	Rev No.	Summary of Changes	Ref Section	Purpose of Issue

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1 Introduction

This document has been prepared as a requirement by Natural Resources Wales (NRW) to assess and reduce the risk of a number of emerging and established risks to native Welsh biodiversity and ecosystems in the vicinity of the Wylfa Newydd Project. Such risks include the introduction of the Chytridiomycosis fungal disease to the amphibian population and the spread of Invasive Non-Native (INN) plant species, which are the focus of this document.

The document provides guidance and an account of biosecurity measures which are to be considered as part the various works associated with the Wylfa Newydd Project, which includes the A5025 road improvement works. This guidance will inform the Biosecurity Risk Assessments and Methods Statements which will be developed by the employer's contractor(s) for the range of work associated with the Wylfa Newydd Project.

2 Chytridiomycosis (*Batrachochytrium dendrobatidis* (Bd))

This Section of the document is relevant to:-

- The site operator;
- Engineering contractors;
- Operators of plant and machinery; and,
- Ecological contractors undertaking supervisory and monitoring works.

2.1 Background

A Chytrid type fungus was identified in Talacre and Johnstown in 2008 (Matt Ellis, NRW, pers. comm.), so is known to be present in North Wales. This fungus has affected amphibian populations globally and has caused the extinctions of species.

Transmission is via the movement of fungal zoospores from one water body to another. The most common and successful ways that zoospores spread from place to place are in water, moist or wet materials (including soil or equipment) or on the skin of infected amphibians from direct contact of an infected animal with an uninfected animal (e.g. during territorial or breeding encounters)¹. Chytridiomycosis ("Mycosis" = disease caused by a fungus) is the disease that occurs when an amphibian is infected with large numbers of the Bd fungus.

Table BS1 highlights the various means by which Chytridiomycosis can be transmitted and the associated control measures to which the employed contractors should adhere. The control measures will form part of the contractor's biosecurity risk assessment and method statement to prevent and avoid such transmission.

¹ Johnson, M.L., R. Speare. 2003. Survival of *Batrachochytrium dendrobatidis* in water: Quarantine and disease control implications, *Emerging Infectious Diseases* 9: 922-925.

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Table BS1: Transmission of Chytridiomycosis

Risk	Transmission Vector	Level of Risk	Consequences	Control Measures
Introduction of Chytridiomycosis to the amphibian population	Any equipment used to catch and transport amphibians as part of the mitigation programme, including personal protective equipment.	High if the personnel employed to translocate the amphibians have been involved in the surveying of ponds on other sites or if equipment has been used on other amphibian sites. Low if there has been no contact by personnel with other amphibian sites.	Potential extinction of amphibians across Wylfa Newydd Project sites and wider geographic extents	The most effective way of preventing the introduction of the disease is to use site or waterbody specific equipment, which should not be used elsewhere. If amphibians need to be handled, disposable vinyl gloves should be used. Latex must be avoided as this material is harmful to amphibians. If the individuals have worked on any other amphibian sites, boots must be disinfected prior to entering the new site. The disinfection process is detailed below.
As above	Any machinery used which have come into contact with an infected waterbody.	High if plant/machinery has been in contact with water on an infected site, otherwise low.	As above	The most effective way of preventing the introduction of the disease is to prevent vehicles and plant entering waterbodies. If prevention is unavoidable use site specific vehicles and plant which have not been used in other waterbodies and/or have been washed and disinfected. Any parts of vehicles or plant that have come into contact with water bodies off and on the site should be washed and disinfected. This must be carried out prior to starting works and well away from the waterbody in question.
Spread of Chytridiomycosis to other amphibian sites in the locality	Infected animals moving to other water bodies in the area with the potential to eventually affect the great crested newt populations across Anglesey.	High if the disease is introduced to the Wylfa Newydd Project sites, otherwise low.	Widespread infection of amphibian population.	Ensure that the above measures are adhered to.

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2.2 Control Measures for Contractors

The employer's contractor will ensure that good hygiene practices are in place throughout the duration of works and develop their own risk assessment and method statement to prevent the spread of Chytridiomycosis. The primary way of preventing transmission of this disease is by avoiding contact with water and this is particularly the case with large machinery which will be difficult to clean and disinfect.

The method statement will need to detail the process of working near waterbodies and the method of avoiding cross-contamination of water with the Chytrid type fungus. The general principle to be followed is that all equipment and machinery which may come into contact with amphibians or pond water should be washed and disinfected (detail on the procedure is given below). When handling disinfectants the work should be undertaken in accordance with the Control of Substances Hazardous to Health (COSHH) Regulations 2002 (as amended).

The cleaning and disinfection of vehicles and plant which have come into contact with waterbodies is important, but there is no one universal way to apply a disinfectant effectively. It is important that surfaces are clean before disinfectants are applied and pressure washing can be used. Contractors should choose a Defra approved disinfectant that is fit for purpose based on the manufacturer's instructions, (e.g. Virkon).

Personal and hand held equipment should be disinfected using one or a combination of the following methods:

- Wash the equipment thoroughly of any debris, plant fragments, mud etc.; and then,
- Soak in a bleach solution (1 measure of household bleach to 9 measures water) for 15 minutes; or
- Virkon for 1 minute (10 mg/ml, as per suppliers instructions. Note that when making up bleach or Virkon solutions, pond water can be used as long as it contains little or no organic matter as this reduces disinfectant effectiveness); or
- Washing, disinfection and thorough air drying of equipment (>24 hours) comprises the most effective method of control²;
- Fabrics including those worn while doing amphibian fieldwork can be washed on a 40°C cycle (with detergent, ensuring sufficient rinsing).
- Nets should be boiled for 10 minutes or if the fabric allows disinfected with spray bleach in a well ventilated area;
- Keep field gear (traps, net frames etc.) inside plastic bags during transit and storage to reduce the chance of transmitting Chytridiomycosis; and,
- It is essential that disinfectants are disposed of in accordance with the instructions on the container. These should take account of any requirements specified by the Natural Resource Wales. Used gloves can be disposed of as domestic rubbish.

² <http://www.nonnativespecies.org/home/index.cfm>

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2.3 Compliance

A contractor representative of each contractor and their personnel involved in any Wylfa Newydd Project works where there is a risk of Chytridiomycosis transmission must sign the declaration given in Appendix A. This confirms that they have read and understood the above guidance and will embed the applicable control measures as summarised in Table BS1 within their own respective biosecurity risk assessment and methods statement. Documentation of the approach to biosecurity by the employer's contractor will be required before works commence. Biosecurity matters must also form an integral part of the site induction process. The contractor's representative must ensure all information is conveyed to their relevant personnel via contractor written documentation informed by this document and toolbox talks.

3 Invasive Non-Native Plant Species

This section of the document is relevant to:-

- The site operator;
- Engineering contractors;
- Operators of plant and machinery;
- Suppliers of any new planting stock; and,
- Ecological contractors undertaking monitoring works.

3.1 Background

Invasive non-native (INN) plant species are an increasing problem throughout the UK. The characteristics of such plant species are varied and as such they can have the capacity to have a significant impact on native flora.

Table BS2 shares the various means by which INN plant species can be transmitted to and across various sites and the associated control measures to which the employed contractors must adhere to prevent such transmission.

3.2 Legal Implications

3.2.1 Invasive Non-Native Plant Species.

The Wildlife and Countryside Act 1981 (as amended) is the principal legislation dealing with INN plant species. Under this legislation, the introduction of any of the species listed within Schedule 9 of the Wildlife and Countryside Act 1981³, or allowing them to spread into the wild could constitute an offence. The Environmental Protection Act (1990) and associated regulations define Japanese knotweed contaminated soil or plant material as controlled waste and make provisions for their treatment and disposal.

³ <http://www.legislation.gov.uk/ukpga/1981/69/schedule/9>

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3.3 Compliance

A contractor representative of each contractor and their personnel involved in any Wylfa Newydd Project works, whereby there is a concern for the transmission of INN plant species, must sign the declaration given in Appendix B. This confirms that they have read and understood the above guidance and will embed the applicable control measures as summarised in Table BS2 within their own respective biosecurity risk assessment and methods statement. Additional documentation such as a detailed method statement of how the control measures have been achieved may also be required. Biosecurity matters must also form an integral part of the site induction process. The contractor's representative must ensure all information is conveyed to their relevant personnel via contractor written documentation informed by this document and toolbox talks.

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Table BS2: INN Plant Species Risk Assessment

Risk	Transmission Vector	Level of Risk	Consequences	Control Measures
Introduction of INN plant species	Material brought onto the site as part of the operations.	High	Introduction of INN plant species across the Wylfa Newydd Project sites	Site investigation reports must be produced for all donor sites and documentation confirming an absence of INN plant species will be required. This documentation must include a method statement on how this was carried out. *
Introduction of INN plant species	Plant parts and/or seeds introduced via mud on tools, boots, tyres, plant and machinery.	High	The introduction of INN plant species throughout the Wylfa Newydd Project sites and potentially into the wider landscape	All boots, tools, tyres, plant and machinery or any other possible transmission vector must be thoroughly cleaned. Facilities for cleaning boots etc. should be provided at the site office where site hygiene should be strictly enforced.
Introduction of INN plant species	Plant parts and/or seeds introduced via new planting stock brought onto the site Wylfa Newydd Project sites	High	As above	Written confirmation from the supplier that all new planting stock has been grown in an environment free from contamination by INN plant species. **
Spread of INN plant species throughout the Wylfa Newydd Project sites	Plant parts and/or seeds spread throughout Wylfa Newydd Project sites via mud on tools, boots, tyres, plant and machinery. All INN plant species present have the potential to be	High	As above	Areas containing Japanese knotweed must be clearly taped off and all vehicles and personnel should be excluded from these areas. The control of the Japanese knotweed should continue until this species is eradicated. Other measures to prevent the spread of INN plant species across the site include marking

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Risk	Transmission Vector	Level of Risk	Consequences	Control Measures
	spread throughout the sites during proposed works			locations of INN plant species; providing maps of known INN plant species locations to contractor; and including INN plant species identification/familiarisation material in the induction process.
Spread of INN plant species off the Wylfa Newydd Project sites	Plant parts and/or seeds carried off site via mud on tools, boots, tyres, plant and machinery	High	The spread of INN plant species onto other sites.	As above plus: All boots, tools, tyres, plant and machinery or any other possible transmission vector must be thoroughly cleaned. Facilities for wheel washing and the cleaning boots etc must be provided at a site office where site hygiene should be strictly enforced.
Continued infestation of the Wylfa Newydd Project sites by INN plant species	N/A	Medium	The spread of INN plant species throughout and off site.	The monitoring of INN plant species on the Wylfa Newydd Project sites should form an integral part of the construction environmental management plan (CEMP) but a specific INN plant species management plan should be developed by the employer's contractor and make provision for the long term control of all INN plant species. This should include all alien species , not just those known to be currently present.

* Documentation required stating that the material is free from contamination by INNs including a method statement on how the site investigation was carried out

** Documentation required from new planting stock supplier that the stock has been grown in an environment free from contamination by INNS.

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4 Risk Assessment Review

This guidance and generic risk assessment must be regularly reviewed taking into consideration the proposed works for each package of the Wylfa Newydd Project. This should not be a pre-scheduled review but should be influenced by new developments/information becoming available or new biosecurity risks which have not as yet been covered.

4.1 Recording

This guidance and generic risk assessment must be available for inspection as part of the auditing process of works carried out. This covers works outwith and under licence from the Welsh Government/NRW. A detailed log of the implementation of all of the measures detailed in this risk assessment must be saved and appropriately stored. This log must also be available for inspection from the Welsh Government/NRW and must contain all of the required additional documentation including the employer's contractor's biosecurity risk assessment and methods statement.

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Appendix A: Chytridiomycosis Declaration

<p>Name:</p> <p>Organisation:</p> <p>Position within company:</p> <p>Date:</p> <p>Additional documentation supplied: Yes/No</p> <p><i>If 'Yes' please give details:</i></p>

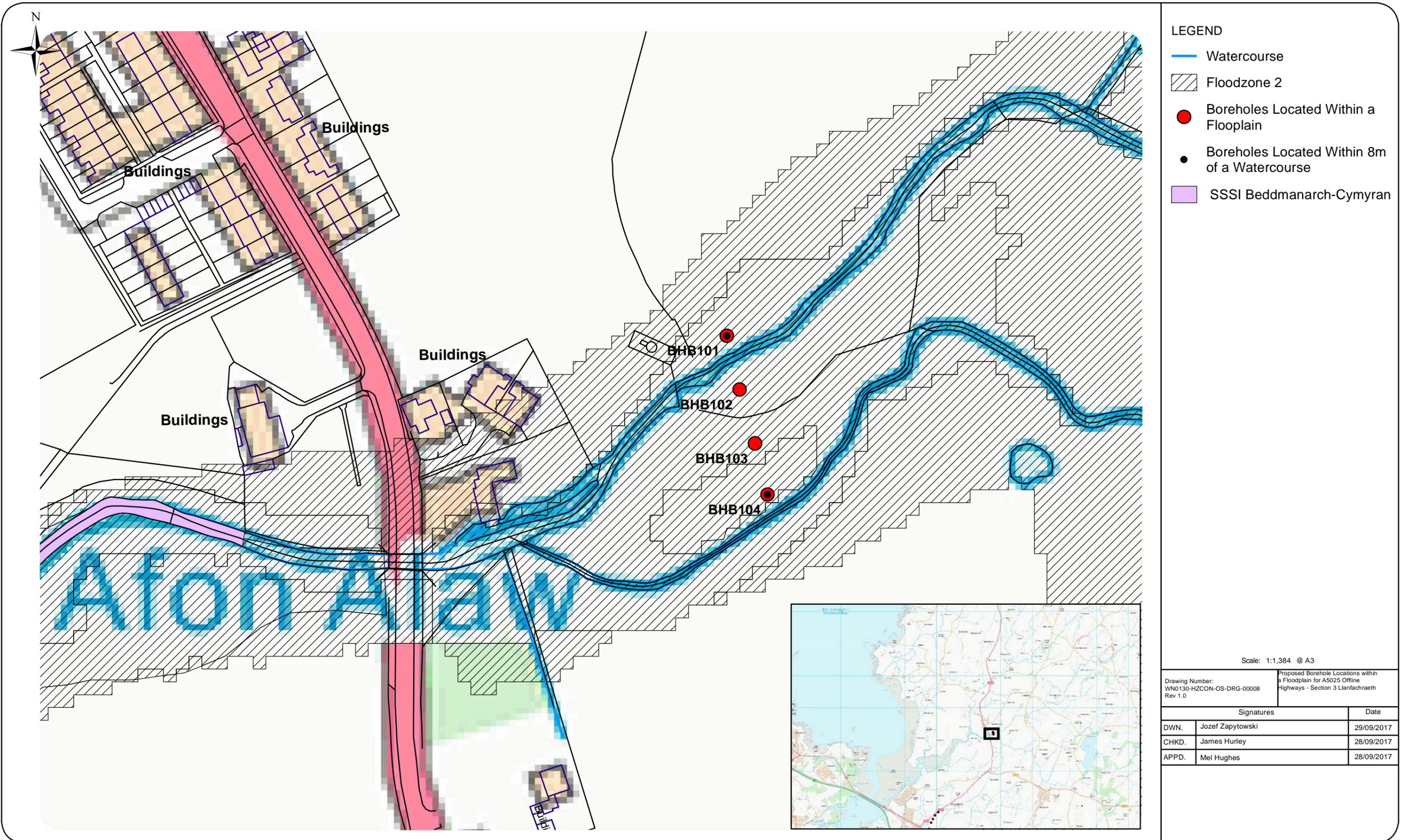
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Appendix B: Invasive Non-Native Plant Species Declaration

<p>Name:</p> <p>Organisation:</p> <p>Position within company:</p> <p>Date:</p> <p>Additional documentation supplied: Yes/No</p> <p><i>If 'Yes' please give details:</i></p>
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Proposed Borehole Locations within a Floodplain for A5025 Offline Highways - Section 3 Llanfachraeth



LEGEND

- Watercourse
- Floodzone 2
- Boreholes Located Within a Floodplain
- Boreholes Located Within 8m of a Watercourse
- SSSI Beddmanarch-Cymyran

Scale: 1:1,384 @ A3

Drawing Number: WN0130-HZCON-OS-DRG-00008 Rev 1.0		Proposed Borehole Locations within a Floodplain for A5025 Offline Highways - Section 3 Llanfachraeth	
Signatures		Date	
DWN.	Jozef Zapytowski	29/09/2017	
CHKD.	James Hurley	28/09/2017	
APPD.	Mel Hughes	28/09/2017	

Proposed Borehole Locations within a Floodplain for A5025 Offline Highways - Section 1 Valley

