



NIGG EAST QUAY DEVELOPMENT - CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

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1.0 Introduction

This CEMP document has been produced to set out the environmental controls and mitigation that will be implemented to ensure that all client and regulatory requirements applicable to the Nigg Energy Park – East Quay Development are met. This document has been prepared by Farrans and applies to the site of the marine works only i.e. the works to be undertaken by Farrans. The development of the land to the east of the marine works is the subject of a separate contract and associated Construction Environmental Management Documentation.

The CEMP is considered a live document and will be updated and reviewed as necessary as works progress to ensure Farrans are compliant with all legislative and client requirements. Revisions to the document will be noted in the amendment record sheet and the changes communicated to the relevant parties involved with the project.

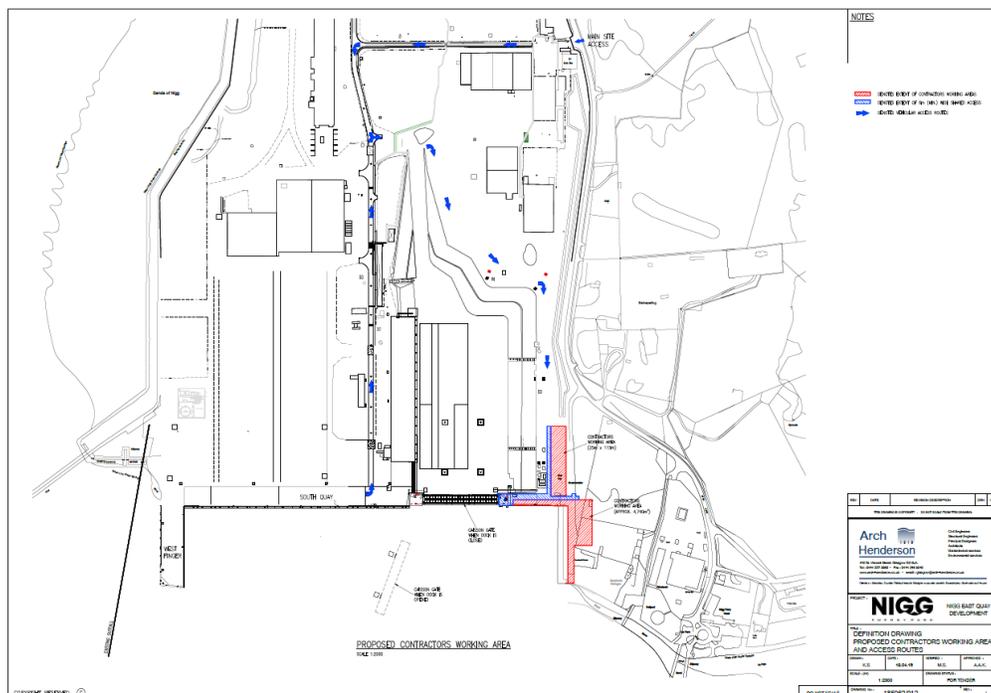
2.0 Project Description

The East Quay development at Nigg Energy Park (NEP) is intended to provide a new wet berth with heavy duty quays to serve the marine renewable energy market as well as the North Sea oil and gas markets.

Works consist of the detailed design, construction and commissioning of a 225m long finger jetty, along with the associated dredging operations. The works also include the supply and installation of quay side furniture and fittings to be installed at the quayside and quayside lighting.

NEP is located on the north side of the Cromarty Firth, approximately 8km east of Invergordon, Scotland. The site is centred at Ordnance Survey Grid Reference NH 79527 69016. The proposed jetty will extend southwards from the existing southern boundary of NEP and is located at the east side of the existing approach channel to the dry dock.

Drawing No. 185062-012 denotes the working area and vehicular access routes.



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2.1 Land Use

The existing Nigg Energy Park was originally developed in the 1970's to act as a construction dock and steel fabrication yard for the off-shore structures to be used in the North Sea Oil industry. The working area is situated within the confines of an operational port, which will remain operational for the duration of the contract.

The land to the east of the site is currently undeveloped and consists of areas of dense and scattered scrub, grassland, and ruderal vegetation. Sand and shingle above the high tide mark are also present both within and to the south of the site. An existing steel sheet piled sea wall lies within the site and will be incorporated into the works. Nigg Energy Park lies to the north of the site with open sea to the west.

Several designated sites are recorded adjacent to the site, which include: The Cromarty Frith SPA (Special Protection Area), The Moray Frith SAC (Special Area of Conservation) and the Dornoch Firth and Morrich Moore SPA. It is noted that the Sutors is one of the most important features within The Moray Firth SAC, particularly for bottlenose dolphin and harbour porpoise foraging and feeding.

Reference documents:

- *Nigg East Quay Volume 1: Environmental Impact Assessment Report (June 2019)*
- *Volume 2 Works Information, Part 1 – General Specification*

2.2 Ground Conditions

BGS records indicate the site is underlain by Marine Beach Deposits, comprising, clay, silts and sands, resting on the Raddery Sandstone Formation, consisting of reddish brown sandstone interbedded with marl.

The driving of piles is to be undertaken through different ground layers:

- Made ground layers consisting of granular material placed to build the reclaimed area where the current shore was developed. This layer is protected by large boulders next to the seafront, which need to be removed before driving.
- Below the made ground, or where exposed, the seabed material consists of marine deposits. They are made of sand and gravels of varying densities, generally medium dense in the upper horizon, becoming very dense with depth. Locally some cobbles and gravel horizons occur.
- Bedrock occurs below the granular sediments. The bedrock consists of reddish-brown sandstone.

Pile driving operations are to be undertaken mainly in the marine deposits. They are made of two different layers:

- An upper layer of loose to medium density where driving is expected to be easy.
- A lower layer of dense to very dense sand with gravels and cobbles (less than 120mm size) where driving is expected to be difficult.

Mitigation measures are discussed in section 25.0

Reference documents:

- *Nigg East Quay Volume 1: Environmental Impact Assessment Report (June 2019)*
- *Fugro, Ground Investigation without Geotechnical Evaluation Report East Quay Development – Marine Ground Investigation Nigg Bay, Scotland (May 2019).*

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- *Global Energy Nigg Limited East Quay Development Driveability Analysis*

3.0 Project Stakeholders

<p>Principal Contractor</p> <p>Farrans (Construction) Limited 99 Kingsway Dunmurry Belfast BT17 9NU</p> <p>Contact: Patrick Murray Tel: [Redacted] Email: PMurray@farrans.com</p>	<p>Principal Designer</p> <p>HBPW LLP 43 Bridgegate Retford Nottinghamshire DN22 7UX</p> <p>Contact: Paul Withers Tel: [Redacted] Email: P.Withers@HBPWconsulting.co.uk</p>
<p>Client</p> <p>Global Energy Group Nigg Energy Park Tain Ross-shire IV19 1QU</p> <p>Contact: Rory Gunn Tel: [Redacted] Email: Rory.Gunn@gegrou.com</p>	<p>Harbour Authority</p> <p>The Port of Cromarty Firth Port Office Shore Road Invergordon IV18 0HD</p> <p>Contact: Tel: Email:</p>
<p>Environmental Consultant</p> <p>EnviroCentre 8 Eagle Street Glasgow G4 9XA</p> <p>Contact: Campbell Fleming Tel: [Redacted] Email: cfleming@envirocentre.co.uk</p>	

4.0 Roles and Responsibilities

The following section addresses the roles and responsibilities designated to the Farrans project team.

A Project Organisation Chart is attached in Appendix 1.

4.1 Farrans Contract Manager

Farrans Contract Manager shall:

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- Provide information on contract requirements, including Scope of Works, to the Environmental Designee following contract award and prior to start of works on site, and when any changes occur.
- Nominate Environmental Designee and Waste Representative(s).
- Ensure the required consents are in place before work starts.
- Ensure environmental and waste requirements are included on requisitions and in subcontracts and orders.
- Ensure fulfilment of the environmental controls and mitigation measures outlined in the CEMP.
- Ensure oil, including diesel, is stored in properly bunded tanks / bowsers / drip trays.
- Ensure Waste Transfer Notes / Special Waste Consignment Notes are checked against invoices before payment.
- Report incidents and non-conformances to the Environmental Designee.
- Ensure the Environmental Designee is informed of any environmental complaints.
- Liaise with statutory authorities and Client as required and ensure records of communication (including verbal communication) are kept. Ensure statutory authorities are always accompanied on site visits.
- Include environmental performance, review of Contract Objectives and Targets (including environmental), review of Incidents and non-conformances at the Contract Review Meetings.
- Ensure controls are implemented by employees and subcontractors to avoid environmental damage and breach of legislation.
- Ensure employees and subcontractors receive Induction Training (including environmental rules).
- Ensure employees and subcontractors receive training in spill control.
- Ensure employees and subcontractors receive Environmental Toolbox Talks as well as Health & Safety Toolbox Talks.
- Verify actions resulting from Corrective Action Requests and Observations raised during audits are completed by the deadlines.

4.2 Farrans Environmental Designee

Farrans Environmental Designee shall:

- Report major incidents to the Contract Manager immediately, the Company Environmental Manager, the Company Insurance Department and Global Energy Nigg (GEN) Ltd.
- Carry out thorough investigations and provide reports to the Farrans project management team and GEN Project Manager after an environmental incident.
- Log and monitor incidents and non-conformances.

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- Obtain prior agreement from GEN Project Manager, the project ECoW (EnviroCentre), Farrans Contract Manager and the Farrans SHEQ Manager for any deviations from Environmental Procedures.
- Disseminate information issued by the Contract Manager and Company Environmental Manager, including changes to legislation, to relevant employees.
- Identify employees that require environmental training, provide or organise the training and maintain training records.
- Provide advice, deal with queries and correspondence on environmental issues.
- Liaise with the Company Environmental Manager and identify significant environmental impacts for the Project.
- Maintain the Project-Specific Environmental Management Plan.
- Undertake inspections to ensure controls are in place and working effectively.
- Monitor the progress in closing out Corrective Action Requests and Observations raised during audits.
- Provide report to the Contract Manager for delivery at progress meetings.
- Complete Environmental "Action Lists" and forward to the Contract Manager each month.
- Keep updated the Site Waste Management Plan.
- Ensure all records are retained and readily available.

Note

Method Statement authors will include environmental controls and obtain advice from the project ECoW when unsure of requirements.

The Procurement Department shall include environmental and waste requirements on orders and attach the relevant information.

4.3 Subcontractors

Subcontractors shall:

- Complete the project site induction prior to the commencement of works.
- Be cognisant of the requirements outlined in the CEMP.
- Submit Risk Assessments and Method Statements (RAMS) to Farrans for review.
- Read, understand and sign up to Farrans RAMS.
- Ensure appropriate controls are in place to mitigate environmental risks, including refuelling procedures, spillage response and waste management.

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- Attend daily briefings and training, including toolbox talks organised by Farrans.

4.4 All Staff

All Staff shall:

- In the event of an incident, stop work, implement control procedures and report the incident to Farrans Contract Manager who shall inform GEN Project Manager.
- Inform the Farrans Contract Manager when waste needs collecting.
- Pass any queries or correspondence on environmental issues to the Environmental Designee and Site Agent.
- Work in accordance with Environmental Procedures / Work Instructions, Contract Environmental Plan and Method Statements.

5.0 Consultation and Communication

It is the intention of Farrans that consultations and dialogue will continue throughout the planning and construction phases of the project, taking into consideration risks to environmental receptors, to ensure appropriate controls are in place.

Environmental issues will be communicated to staff and operatives at site induction. Environmental Toolbox talks will be delivered by the Environmental Designee, and records of attendance maintained.

Periodic environmental training will be organised as the need arises. For example, all operatives and staff will be provided with pollution incident response training to avoid adverse environmental impact.

Issues raised on site will be discussed at the weekly construction meetings and appropriate action taken by the responsible person identified. Environmental incidents will be reported to the Project Manager, recorded on a register and documented on the Farrans F123 Environmental Incident Report form, which will be reviewed by the Environmental Manager.

Consultations will continue throughout the project with GEN. Where updates and amendments are required, these will be highlighted in the CEMP.

6.0 Ecology and Biodiversity

The proposed site for development is situated within a marine environment and borders on several ecologically significant areas with protected status, which include: The Cromarty Frith SPA (Special Protection Area), The Moray Frith SAC (Special Area of Conservation) and the Dornoch Firth and Morrich More SAC. It is noted that the Sutors is one of the most important features within The Moray Firth SAC, particularly for bottlenose dolphin and harbour porpoise foraging and feeding. Therefore, any impacts on the hydrology has the potential to impact on surrounding areas of high ecological significance. Impacts on terrestrial ecology are discussed in section 6.2.

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6.1 Marine Ecology

A designated Marine Mammal Observer (MMO) will complete a watching brief during marine works, for open water impact piling if this is required and for dredging/disposal activities. The MMO will advise Farrans and our subcontractors when the mammals are outside the specified mitigation zone. No works will be permitted until confirmation is provided that the area is clear by the MMO. The MMO will retain a written record of all sightings affecting the works. Passive Acoustic Monitoring (PAM) support will be in place if necessary, for the duration of the piling works. It is the intention of Farrans to maintain a record of piling activity which will be made available upon request to the University of Aberdeen, further detail is provided in section 12.1.

It is envisaged that pile installation will be completed using a Drive Drill Drive Method, using a vibratory pile hammer. No impact piling is intended however, should impact piling be required, the MMPP described above shall be adhered to.

Work that is carried out on site will be done during times and in a manner, which will cause minimal, if any, disturbance and noise to the surrounding area, as described in the Marine Mammal Protection Plan.

6.2 Terrestrial Ecology

The following is noted from the terrestrial survey undertaken as part of the EIA process:

- No sensitive habitats were identified.
- No evidence of otter or badger were identified.
- Suitable habitat for birds was identified on the site.

Accordingly, nesting bird checks will be completed in sensitive areas throughout the construction phase and during the nesting bird season (March to August inclusive)

Mitigation measures are discussed in section 22.0.

Reference documents:

- *Nigg East Quay Volume 1: Environmental Impact Assessment Report (June 2019)*
- *Nigg East Quay, Technical Appendix 4.1: Marine Mammal Protection Plan*
- *Volume 4 Environmental Management Information*
- *EnviroCentre, Schedule of Mitigation – Nigg East Quay*
- *Work Instructions WI – 001 to WI – 016. A contents list is shown in Appendix 3.*
- *Ecologist's Environmental Check Point Schedule if required*

7.0 Archaeology and Cultural Heritage

The Archaeological Protocol shall be as described in the Wessex Archaeology Protocol set down in Appendix 6.

Reference documents:

- *Nigg East Quay Volume 1: Environmental Impact Assessment Report (June 2019)*
- *The Crown Estate – Protocol for Archaeological Discoveries: Offshore Renewables Projects.*
- *Wessex Archaeology (2021) Nigg Energy Park – East Quay Development Cromarty Firth, Scotland Archaeological Protocol. Report Ref: 248240.01*

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8.0 Water Issues

The works consist of construction of a 225m long finger jetty, along with the associated dredging operations. Construction works will present a potential environmental risk. Therefore, protection of the waterbody must be ensured throughout all phases of construction. As highlighted in the information below, all necessary measures will be taken around the site to ensure that the site remains free from any pollution/contamination incidents.

All efforts will be made to ensure that runoff emanating from the works do not discharge in contravention of Scottish Environmental legislation e.g. Water Environment (Controlled Activities) (Scotland) Regulations. Works within the marine environment will be controlled under the Marine Licence and will be undertaken in full compliance of SEPA's relevant PPGs.

The following controls will be implemented on site:

- Fuel, oil, and chemicals must be stored in bunded containers that can be securely locked.
- Spill kits will be stored at these locations and all staff and operatives trained in their use. Work Instructions WI – 001, and WI – 005 explain the procedures for storage and spillage response.
- Plant operators will be required to check their machines for leaks daily and record their findings. All fuel and oil leaks must be reported and repaired immediately. All items of plant will carry spill kits.
- Pumps and other fuel driven equipment must not be sited closer than 10m from the waters edge where practicably feasible.
- Small plant, including non-bunded generators must have a plant nappy in place when in use.
- Trucks delivering concrete must wash out in designated areas and away from controlled waters.

Reference documents:

- *Nigg East Quay Volume 1: Environmental Impact Assessment Report (June 2019)*
- *PPG 1: Understanding your environmental responsibilities – good environmental practices*
- *GPP 5: Works and maintenance in or near water*
- *PPG 6: Working at construction and demolition sites*
- *The Firth of Clyde Biosecurity Plan (2012-2016)*
- *Training Awareness Notes – Appendix 2*

8.1 Biosecurity Measures

Invasive Non-Native Species (INNS) are any animal or plant introduced (deliberately or accidentally) by human activity to an area which they do not naturally occur. There will be a low risk of spreading the INNS during the marine works due to the increased use of vessels in the area, spreading via hull fouling and transfer in ballast water. INNS of note include:

- *Wireweed*
- *Green sea-fingers*
- *Common cordgrass*
- *Red alga*
- *Acorn barnacle*
- Japanese skeleton shrimp
- Leathery sea squirt

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Mitigation measures shall be detailed in full within the subcontractors RAMS which will be reviewed by Farrans. It is anticipated INNS biosecurity control measures for marine works will include:

- A visual inspection of vessel hulls shall be undertaken by the appointed subcontractor prior to the vessel/equipment commencing its inbound journey to the site. This will ensure all visible submerged surfaces are free of bio-fouling.
- A visual inspection shall be undertaken the first time that a high risk vessel/equipment arrives at site to check for INNS.
- If a potential INNS is identified, the appointed person will report to Farrans and GEN.

No terrestrial INNS have been identified on site, however the following INNS good practice measures are to be followed on the site, including:

- Always arrive at a site with clean boots, vehicle and equipment and as far as possible also leave in that condition.
- Where possible park vehicle on hard standing and avoid vegetated areas
- At the end of a visit dispose of any used cleaning material appropriately.
- Avoid getting the interior of your car, pedals etc muddy as this is more difficult to clean.
- Where site visits involve crossing several land holdings, for example on public rights of way or open access land, take particular care to avoid livestock in these situations and ensure that your equipment is clean before the next site visit.

Tips for keeping boots and equipment clean include:

- Keep a brush, bucket and container of water in the boot of the car so you can clean your boots etc when you can't get access to a tap.
- Where appropriate ensure a cleaning kit(s) is available for use in vehicles used for site visits.
- In muddy conditions keep your boots handy (e.g. in passenger footwell) so that you can keep your normal shoes clean.
- Keep a spare pair of boots/walking boots in the car in case you're unable to clean your other pair.
- Wash any clothes that get muddy at the highest possible temperature as higher temperatures kill more pathogens.

8.2 Surface Water Management

Surface water management will be completed in accordance with Sustainable Drainage Systems (SuDS) guidance. No untreated surface water discharge will be discharged in to the surrounding coastal waters.

When pumping water from excavations ensure all surrounding water drains are identified, marked in the site documentation, protected and maintained. Ensure water is pumped into settlement tanks or similar, to separate silt and suspended particles, adopt a test and emergency plan and ensure appropriate controls are adequate. Carry out regular maintenance and inspection.

The Pollution Incident Response Plan (PIRP) will provide further detail of; the existing site drainage, treatment methods and new site drainage to be installed.

9.0 Energy

Energy will be used during construction for:

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- Fuel for the vehicles, plant and machinery used on the site;
- The transport of materials/waste to and from the site; and
- Electricity used for lighting and heating.

All plant will be serviced regularly to minimise emissions and inspected before being allowed on site.

Plant should be switched off when not in use.

Most work will be carried out in daylight hours, however evening and night time temporary lighting shall be required in the winter months. Artificial lighting will be directed to avoid disturbing nocturnal species such as bats.

Electricity usage for lighting and heating of the construction site offices and working areas is expected to be minimal. Staff will be encouraged to adopt a 'switch off' policy regarding lighting and heating when working in offices. Posters will be displayed highlighting energy wastage.

The Contract Manager should consider the use of infra-red detectors for security lighting, as opposed to continuous lighting.

Records of fuel and electricity usage shall be recorded in the Farrans F183 – CO2 Emissions Calculator and Water Use form.

10.0 Material Use

Materials generated on site as part of the construction activities will include;

- Approximately 165,000 m³ of dredged material, with an aim of reusing between 15,000m³ within the quay structure. The remaining dredged material, up to maximum of 150,000m³, shall be disposed of at the licensed dredge spoil deposit area, located at the mouth of the Cromarty Firth.
- Reuse of site won fill material for infilling of the quay. Up to 25,000m³ of suitable material is available from previous excavations at Nigg Energy Park.

In general, the use of materials on site will be based on a 'reduce, re-use, recycle' approach. It is proposed to reuse as much dredged material and stockpiled material as possible for backfill within the quayside structures.

All dredged material brought ashore for reuse will be stockpiled in a designated area and allowed to dry out prior to use as infill to the new quay. Materials will be stored to avoid wastage and deterioration of quality.

Materials to be imported to site include:

- Concrete 3,300 m³
- Steel 4,600 t
- Aggregate 110,000 t

All timber products must be derived from a sustainably managed source with a written declaration from the supplier. Timber will be stored under cover to avoid deterioration and wastage.

Hazardous materials will be stored in accordance with the COSHH requirements discussed in section 18.0.

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Reference documents:

- *Nigg East Quay Volume 1: Environmental Impact Assessment Report (June 2019)*
- *Volume 2 Works Information, Part 1 – General Specification*
- *Volume 2 Works Information, Part 2 – Technical Specification – Civil & Maritime Works*
- *Training Awareness Notes – Appendix 2*
- *Site Waste Management Plan*

11.0 Traffic and Transport

Access to NEP is restricted and is controlled at security gates, access will be permitted to pre-authorised vehicles only, in accordance with the Port Facility Security Plan.

Refer to the Construction Traffic Management Plan.

Reference documents:

- *Farrans Construction Traffic Management Plan*

12.0 Noise and Vibration

While some noise emissions will cause temporary impact, good communication between the site management team, the local Environmental Health Officer and local residents will ensure that such impacts are kept to a minimum by correct timing, silencing or other mitigation measures as discussed in section 25.0.

We shall liaise with the surrounding local authorities about noise, disturbance and working hours, and to comply with any restrictions imposed. Unless otherwise authorised, no noisy work shall be carried out outside the hours of 07.00 to 19.00. In the interests of protecting the amenity of residents and the working environment of persons employed in the locus of the site, we shall employ the "best practical means" as defined in the Control of Pollution Act 1974 to minimise noise levels and vibration resulting from the operations. We will ensure that all vehicles, plant and machinery used during the operations are fitted with effective exhaust silencers and that all parts of such vehicles, plant or machinery are maintained in good repair and in accordance with the manufacturer's instructions and are so operated as to minimise noise emissions. Only "sound reduced" compressors or other alternatives approved by the Local Authority should be used and any equipment or panel fitted by the manufacturer for the purpose of the reduction of noise should be maintained and operated so as to minimise noise.

Plant and machinery which is audible at the site boundary should only be operated within the site between the hours of 07:00 – 19:00 Monday to Friday, 07:00 – 13:00 Saturdays, inclusive, and at no time on Sundays and Local Holidays. Without prejudice to the requirements of the Conditions of Contract, we shall not carry out works outside of the core working hours, except where such work is required under the terms of the Contract or is absolutely necessary for the saving of life or property or for the safety of the works. It is envisaged that dredging works will be undertaken 24/7.

Reference documents:

- *Work Instruction WI – 007 'Noise and Vibration'*
- *BS 5228 – Code of practice for noise and vibration control on construction and open sites. Noise*

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- *BS 7385 – Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration*

12.1 Passive Acoustic Monitoring

Passive Acoustic Monitoring (PAM) systems may be utilised for the detection of vocalising marine mammals, including bottlenose dolphin and harbour porpoise. Any PAM system will be suitably located to ensure spatial coverage for monitoring of construction noise generation within the marine mammal mitigation zone.

The Farrans project team will ensure that our subcontractor(s) maintain a piling log for the site and a record of when in water works start and finish, in turn this information shall be shared with the University of Aberdeen.

Reference documents:

- *Nigg East Quay Volume 1: Environmental Impact Assessment Report (June 2019)*
- *EnviroCentre, Schedule of Mitigation – Nigg East Quay*
- *Nigg East Quay, Technical Appendix 4.1: Marine Mammal Protection Plan*

13.0 Community Relations

In the first instance, the Farrans project team shall report on progress to the GEN project manager. To ensure that the project has minimal disruptions, GEN will establish a community liaison group, which shall meet at least quarterly to ensure ongoing liaison with neighbours regarding the maintenance of access, deliveries etc. The community liaison group shall be chaired by a representative of the Highland Council and invitees will include council delegates, local community leaders, Scottish Natural Heritage, SEPA, Marine Scotland and the Police.

Complaints will be addressed efficiently, and all efforts made to maintain good working relations between all parties. Complaints will be documented on 'Complaint Logs' and reviewed at monthly progress meetings.

Operatives employed on site will be informed at site induction of the importance of maintaining good relations.

14.0 Emissions

Emissions during construction will consist of light, dust, and fumes which may cause a nuisance to people and wildlife nearby.

The site will be generally unlit at night. In poor light conditions during normal working hours and when 24-hour operations (dredging) are being undertaken, temporary lighting units powered by portable generators will be used where necessary to ensure safe working and/or site security. They will be positioned in such a way as to minimise glare to residents, motorists, and animals.

Most machinery used on site will be powered by diesel engines. To control the emission of excessive exhaust fumes and smoke, Farrans and their contractors will ensure that all vehicles and items of plant and equipment are correctly adjusted and maintained. Refer to Work Instruction WI – 015 'Control of Emissions and Odours'.

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Inevitably a certain amount of dust will be produced during dry weather conditions. However, every effort will be made to keep this to a minimum. Vehicle speeds will be restricted on site to minimise dust generation (recommended 10mph). Where appropriate, water will be sprayed onto the surface to dampen the surface and thereby reduce dust generation.

Precautions will be taken to minimise the deposit of mud and dust on the roads, but this cannot be avoided completely. Any such deposits will be removed regularly using road brushes and vacuum road sweepers.

Burning of materials will not be permitted on site. Burning of wood requires a waste exemption licence, exemption 30 of Schedule 2, of the Waste Management Licensing Regulations.

Reference documents:

- *Work Instruction WI – 008 ‘Control of Dust’*
- *Work Instruction WI – 015 ‘Control of Emissions and Odours’*

15.0 Socio-Economic

It is not foreseen that any of the works associated with the project will affect the socio-economic balance of the local and surrounding area. There is sufficient space to undertake the works safely without affecting the navigation of the channel and there are no works required out with the private site boundary.

Conversely, there is likely to be an economic benefit through the employment, where possible, of local labour and the use of local supply chain.

16.0 Natural Resources

Natural resources will be sourced locally where practicable to reduce the impact of transportation. However, due to the specialist requirements of parts of the scheme, this may not always be possible. Mitigation measures will be in place to minimise wastage, including the reuse of aggregates (where they are available and meet the relevant specifications).

The objective of Farrans and our subcontractors will be to conserve natural resources where possible.

Dredged material

Nearby Cromarty Firth will be dredged in order to clear obstructions from the line of the new jetty. This process will be carried out according to BS 6439-5:1991 *Maritime structures - Code of practice for dredging and land reclamation*, which will minimise impact on the environment. It is proposed to reuse as much dredged material as possible for infill at the quayside structures.

Graded Aggregate/Gravel

Granular fill material used for bedding or surrounding to pipework will protect pipelines from possible damage, caused by cyclical loadings due to traffic.

A significant quantity of sand and aggregate will be used in the production of concrete. Concrete wastage will be kept to a minimum and surplus will be used for blinding layers, etc.

Timber

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It is envisaged that the use of timber on this project will be minimal; however its use will depend upon the specification of the Designers.

Stone and Hard Core

Stone and hard core will be used for temporary compounds, and parking areas. Where possible, secondary aggregates will be used in preference to primary materials, providing they meet the relevant specifications.

Energy Use

In addition to the manufacture of cement, steel and building materials, energy will be used during construction for:

- Fuel for the vehicles, plant and machinery used on the site
- The transport of materials/waste to and from the site
- Electricity used for lighting and heating

To ensure that the project is completed safely and efficiently, a variety of machines will be needed during the construction phase. All plant will be serviced regularly to minimise emissions and inspected before being allowed on site.

Water Use

Water will be used in small quantities for cleaning, toilet facilities and vehicle washing, etc.

17.0 Waste Management

The proper management and handling of waste on-site is essential to ensure that pollution and increased levels of contamination are minimised.

Effective management of waste on site will consist of the following measures:

- Closed skip containers
- No dumping / littering policy on site Regular clean-up of the site.

When subcontractors are transporting waste to licensed tips they shall:

- Be in possession of a Waste Carrier Licence. When sub-contractors sub-let haulage of waste off site, each haulier or subcontractor must be in possession of their own waste carrier license to comply with waste legislation.
- Complete Waste Transfer Notes / Special Waste Consignment Notes and submit to the Environmental Designee.
- Only take waste to a licensed Waste Management Site or Waste Exempt Site, as instructed by the site management team.
- Complete Tipping Dockets/Tickets and give to the Environmental Designee.

The following table summarises the potential types of wastes that can be generated during construction of a project and indicates the most appropriate method of disposal.

ACTIVITY	WASTE GENERATED	DISPOSAL RECOMMENDATION
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Site operations	Office rubbish, paper, packaging, canteen refuse, etc	Recycle as much as possible, segregate food and canteen waste for composting. Avoid sending to landfill.
Site operations	Waste from site	Collect in covered skips and send to a licensed waste disposal site
Site operations	Scrap metal and re-bar	Send to recycling facility
Site operations	Wood	Send to a recycling or licensed waste transfer station
Site operations	Concrete	Re-use surplus for blinding layers, etc, or break up for re-use as hardcore.
Site operations	Sewage	If no mains sewerage connection is available on site, disposal to be completed by a waste management contractor
Site operations	Contaminated water	Use settlement techniques in accordance with recommendations by SEPA and SuDS best practice guidance
Site maintenance of plant	Workshop waste, e.g., oil, filter, paint etc	Collect for off-site disposal - Special wastes to be segregated on site and disposed of by a licensed waste carrier
Backfilling and grading	Surplus spoil	Take to licensed waste disposal site, or site that is exempt from waste management licensing.
Reinstatement	Temporary stone areas	Remove to waste exempt site
Reinstatement	Temporary fencing	Re-use elsewhere

Reference documents:

- *Site Waste Management Plan*
- *Work Instruction WI – 002 ‘Waste Management’*

18.0 Hazardous Substance Management

The table below indicates the types of hazardous substances and subsequently special wastes that may be generated during the construction program.

CATEGORY	DESCRIPTION / EXAMPLES
Oils and solvents	Oily rags, thinners, solvents, degreasers, hydraulic fluids, lube oils, used oil spill clean-up/absorbent materials and associated contaminated soil, and empty oil containers
Paint	Primers, paints and empty cans
Epoxy coatings	Used for coating pipe joints or repairing damaged factory applied coatings
Contaminated ground	Made ground, refuelling areas
Batteries	Lead acid
Fluorescent tubes	From site offices
Drilling muds	Only if contaminated as bentonite muds are generally used
Pigging debris	Water/contaminated debris.

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Subcontractors will be required to submit COSHH assessments for review by an appointed member of Farrans management team. COSHH assessments will be reviewed using information from the material safety data sheet (MSDS), also submitted by subcontractors.

COSHH assessments will be audited by the Project Health & Safety Officer.

COSHH Assessment must contain the following information: -

1. identifying the substance
2. describing how it is used
3. detailing the number and type of employees who are exposed to the risk
4. classifying the hazard (s) likely to be encountered
5. outlining the routes of entry to the body
6. describing the steps to be taken to minimise the risk
7. identifying appropriate local exhaust ventilation, if deemed necessary
8. health surveillance requirements
9. information, instruction and training requirements
10. first aid measures
11. storage requirements
12. disposal recommendations
13. risk level assessment

It will be the responsibility of the subcontractor to review and revise their COSHH assessments in the event of ill health or accident, changes in legislation, changes in work procedure, use of new plant and equipment, or other substantive reason.

No asbestos containing materials (ACMs) are identified within the site. If asbestos containing materials are identified during the construction works, removal will be undertaken by a licensed contractor in accordance with the Control of Asbestos Regulations and HSE guidance. As each work area is cleared of asbestos, clearance testing and certification will be undertaken. All ACM will be disposed of as special waste by a licensed waste carrier to an appropriate waste facility.

A register of hazardous substances will be maintained on site for review by the Company Health & Safety Department. Deliveries of hazardous substances will be to suit the requirements of the programme avoiding lengthy storage periods and taking cognisance of shelf life.

Hazardous substances will be segregated and stored to prevent unplanned escape to the environment. Cement will be stored in a lockable store, whilst liquids will be stored within a bunded facility. All diesel tanks, whether static or mobile, will be fully bunded to retain at least 110% of the volume. Storage facilities will be sited as far as possible from the Firths water edge, operational processes and existing drains. Inspections will be carried out on bunds and stores on a regular basis with weekly monitoring being documented on the Company 'Weekly Health & Safety and Environmental Checklist'.

Spill kits suitable for the absorption of the stored substance will be maintained at storage areas, and operatives trained in their use. Work Instruction WI – 001 'Storage, Housekeeping and Use of Fuels, Oils, Paints, and Chemicals' will be implemented as part of our environmental management system.

Special waste will be segregated and disposed of in accordance with *The Special Waste Regulations*.

The regulations prohibit the mixing of hazardous waste without a permit.

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Special waste is considered mixed if it has been mixed with:

- (a) a different category of hazardous waste
- (b) a non-hazardous waste; or
- (c) any other substance or material

A waste is considered a special waste if it displays any of the properties specified in Part II of the schedule within the Hazardous Waste Directive. Farrans and subcontractors must ensure that waste described as Special Waste must not be mixed with different categories of hazardous materials, non-hazardous waste, or any other substance or material. Each category of special waste must be separated for disposal.

Reference documents:

- *Site Waste Management Plan*
- *Work Instruction WI – 001 ‘Storage, Housekeeping and Use of Fuels, Oils, Paints, and Chemicals*
- *The Special Waste Regulations*
- *The List of Wastes Regulations*

19.0 Pollution Incident Response Plan

Farrans will produce a Pollution Incident Response Plan (PIRP) as part of the Environmental Management plan for the Contract. The PIRP will:

- Detail potential environmental incidents and the appropriate response required.
- Provide details of the 24-hour Environmental Emergency Response Crew to be available throughout construction.
- Provide a list of statutory bodies to be contacted in the case of an Environmental Emergency.
- Detail the appropriate reporting procedure required for near misses, incident and accidents, and a template report form for same.
- Provide a list of pollution response contractors to be contacted in the case of an Environmental Emergency.
- Require all personnel to undertake a site induction which will include an Environmental “Tool Box” workshop that includes Pollution Incident Response Plan.

Reference document:

- *Farrans Pollution Incident Response Plan*

20.0 Summary of Environmental Aspects

Description	<i>Tick as applicable (✓)</i>
(1) Noise generation from construction plant and equipment	✓
(2) Fuel consumption by construction plant and equipment	✓
(3) Electricity consumption in offices	✓
(4) Waste generation in offices and on site	✓

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(5)	Special waste generation on site	✓
(6)	Water consumption	✓
(7)	Raw material consumption	✓
(8)	Fuel and oil release from construction plant and equipment	✓
(9)	Discharge of chlorinated water after cleansing / testing	
(10)	Discharge of suspended solids	✓
(11)	Possible release of asbestos fibres to the atmosphere (from working with old asbestos pipes or within demolition works)	✓
(12)	Release of chemicals to the environment	✓
(13)	Traffic management	✓
(14)	Release of wash water from concrete delivery trucks	✓
(15)	Release of emissions by construction plant and equipment	✓
(16)	Spills and leaks from construction plant and equipment	✓
(17)	Smoke emission	
(18)	Acid release	
(19)	Working near wildlife	✓
(20)	Working near protected wildlife	✓
(21)	Working near rare plants	
(22)	Working near invasive non-native species	✓
(23)	Working close to trees	
(24)	Working close to tree(s) with preservation order(s)	
(25)	Working through hedgerows	
(26)	Working close to listed building(s)	
(27)	Working close to archaeological features	✓
(28)	Working outside 'working area'	✓
(29)	Light emissions from temporary lighting equipment	✓
(30)	Discovery of fallen animals (carcasses)	✓
(31)	Deposition of mud on roads	✓

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|------|---|---|
| (32) | Working near foul sewers / septic tanks | ✓ |
| (33) | Vehicle washing | ✓ |
| (34) | Handling and storage of excavated materials | ✓ |
| (35) | Handling and storage of dredged materials | ✓ |

21.0 Summary of Environmental Impacts

	Description	<i>Tick as applicable (✓)</i>
(1)	Nuisance from noise generation caused by construction plant and equipment	✓
(2)	Nuisance from vibration from construction plant and equipment	✓
(3)	Waterway pollution through discharge of water containing chloros	
(4)	Waterway pollution through discharge of water containing suspended solids	✓
(5)	Water resource depleted through charging new pipelines for testing	✓
(6)	Contamination of land and groundwater through oil and fuel leaks	✓
(7)	Contamination of land and groundwater through chemical spills	✓
(8)	Contamination of land and groundwater through acid spills from batteries	
(9)	Increased CO ₂ from energy use	✓
(10)	Nuisance caused by litter	✓
(11)	Contamination of land and water by litter	✓
(12)	Waterway pollution from cement wash during truck wash out	✓
(13)	Waterway pollution from escape of oil, fuel, grease	✓
(14)	Waterway pollution from escape of battery acid	
(15)	Air pollution through emissions from construction plant and equipment	✓
(16)	Air pollution from smoke caused by lighting fires	
(17)	Disturbance to wildlife	✓
(18)	Disturbance to protected wildlife	✓
(19)	Damage to rare and protected plants	
(20)	Spread of invasive non-native species	✓
(21)	Damage to trees	

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- (22) Damage to trees with preservation orders
- (23) Damage to hedgerows
- (24) Damage to land outside 'working area' ✓
- (25) Nuisance from light pollution ✓
- (26) Danger to motorists when mud on roads ✓
- (27) Spread of disease on discovery of fallen animals (carcasses) ✓
- (28) Water pollution from damaged foul sewers and septic tanks ✓
- (29) Pollution of waterways from vehicle washing ✓
- (30) Damage to soil structure from poor soil handling and storage techniques. ✓
- (31) Water pollution from suspended solids being transported to controlled waters ✓

22.0 Planned Mitigation Measures

MARINE / LAND	ASPECT	ENVIRONMENTAL IMPACT	OPERATIONAL CONTROL MEASURES	RESPONSIBILITY
Both	Light emission through inappropriately sited temporary lighting for work activities	<ul style="list-style-type: none"> Light pollution 	<ul style="list-style-type: none"> Ensure that artificial lights are sited to avoid glare Set up artificial lights and check if causing glare Ensure artificial lights are directed at the working area Follow guidelines regarding working hours 	Site Engineer Environmental Designee
Land	Nuisance and disturbance from excessive noise	<ul style="list-style-type: none"> Noise pollution 	<ul style="list-style-type: none"> Use plant that is suitably silenced Minimise drop height when filling lorries If necessary, use screens to reduce direct noise transmission Items of plant and equipment to be serviced in accordance with maintenance programme Use only plant conforming with relevant standards and directives on emissions Ensure doors are well sealed, and kept closed on compressors when working in noise sensitive areas Operate plant properly so that it does not cause excessive noise – avoid needless revving Minimise machine ‘idling’ Inform local community of programme of works 	Site Engineer Environmental Designee
Both	Damage to materials through inappropriate off loading and storage methods	<ul style="list-style-type: none"> Damaged materials cause unnecessary waste creation and use of natural resources 	<ul style="list-style-type: none"> Handle and store materials to avoid damage Order materials to suit the requirements of the programme Avoid over ordering Avoid repetitive handling Reuse materials where possible to keep them out of the waste stream 	Site Engineer
Land	Waste generation	<ul style="list-style-type: none"> Water pollution and site untidiness 	<ul style="list-style-type: none"> Use covered / netted skip for collection and storage of waste Refer to Site Waste Management Plan Comply with ‘Duty of Care’ legislation – ensure all hauliers of waste are in possession of a Waste Carriers Licence and provide Waste Transfer Notes for waste off site. Ensure waste is disposed at a licensed tip or site with a Waste Exemption Licence. Request copy of Waste Exemption Licence and keep on file to satisfy waste duty of care requirements Remember: Copies of Waste Transfer Notes must be held for 2 years, and Special Waste Consignment Notes held on file for 3 years to comply with legislation 	Site Engineer Environmental Designee

			<ul style="list-style-type: none"> Ensure Site Waste Management Plan is kept updated and submitted to the Environmental Manager. Waste management data sheet to be updated on a regular basis. Refer to WI – 002 	
Land	Release of oils, diesel, and chemicals from storage area	<ul style="list-style-type: none"> Unplanned release of oils, diesel, and chemicals can cause land contamination and water pollution 	<ul style="list-style-type: none"> Establish centralised, suitably bunded, dedicated storage areas with 110% capacity for the oils and chemicals stored within. Ensure adequate spill kit provision, i.e., oil absorbent materials and update spill kit register to ensure stock is replenished. Keep small quantities of fuel and oil in leak-proof containers, in the site store within bund tray Maintain housekeeping inside the store. Ensure a clear walkway, free from tripping hazards and spills of oil, etc. Mobile diesel bowsers must be fully bunded. Ensure that hose is returned to housing after use, and locked Bulk fuel may be stored in static tanks. These must be bunded to retain 110% of the volume of the storage tank. Minimum clearance of 750mm between tank and bund wall is recommended. Ensure the delivery hose is kept within the bund. An oil spill containment boom will be erected at the waterside to catch any pollution runoff. Store chemicals in ventilated area. Consult with Product Data Sheets and COSHH assessments and follow advice and requirements. Chemicals to be stored within a secure bunded facility Maintain register of hazardous substances Keep at least 30m from a waterway and at least 50m from a borehole, well or spring. 	Site Agent Site Engineer Environmental Designee
Both	<p>The potential for uncontrolled release of diesel during filling</p> <p>Potential for leaks from hydraulic hoses</p>	<ul style="list-style-type: none"> Diesel can kill vegetation and cause severe water pollution and land contamination Water pollution and land contamination from leaking or burst hydraulic hoses 	<ul style="list-style-type: none"> Refuel using funnel or hose with trigger handle. Mop up small spillage using oil absorbent spill kit. Dispose of contaminated spill materials as special waste. Daily checks to be carried out on hydraulic hoses by competent person. If there are signs of damage or fatigue, repair / replace immediately. Top up hydraulic oil at designated fuel/oil depot. Keep at least 30m away from waterway(s) or drain leading to a waterway(s). Always keep spill kit close by. 	Site Agent Site Engineer Environmental Designee

	<p>Accidental damage to existing live pipe-work leading to flooding</p> <p>Discharge of suspended solids via land drains</p>	<ul style="list-style-type: none"> • Pollution of nearby waterway(s) from surface run-off containing suspended solids • Pollution of nearby waterway(s) from suspended solids escaping down land drains 	<ul style="list-style-type: none"> • Equipment to be maintained, operated, and inspected by competent person(s) • All operatives to be informed not to take instructions from anyone other than a member of the site management team (staff). • No excavations to be carried out without permission from site management. This is to avoid accidental damage to existing pipe-work that carries water or sewage. • Existing pipe-work to be identified and marked out on site. Task talk to be given to excavator operators informing them of the position of existing pipe-work carrying water or sewage. • Allow suspended solids to settle out prior to entering a waterway(s). Pump to a settlement tank or pit. Dig cut off trenches where ground slopes to waterway. Lead runoff to settlement pit, before discharging through sediment sock/bag. • Dredging shall be done in accordance with BS 6439. • All land drains to be marked out on site and high risk drains temporarily blocked off to prevent carriage of suspended solids to nearby waterway. • Refer to Work Instructions WI – 001, WI – 007, WI – 009. • Refer to PPG1 ‘General guide to the prevention of water pollution’; GPP5 ‘Works and maintenance in or near water’; PPG6 ‘Working at construction and demolition sites’. 	
Land	Accidental damage to the existing live pipe-work	<ul style="list-style-type: none"> • Flooding 	<ul style="list-style-type: none"> • Existing pipe-work to be identified and marked out on site. Task talk to be given to excavator operators informing them of the position of existing pipe-work for utility services. 	Site Agent Site Engineer
Both	Release of cement to controlled waters	<ul style="list-style-type: none"> • Pollution of water from cement washings from concrete trucks and tools 	<ul style="list-style-type: none"> • Store cement in dry conditions to protect and preserve quality. Do not leave outdoors to deteriorate and become waste. • Use gloves when handling cement to prevent burns and dermatitis. • Wash out concrete delivery trucks at the designated concrete wash out. • Do not wash tools contaminated with concrete in a waterway • Instruct driver of delivery truck to wash out in designated area / wash out pit. • Refer to WI – 003 	Site Engineer
Both	Release of shutter oil to land and water	<ul style="list-style-type: none"> • Pollution of water and contamination of land 	<ul style="list-style-type: none"> • Use shutter release oil that is environmentally friendly • Store shutter release oil in bunded facility in site store • Return containers of shutter oil to the site store at the end of each shift 	Site Engineer

			<ul style="list-style-type: none"> Don't spray or spill shutter release oil on the ground. Cover ground with polythene. 	
Land	Drainage systems	<ul style="list-style-type: none"> Failure to replace to original condition 	<ul style="list-style-type: none"> Installation of new surface water drainage to comply with the designer's specification. Drainage systems will be reinstated after construction to provide the same drainage regime. Drains must be identified and marked for ease of re-location. 	Site Engineer
Marine	Dredging	<ul style="list-style-type: none"> Pollution of controlled waters due to uncontrolled escape of sediment. 	<ul style="list-style-type: none"> Measures to be implemented on board the dredging vessel include; utilising special designed cutter heads, degassing systems, monitoring, careful navigation in shallow water, limit overflow, and avoid spillage from open barges/hoppers. Dredged spoil material not to be reuse at the quayside structure is to be disposed of at the agreed disposal site. 	Site Agent Site Engineer Environmental Designee
Both	Piling	<ul style="list-style-type: none"> Noise pollution causing nuisance to neighbours and sensitive receptors 	<ul style="list-style-type: none"> Work within agreed hours and mitigate all noise where possible. Review environmental assessment for site for any sensitive receptors in the area. Try to use environmentally friendly pile driving rigs with reduced noise and vibration. Implement soft start to ward off marine mammals and aquatic species, gradually ramping up Carry out vibration monitoring on a regular basis where necessary and work within agreed hours. Review EIA and consult project ECoW (EnviroCentre) for any sensitive wildlife in the vicinity of the working area. 	Site Agent Site Engineer Environmental Designee
Land	Excavations	<ul style="list-style-type: none"> Migration of dust causing nuisance and pollution during dry weather spells Local noise and exhaust pollution from excavation works when plant is in use Excavation collapse causing disturbance to land in the area (dust, debris, etc). 	<ul style="list-style-type: none"> Where possible utilise water bowsers, dust screening and adequate dust suppression to reduce the generation and migration of dust to surrounding areas. Review weather forecasts to determine future weather and ensure contingency plans in place. Ensure all plant are regularly maintained to give optimum performance. Only authorised and trained operators to be used. Adhere to site working hours. Carry out excavations in line with the method statements and drawing(s) as supplied. Ensure emergency plans in place. Erect containment screens where collapse may migrate to prohibited areas, carry out checks during excavation activities to prevent uncontrolled collapse. Ensure emergency plans specific to the site are created and implemented before the work commences. Consult the drawings regarding location of 	Site Agent Site Engineer Environmental Designee

		<ul style="list-style-type: none"> Accidentally striking live services causing explosive/fire. 	<p>services and ensure formal termination notification received. Carry out CAT scans before starting.</p>	
Both	Dewatering	<ul style="list-style-type: none"> Pollution of controlled waters due to uncontrolled escape of contaminated water 	<ul style="list-style-type: none"> Identify all likely pathways which could lead to controlled waters and sensitive groundwater. Where practicable or required carryout treatment of water prior to disposal. Carry out regular checks of machinery and supervise the process. De-silt by ways of settling tanks/ponds before discharging into the water course. Obtain discharge consent from SEPA and implement monitoring of discharge to prove compliance to discharge licence conditions (e.g. volume, content). Any sludge or silt to be removed from site as part of the process should be treated as waste and removed by registered carriers. The ground may need to be tested for contamination before removal takes place. Where possible try to reuse material on site to reduce landfill waste. 	<p>Site Agent Site Engineer Environmental Designee</p>
Land	Discovery of fallen animals	<ul style="list-style-type: none"> Possible spread of disease 	<ul style="list-style-type: none"> If the carcasses have recently been buried and contain fleshy material, the remains should be rendered at an approved rendering plant. Farrans will ensure best practice is followed seeking advice where required from the appropriate authority. Adhere to the Animal By-Products Regulations 	<p>Site Engineer</p>
Land	Badgers	<ul style="list-style-type: none"> Disruption, harm, or injury to badgers 	<ul style="list-style-type: none"> No badgers have been identified. 	<p>Site Agent Ecologist</p>
Marine	Otters	<ul style="list-style-type: none"> Potential habitats along Cromarty Firth shore. Disruption, harm, or injury. 	<ul style="list-style-type: none"> No otter activity in the area of works, however otters are known to occupy the surrounding area. Holes/pits to be covered at night or mammal ramps positioned to allow any trapped animals to escape. If a holt or couch is discovered during construction, consult the project ECoW (EnviroCentre) and establish an appropriate exclusion zone. 	<p>Site Agent Ecologist Environmental Designee</p>
Marine	Marine mammals	<ul style="list-style-type: none"> Disruption, harm or injury to marine mammals 	<p>Marine Mammal Observer to provide instruction that the area is clear of marine mammals.</p> <p>If impact piling is required, the following controls will be required:</p> <ul style="list-style-type: none"> Ensure the mitigation zone of 500m is monitored prior to piling activity starts. Ensure the Marine Mammal Observer (MMO) has given the all clear. 	<p>Site Agent Ecologist Environmental Designee</p>

			<ul style="list-style-type: none"> Utilise a soft start of the piling rig and gradually ramp up. <p>Refer Marine Mammal Protection Plan for further details of mitigation required for impact piling.</p>	
Land	Birds	<ul style="list-style-type: none"> Disruption, harm, or injury. 	<p>General measures to avoid disturbance to nesting birds:</p> <ul style="list-style-type: none"> Retain the nest in-situ, install a suitable exclusion zone for protection. Delay works within vicinity of nest until vacated. If works are required in close proximity to nest location, consult the project ECoW (EnviroCentre) on how to proceed. Consult ornithologist regarding potential nesting bird deterrence methods. 	<p>Site Agent Site Engineer Ecologist</p>
Marine	Biosecurity	<ul style="list-style-type: none"> Potential spread of INNS 	<p>To be confirmed with the dredging contractor. It is anticipated that the following checks will be completed</p> <ul style="list-style-type: none"> A visual inspection of the hull shall be undertaken by an appointed person prior to vessel/equipment commencing its inbound journey to the Cromarty Firth to ensure all visible submerged surface are free of bio-fouling. A visual inspection shall be undertaken the first time that a high risk vessel/equipment arrives at Nigg Energy Park to check for invasive non-native species. If a potential invasive non-native species is identified, the appointed person will report to the GEN Project Manager. 	<p>Site Agent Site Engineer Environmental Designee</p>
Both	<p>Storage of fuels</p> <p>Re-fuelling activities</p>	<ul style="list-style-type: none"> Pollution of water resources by fuel and oil spills during construction. 	<ul style="list-style-type: none"> Good housekeeping during construction will be undertaken, for example, the use of drip trays beneath plant and pumps, and the inspection of all plant for fuel and oil leaks before being accepted for delivery onto the working width. Adherence to all Pollution Prevention Guidelines (PPGs). All fuel and oil drums or containers will be stored in bunded areas / stores along the working width. Re-fuelling points will be located away from waterways (>30 m), in line with SEPA guidelines. All fuel tanks and oil drums will be bunded with impermeable material. Where more than one container is stored, the bund should be capable of storing 110% of the largest tank or 25% of the total storage capacity, whichever is the greater. Bunds will be constructed in accordance with PPG 2. Any valve, filter, sight gauge, vent pipe or other ancillary equipment must be kept within the bund when not in use. No drainage valve may be fitted to the bund for the purpose of draining out rainwater. 	<p>Site Engineer</p>

			<ul style="list-style-type: none"> Oil absorbers and grab packs will be available on all vehicles and further materials, including booms, will be carried by Farrans emergency team at the main construction site base. A Pollution Incident Response Plan (PIRP) will be prepared prior to construction in consultation with SEPA. 	
Land	Use of portable toilets	<ul style="list-style-type: none"> Pollution of water resources by sewage spillage. 	<ul style="list-style-type: none"> Toilets and welfare will be provided at the construction compound and site offices. Portable toilets will be emptied regularly by a specialist contractor and disposed off-site in accordance with the Duty of Care. Waste Transfer Notes will be held on file. 	Site Engineer Environmental Designee
Both	Construction operations	<ul style="list-style-type: none"> Noise and vibration can be a nuisance to people and animals nearby 	<ul style="list-style-type: none"> In order to create as little disturbance as possible, normal hours of work during construction will be kept to 07:00 - 19:00 Mon-Fri and 07.00-13.00 Saturday. Hours outside this period and any night-time working which is required will be kept to a minimum and discussed in advance with GEN. All equipment will have silencers fitted where possible. Local residents will be informed of the programme of works in advance of any noisy activities. Please refer to Work Instruction WI – 007 ‘Noise and Vibration’ 	Site Agent Site Engineer
Land	Movement of plant and vehicles along the footprint of the project	<ul style="list-style-type: none"> Potential significant negative impact on local traffic levels 	<ul style="list-style-type: none"> To minimise the impact of construction traffic on the local road network, a Traffic Management Plan will be developed and agreed with Roads Service. Employees will be encouraged to share transport If appropriate, materials will be purchased locally Deliveries will be planned to avoid congestion Roads will be cleaned on a regular basis 	Site Agent Site Engineer
Land	Movement of plant and vehicles along the footprint of the project	<ul style="list-style-type: none"> Potential significant negative impact on road structure. 	<ul style="list-style-type: none"> Roads will be reinstated to their original form in accordance with the requirements of the Highland Council. 	Site Engineer
Land	Fuel in transporting plant and materials to site.	<ul style="list-style-type: none"> Depletion of natural resource 	<ul style="list-style-type: none"> Use of local suppliers where possible Minimising journeys through careful planning and optimum use of space. 	Procurement Manager All staff
Both	Use of construction materials	<ul style="list-style-type: none"> Waste creation 	<ul style="list-style-type: none"> Where possible Farrans will ensure that materials are either re-used or recycled Requirements to be stated within the Site Waste Management Plan. 	Site Agent Site Engineer

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Land	Construction of access roads	<ul style="list-style-type: none"> • Depletion of natural resource 	Impacts minimised by: <ul style="list-style-type: none"> • Attention to the siting of temporary compound and parking areas. These should be minimise the areas of hard standings. • Use of secondary aggregates, where available, in preference to primary materials, where they meet the relevant specifications; • Reusing imported stone locally subject to waste management requirements. 	Site Agent Site Engineer
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23.0 Environmental Monitoring

Farrans Contract Manager will ultimately be responsible for the implementation of mitigation measures and monitoring. He will be supported by the site management team.

Daily inspections are to be carried out to check plant and equipment for oil and fuel leaks, and condition of nearby waterway(s).

Weekly checks to be implemented for H&S and EMS, and records maintained.

Farrans will ensure that appropriate levels of supervision are available on site to oversee all activities and amongst other things ensure that the requirements regarding environmental matters are being fulfilled (e.g. Marine Mammal Observers, storage of dredged material, nuisance from noise, light, dust etc).

The Environmental Designee will carry out site inspections during the construction phase to ensure that works comply with statutory and all contract requirements; to show that works are being undertaken in compliance with the project plan, procedures, work instructions, and method statements and to demonstrate that remedial action has been taken, as necessary.

In addition, the Environmental Designee will undertake continuous monitoring during construction to verify the construction team's environmental performance and compliance with environmental plan, procedures, work instructions, and method statements.

Environmental Check Point Schedules will be completed to ensure environmental quality control measures are undertaken. Examples of these include the 'Ecologist's and Environmental Check Point Schedule', refer to Appendix 5. These records will be held in the site quality control files.

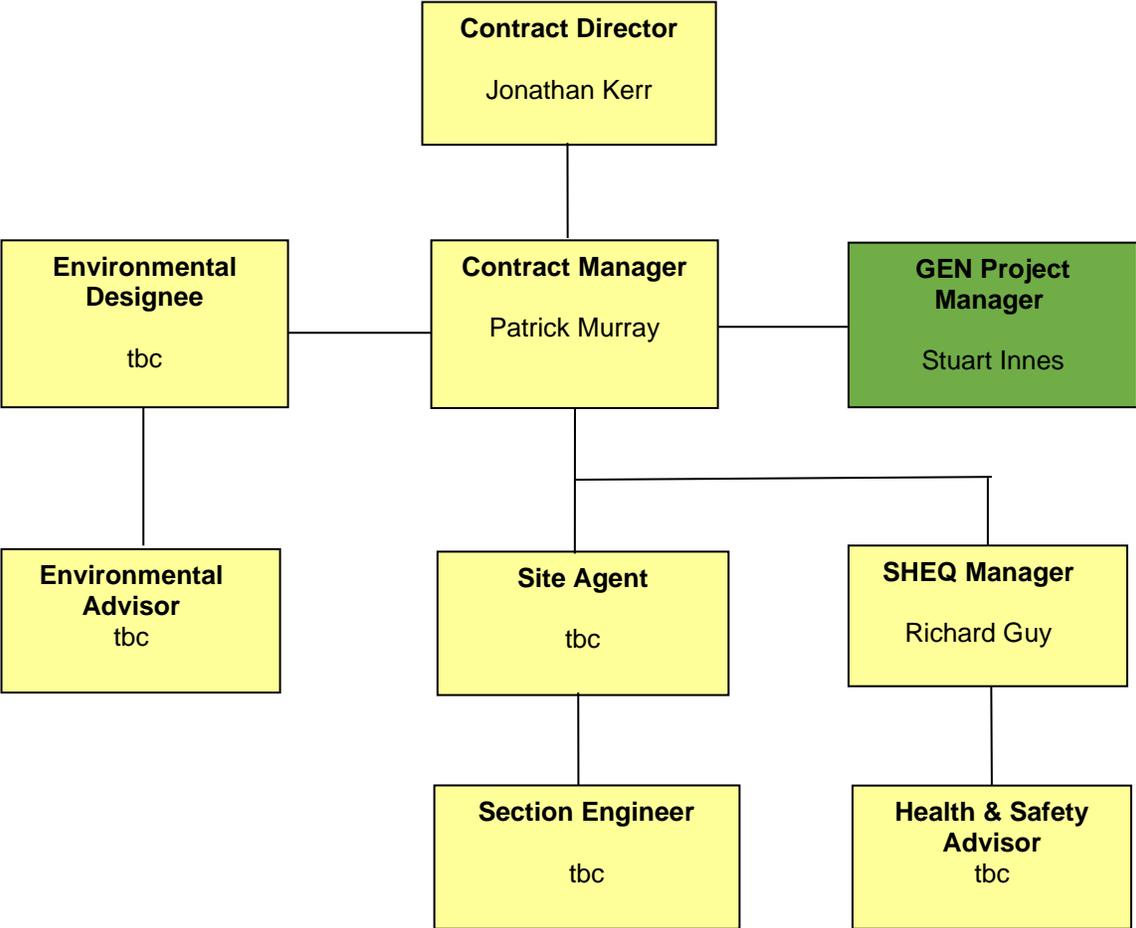
Environmental audits will be undertaken in conjunction with health and safety audits by personnel who are independent of site activities.

24.0 Training Awareness

Training awareness notes are included in Appendix 2.

All staff and operatives, including subcontractors, employed on the project will receive environmental induction as part of the overall site induction. All staff and operatives will be trained in the use of spill response kits as part of the pollution incident response preparedness programme.

Appendix 1 – Farrans Organisational Chart



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Appendix 2 – Environmental Training Induction Notes

The Company and its employees have a legal obligation to conduct their work in such a manner that unnecessary risks and disturbance to the environment are avoided. In satisfying these responsibilities the company is committed to employing Best Practice Options to minimise this risk. As part of the Environmental Management System employed by the Company, personnel are made aware of issues which may impact on the environment and are encouraged to act responsibly.

Compliance with the requirements of the Environmental Management System is a condition of employment on all Contracts and is important in the prevention of legal action being taken against the Company, and / or your employer. Personnel disregarding the environmental protection measures adopted in the Work Instructions and Site Environmental Management Plan will be subject to disciplinary action.

Your attention is drawn to the following areas:

1. Storage and housekeeping of fuels, oils, paints, and chemicals

- Keep oils, fuels, paints, and chemicals in a secure, lockable, bunded store in the compound.
- Move only minimum quantities of oils, fuels, paints, and chemicals to other areas of the site.
- Refuel / refill in designated areas or compound. Refuel using funnel or nozzle.
- Do not allow diesel to spill on to the ground whilst refuelling. Use a drip tray with absorbent pads.
- If fuel spillage occurs, inform site management staff immediately. Mop up using oil absorbent pads.
- Do not leave unused fuel, oil, paints, or chemicals on site.
- Dispose of oil and used oil filters as Hazardous (special) Waste. Plant fitters must remove used oil and oil filters from site when plant is serviced. Plant should be serviced on a hard standing such as concrete.
- Follow advice in Product Data Sheets with regards to storage, use, and safe disposal of chemicals and paints.
- Bulk fuel tanks must be fully bunded. Seek advice from site management if uncertain.

2. Management of wastes

- Hazardous (special) waste such as oil, oil filters, grease cartridges, chemicals, paint, empty aerosols and partially empty containers containing these materials **must not** be thrown in the ordinary skip or bin. Store in separate containers for hazardous waste. Remember you must separate hazardous waste – it's the law.
- Do not leave used batteries on site. These contain acid and must be disposed of as Hazardous Waste.
- Do not burn waste material. Burning of waste on site requires a waste exemption licence to comply with waste legislation. The licence costs £530. **Don't take the risk.**
- Waste excavated or generated on site **must** be taken to a licensed waste disposal facility or waste exempt site.
- Waste carriers must have a Waste Carrier Licence to comply with the law.
- Do not overload trucks, or have debris protruding over the sides of the trucks.
- Keep access routes clean.
- Do not litter the site.

3. Washing out of concrete delivery trucks / concrete mixers

- Do not wash out concrete delivery trucks close to waterways or drain leading to any waterway.

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- Cement is alkaline and kills fish.
- Concrete delivery trucks to be washed out in designated area as far as possible from a waterway.
- Do not wash tools in any waterway especially those contaminated with wet concrete.

4. Run-off from site

- Do not allow water containing silt or mud to discharge directly to any waterway. Settlement pit to be excavated to allow silt / mud to settle out.
- Do not pump water containing silt directly in to a waterway. Pump to a settlement pit or through long grass. Make sure the grass is not saturated, otherwise the silty water will run straight to the waterway and not settle out.
- Pumps should be sited a safe distance from any waterway. A distance of 10m is generally acceptable.

5. Plant

- Plant must be regularly maintained to avoid unnecessary leaks of oils, and emission of dark smoke.
- Engines should be switched off when the item of plant is not in use.
- Avoid unnecessary revving of engine.

6. Wildlife

- It is illegal to knowingly disturb nesting birds.
- All care should be taken to avoid disturbance to wildlife. Any sightings of protected species such as badgers, otters, or bats must be reported to the Environmental Designee or the Project ECoW (EnviroCentre) immediately.
- Care must be taken not to release harmful substances into the environment since wildlife can be affected.
- Litter can be hazardous to wildlife and should be disposed of properly.

7. Vegetation

- Avoid polluting the land or vegetation with any fuels, oils, paints, chemicals, or wastes.
- Do not damage existing vegetation that will remain at the end of the works when unloading, manoeuvring, etc.
- Do not damage, disturb, or remove any vegetation unless it is a specific requirement in a Method Statement.
- Do not store materials within the canopy of a tree; otherwise the tree roots may be damaged.
- Access to the site and areas within the site, must only be by designated routes.
- All works must be within the site boundary.

8. Archaeological and Historic Finds

The following methods shall be implemented for unexpected or incidental finds of historical artefacts during the dredging works:

- Farrans and our subcontractors shall cease potentially damaging works in the area and inform the Project Manager and Global Energy Group of the discovery.
- Record findings as soon as possible in site records, including all available site information, photographs, drawings and other records.

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- A nominated point of contact shall inform the Implementation Service and seek advice on how to proceed.
- The Implementation Service shall assess the archaeological significance. If low potential, construction works may proceed in the area. If high potential, the Implementation Service shall advise of the Temporary Exclusion Zone (TEZ) to be implemented and if required, inform the Archaeological Curator of significant discoveries.

9. Noise

- Ensure plant and equipment have properly operating silencers / mufflers. Notify Farrans project management if this is not the case.
- Do not leave plant and other vehicles / machinery running needlessly. This causes unnecessary pollution.
- Consider the location of noisy plant in order to minimise nuisance to nearby houses, motorists, and wildlife.
- Excessive noise and/or vibration should be reported to Farrans management and GEN Project Manager.

10. Dust

Dust is a nuisance and can be damaging to humans, machinery, plants and animals.

- Avoid creating unnecessary dust.
- Cover materials which could create dust when windy.
- Form and shape stockpiles to limit excessive windblown dust
- Dampen down dust in operations which create dust.
- Ensure that vehicles leaving site do not leave mud on the road.

11. Fire

Flammable materials, site cabins and containers can catch fire very easily at all times of the year.

- Ensure that all cigarette ends and matches are properly extinguished before disposal.
- Be acquainted with the location of firefighting equipment.
- The main store of firefighting equipment and materials is located in the Site Compound.
- The emergency procedure will be implemented in the case of fire.
- If you see a fire on site or adjacent to the site take action immediately, following the emergency procedure, and inform site management.

12. Spillage response

The most likely incidents to occur on a site will include silt, oil, concrete, grout, cement, and chemical contamination of nearby waterway(s), and contamination of land with oils, chemicals and construction products.

- Identify the cause of the incident and act to try and prevent it worsening. Stop or reduce the flow of diesel, engine oil, hydraulic oil, or chemicals.
- Contain the incident using sand, absorbent pads, or by digging a containment bund.
- Report the incident immediately to site management, explaining the nature, cause, and location.
- Contaminated ground to be excavated and disposed of as hazardous waste.

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Do Not

- Do not dig grips / ditches to drain polluted matter to a nearby waterway or drain.
- Do not ignore an incident as this will lead to serious disciplinary consequences, and possible legal action against the Company, and / or your employer.

Farrans Environmental Policy is available for anyone to read. It is displayed in the Site Office.

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Appendix 3 – Register of Environmental Work instructions

WI - 001	Storage, Housekeeping, and use of Fuels, Oils, Paints, and Chemicals
WI – 002	Management of Waste
WI – 003	Cement and Concrete
WI – 004	Control of Ground Water and Site Run-off Containing Suspended Solids
WI – 005	Spillage Response
WI – 006	Wildlife and Natural Features
WI – 007	Noise and Vibration
WI – 008	Control of Dust
WI – 009	Maintenance of Plant, Site Vehicles, and Equipment on Site
WI – 010	Working on Contaminated Sites
WI – 011	Working on Infested Agricultural Land
WI – 012	Operations Close to Badger Setts
WI – 013	Protection of Trees
WI – 014	Crossing Waterways with Pipelines
WI – 015	Control of Emissions and Odours
WI – 016	Ecology Planner (Northern Ireland)
WI – 017	Ecology Planner (Scotland)
WI – 018	Ecology Planner (England)
WI – 019	Construction of Washout Pit for Concrete & Mortar
WI – 020	Dredging / Marine Works
WI – 021	Aggregates from Inert Waste
WI – 022	Water Discharges
WI – 023	Water Quality Monitoring
WI - 024	Waste Exemptions
WI - 025	Permitted Development Rights

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Appendix 4 – Index of Guidance for Pollution Prevention (GPPs) formerly known as Pollution Prevention Guidelines (PPGs)

- PPG 1: Understanding your environmental responsibilities – good environmental practices
- GPP 2: Above ground oil storage tanks
- PPG 3: Use and design of oil separators in surface water drainage systems
- GPP 4: Treatment and disposal of waste water where there is no connection to the public foul sewer
- GPP 5: Works and maintenance in or near water
- PPG 6: Working at construction and demolition sites
- PPG 7: Safe storage – The safe operation of refuelling facilities
- GPP 8: Safe storage and disposal of used oils
- PPG 9: Prevention of pollution by pesticides
- PPG 10: Highway depots
- PPG12: Sheep dipping
- GPP 13: Vehicle washing and cleaning
- PPG 14: Marinas and crafts
- PPG 17: Dairies and other milk handling operations
- PPG 18: Managing fire water and major spillages
- GPP 19: Garages and vehicle service centres
- PPG 20: Dewatering underground ducts and chambers
- GPP 21: Pollution incident response planning
- PPG 22: Incident response – dealing with spills
- PPG 23: Maintenance of structures
- GPP 24: Stables, kennels, catteries
- PPG 25: Hospitals and health care establishments
- PPG 26: Safe storage – drums and intermediated bulk containers
- PPG 27: Installation, decommissioning and removal of underground storage tanks
- PPG 28: Controlled burn

All PPG/GPP documents are available at <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/>

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Appendix 5 – Ecologist Environmental Check Point Schedule

FARRANS A CRH COMPANY			ECOLOGIST'S ENVIRONMENTAL CHECK POINT SCHEDULE		
CONTRACT:				CONTRACT No:	
DRAWING NO(s):					
LOCATION:		Chainage _____ to _____			
FIELD REF / AREA:					
DESCRIPTION			CHECK POINT		COMMENTS
Are any of the following species present within the working area?					
SPECIES	YES	NO	If 'NO', signature by Ecologist to allow work to commence		
Bottle nose Dolphin			_____ Date:		
Harbour Porpoise			_____		
Seal			If 'YES', work cannot start. Ecologist to provide instructions.		
Otter					
Birds			Final sign off by Ecologist when mitigation measures have been carried out to their satisfaction.		
Bats			_____ Date:		

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Appendix 6 – Archaeological Protocol



Nigg Energy Park - East Quay
Development
Cromarty Firth, Scotland
Archaeological Protocol

Report Ref.: 248240.01
April 2021



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National grid reference NH 79527 69016
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Table 2 Project Contacts



Nigg Energy Park - East Quay Development Cromarty Firth, Scotland

Archaeological Protocol

Introduction

Project background

Wessex Archaeology has been commissioned by EnviroCentre, on behalf of Global Energy Nigg Ltd to produce an archaeological protocol for the proposed marine works at East Quay development at Nigg Energy Park, located on the north side of Cromarty Firth, Scotland Refer to Drawing no. 185062-012 from CEMP

This report is being compiled to fulfil the requirements stipulated in the Construction Environmental Management Plan (CEMP, Chapter 7.0) dated to December 2020, in the event of discovery of archaeological and cultural heritage finds. The following was detailed:

The following methods shall be implemented for unexpected or incidental finds of historical artefacts during the dredging works:

- *Farrans and our subcontractors shall cease potentially damaging works in the area and inform the Project Manager and Global Energy Group of the discovery.*
- *Record findings as soon as possible in site records, including all available site information, photographs, drawings and other records.*
- *A nominated point of contact shall inform the Crown Estate Implementation Service and seek advice on how to proceed.*
- *The Implementation Service shall assess the archaeological significance. If low potential, construction works may proceed in the area. If high potential, the Implementation Service shall advise of the Temporary Exclusion Zone (TEZ) to be implemented and if required, inform the Archaeological Curator of significant discoveries.*

Consultation was undertaken with Historic Environment Scotland (HES) on the archaeological mitigation proposed in the CEMP. However, this was not approved as the methodology did not follow best practice guidance appropriate for the current scheme. It was noted that the works will require a revised scheme/protocol for archaeological recovery and reporting as the provision provided by the Crown Estate for dealing with finds quoted in the CEMP is only intended to cover offshore renewables developments, not harbour works. To this end Wessex Archaeology have been contracted to act as the Retained Archaeologist and to provide archaeological support to the implementation of an appropriate finds protocol.

Development description

The East Quay is intended to provide a new wet berth with heavy duty quays to serve the marine renewable energy market and other markets.

The works consist of the construction of a 225 m long finger jetty, along with the associated dredging operations. The works also include the supply and installation of quay side furniture and fittings to be installed at the quayside and quayside lighting.

The proposed jetty will extend southwards from the existing southern boundary of the Nigg Energy Park and is located at the east side of the existing approach channel to the dry dock (see Drawing no. 185062-012 from CEMP 2020).

Construction programme

Initial dredging operations are scheduled to commence on Monday 12th April 2021 and last for 15 days.

Scope of document

This document sets out the strategy and methodology for the required compliant archaeological protocol.

In format and content this document conforms with current best practice and the Chartered Institute for Archaeologists' (CIfA) Standards and Guidance (CIfA 2014 a-e (updated 2020), CIfA 2014f (updated 2019) and CIfA 2019).

Aims and objectives

The aim of this archaeological protocol (the Protocol) for the marine works at Nigg East Quay is to provide a mitigation strategy intended to reduce any adverse effects of the proposed works on the historic environment by enabling staff working on-board the vessels or on shore to report discoveries in a manner that is both convenient to their everyday work and effective with regard to curatorial requirements.

The Protocol is in line with industry guidance, such as *Dredging and Port Construction: Interactions with Features of Archaeological or Heritage Interest* (PIANC 2014) and *The Assessment and Management of Marine Archaeology in Port and Harbour Development* (Cooper and Gane 2016).

The objectives of the Protocol are:

- to ensure archaeological involvement during intrusive works;



- to record material of archaeological potential as it is recovered/and or encountered on the seabed;
- to assess the archaeological potential of discoveries;
- to provide archaeological advice regarding legal requirements;
- to provide ‘first aid’ conservation advice for finds and to provide storage advice;
- to establish Temporary Exclusion Zones (TEZs) for discoveries of archaeological material of major archaeological importance;
- to provide advice on further archaeological works should avoidance not be possible;
- to provide advice on further evaluation that may be required; and
- to report on the results of the protocol work within the overarching DBA.

Roles, Responsibilities and Communication

The following **Table 1** sets out the principal roles and responsibilities.

Roles and Responsibilities

Role	Company	Responsibilities
Client	Global Energy Group	<p>The responsibility for implementing the Protocol rests with the Client and their appointed representatives (including their Contractors).</p> <ul style="list-style-type: none"> • The Client will familiarise themselves with the contents of this Protocol and will ensure that Contractors and any project personnel are aware of this Protocol and respect any TEZs that may be implemented as part of these works. • The Client and/or their representative will seek curatorial advice from the Archaeological Curators as appropriate. Interaction with Historic Environment Scotland (HES) Marine Scotland (MS-LOT) and The Highland Council (THC) will be administered by the Client with advice where appropriate through the Retained Archaeologist. • The Client and/ or their representative will ensure that the Retained Archaeologist is provided with all relevant project datasets, to ensure that they are in an informed position to advise the project team. • The Client and/or their representative will identify Nominated Contacts for the Protocol.
Environmental Consultant	EnviroCentre	<p>The Environmental Consultant (EC) is an independent representative who will be responsible for the liaison with the Retained Archaeologist. The EC will be familiar with the requirements set out in the Protocol and will provide oversight that agreed mitigation and reporting protocols are being followed.</p>
Principal Contractor and subcontractors	Farrans (Construction) Limited	<p>All relevant Contractors engaged in the construction of the project shall:</p> <ul style="list-style-type: none"> • familiarise themselves with the Protocol and make it available to all of their staff working on the project; • communicate with the Retained Archaeologist in the planning stages of survey work, to ensure archaeological objectives are included, as appropriate; • obey legal obligations in respect of ‘wreck’ and ‘treasure’ under the <i>Merchant Shipping Act</i> 1995 and the <i>Treasure Act</i> 1996, respectively; • respect constraint maps and TEZs;



		<ul style="list-style-type: none">• assist and afford access to archaeologists employed by the Client;• inform the Retained Archaeologist of any environmental constraint or matter relating to health, safety and welfare of which they are aware that is relevant to the archaeologists' activities; and,• implement and monitor the Protocol.
Archaeological Curators	Historic Environment Scotland (HES) and The Highland Council (THC)	HES is the Archaeological Curator providing advice for the historic environment within Scottish inshore and offshore marine planning areas. Advice will be sought from THC for the historic environment falling above MLWM. See below for contact details.
Retained Archaeologist	Wessex Archaeology	The Retained Archaeologist will oversee archaeological mitigation to provide consistency throughout the project, as required. The Retained Archaeologist is responsible for: <ul style="list-style-type: none">• advising the Client and/ or their representative on necessary interaction with third parties with archaeological interest, and the Archaeological Curator(s);• advising the Client and/ or their representative and appropriate Contractor(s) on which elements warrant archaeological involvement;• implementing and monitoring the Protocol;• provide initial advice in the event of a discovery identified as being of potentially major archaeological significance;• having the authority to suspend work in a particular location in the event that objects of archaeological significance are encountered;• providing suitably qualified and experienced archaeologists;• will act as the first contact for any unexpected archaeological discoveries. The Retained Archaeologist will cover the administration of the reporting of discoveries, including notifying the Archaeological Curator(s) and the Receiver of Wreck if material of archaeological interest is discovered, and provide immediate actions, including recording, handling and storage, and introduction of measures to prevent or reduce damage if the presence of a significant archaeological site is suspected;• will produce reports for approval by the Client and/ or their representative and the Archaeological Curator(s) and will also prepare project archives in consultation with the appropriate repository/ museum.

Archaeological Curator(s)

The Archaeological Curators for cultural heritage offshore are HES which is the statutory body for archaeology and heritage within Scotland, including marine archaeology in territorial waters adjacent to the Scottish coast up to the mean high water mark and to 200 nautical miles (nm) as advisors to Marine Scotland-Licensing Operations Team (MS-LOT) as the licensing body for marine development. In the event of a significant discovery, HES and MS-LOT will be informed of any archaeological or cultural heritage finds, and will as soon as reasonably practicable:

- Liaise with other relevant archaeological authorities;



- Advise on proposals to further evaluate any finds; and
- Advise on proposals to mitigate the effects of work activities upon any finds, if required.

The Archaeological Curator for heritage matters within the intertidal zone of the proposed development will be a representative of THC. The relevant contacts are:

- Philip Robertson, Head of Marine Team Historic Environment Scotland. Longmore House, Salisbury Place, Edinburgh EH9 1SH: Tel: 0131 668 8600 E-mail: Philip.robertson@hes.scot
- Deirdre Cameron, Senior Ancient Monuments Officer, Planning, Consents and Advice Service, Heritage Directorate. Longmore House, Salisbury Place, Edinburgh EH9 1SH. Tel. 01316688896 E-mail: Deirdre.Cameron@hes.scot
- **THC – to add**

Contacts

Project Contacts

Name	Organisation	Role	Contact Information
Stuart Innes	Global Energy Group	Project Manager	[Redacted] Stuart.innes@gegroun.com
Patrick Murray	Farrans (Construction) Limited	Contract Manager	[Redacted] PMurray@farrans.com
Lowri Roberts	Wessex Archaeology	Project Archaeologist	[Redacted] l.roberts@wessexarch.co.uk
Stephanie Said	Wessex Archaeology	Senior Project Officer	[Redacted] s.said@wessexarch.co.uk
Euan McNeill	Wessex Archaeologist	Project Manager	[Redacted] e.mcneill@wessexarch.co.uk

Site Description

Designated sites

There are no designated sites within the inner study area.

Known sites

There are two undesignated heritage assets within the inner study area consisting of Dunskeath House, Nigg Ferry and the remains of two buildings at Balnapling. Both assets date to the post-medieval to modern period and are considered to be of low importance. (Technical Appendix 8.4: Archaeological DBA 2019).

Although no further records have been identified within the inner study area, a number of Historic Environment Record (HERs) records relating to military activity are within close proximity of the study area.

Archaeological potential within the wider area

The marine archaeological resource around Nigg East Quay has the potential to range from submerged palaeolandscapes right through to modern aircraft material, primarily associated with the two World Wars.

There are a number of known sites recorded in the data from the HER located within the outer study area and relate to First and Second World War military activities. These consist of coastal batteries and their ancillary buildings, military camps, Nissen huts and magazines, pillboxes and searchlight batteries, and the remains of an anti-submarine defence established across the narrow Firth. One recorded RAF aircraft which crashed in the Firth in 1944 is recorded in CANMORE database. The aircraft consists of a Wellington bomber which crashed off Cromarty.

A further 31 records have been identified in the data from CANMORE consisting of recorded shipwreck losses. These comprise of one 16th century wreck, and 30 wrecks dating to the 19th and 20th centuries. The shipwrecks represent a variety of craft including schooners, smacks, yawls, brigs and sloops, highlighting the variety of maritime traffic that plied through the Cromarty Firth and probably berthed at the port at Cromarty.

There is potential for discoveries of maritime craft from the prehistory to the modern period. Post-medieval and modern wrecks, as they were generally made of more substantial material, are more likely to have been discovered through surveys undertaken by UKHO and others, and thus recorded in the archaeological record. However, there is still potential for discovery of previously unrecorded wreck



sites, particularly of wooden wrecks, broken up wrecks or partially buried wrecks that are more difficult to detect through geophysical survey.

There is also potential for 20th century aircraft, particularly in relation to Second World War. Aircraft crash sites are also difficult to identify through archaeological assessments of geophysical survey, although past experience indicates material from the site, such as engines or other material may be recorded as small obstructions or anomalies.

Methodology

Protocol for archaeological discoveries (the Protocol)

This protocol for archaeological discoveries (the Protocol) provides a safety net for any unexpected discoveries that could be made during the course of the dredging works. This bespoke Protocol has been developed with reference to best practice from other industries, such as the *Protocol for Archaeological Discoveries: Offshore Renewables Projects* (The Crown Estate 2014) and the *Marine Aggregate Industry Protocol for Reporting Finds of Archaeological Interest* (BMAPA and English Heritage (now Historic England) 2005). The aim of the Protocol is to reduce any adverse effects of the dredging works on the historic environment by enabling people working on the development to report archaeological discoveries in a manner that is both convenient to their everyday work and effective with regard to the requirements of the Archaeological Curator(s) and the Receiver of Wreck.

Flow charts of actions/communications and recording sheets associated with the Protocol can be found in **Appendices 1-3**.

Any discoveries by Project Staff will be reported to the Site Representative on their vessel. The Site Representative then reports to Mark Galbraith the Nominated Contact (ie: Farrans Project Manager), who has been formally identified by the Client to co-ordinate the implementation of the Protocol. The Nominated Contact will in turn inform the Retained Archaeologist.

The Retained Archaeologist will in turn liaise with the Nominated Contact at Farrans, the Client, the Archaeological Curator(s), the Receiver of Wreck, and others, as necessary. Provision will be made by the Client, in accordance with the Protocol, for the prompt reporting/recording to the Archaeological Curator(s) of archaeological remains encountered during the works. If the find constitutes 'wreck' within the terms of the *Merchant Shipping Act 1995*, the Retained Archaeologist will also make a report to the Receiver of Wreck within 28 days of recovery.

Should a find comprise material suspected to be from an aircraft lost while in military service, the MoD will be notified, as the material could be protected under the *Protection of Military Remains Act 1986*.

For discoveries of high archaeological importance, call-out investigations could be instituted, following discussions with the Archaeological Curator(s).

Protocol awareness training

As the Protocol is designed to operate when an archaeologist is not present, it is recognised that for the Protocol to be effective, participants (such as the Nominated Contact, Site Representative and Project Staff) should receive Protocol Awareness training. This will ensure that staff are familiar with the Protocol, are able to recognise finds of archaeological potential, understand how to record them, and are aware of the reporting process.

A Protocol Awareness talk will be undertaken by the Retained Archaeologist for all relevant staff prior to works commencing. Before the works commence, a kick-off meeting will be held to align the project team. The Protocol Awareness talk will take place as a short 'toolbox talk' on 12 April before commencing the works. Digital copies of Protocol materials will be made available for use on board the vessel.

The relevant staff on-board will be informed of the Protocol, details of the find types that may be of archaeological interest, and the potential importance of any material encountered.

Material that is likely to be encountered may include prehistoric material (such as peat or handaxes) or other material relating to shipwreck or aircraft crash site material.

Training will include an overview of the significance of finds, and what to do when finds are encountered, as outlined in **Appendix 1**, and how to fill in the recording form, with example in **Appendix 2**. More information regarding the types of material that could be discovered can be found in **Appendix 3**.

Training will also include information on handling and storing archaeological discoveries, such as outlined in **Appendix 4**.

Although unlikely to be an issue, should the need arise, HES and the MS-LOT will be informed if the methods of reporting are falling short of necessary standards.

Archaeological discoveries during dredging works

In the event that a find is discovered, the find will be assessed for its level of archaeological interest by the on-board operatives, based on awareness training and the criteria outlined in **Appendix 3**. If there is any uncertainty as to whether or not debris encountered on the seabed is of archaeological interest, staff will operate a precautionary approach and assume interest.

Finds of peat, worked flints, articulated shipwrecks, logboats, aircraft material or human remains should be reported immediately, as these would constitute major discoveries. Following the discovery of a major discovery, the contractor will cease all operations immediately within the area, and a TEZ will be implemented around the location of the find. The Site Representative will notify the Nominated Contact/Project Manager, who will then notify the Retained Archaeologist within 24 hours of discovery.

For material of lower importance, the finds should be reported in a manner convenient to daily work.

The proposed dredging works will be undertaken by means of a non-propelled backhoe dredger, tug and split hopper barge operated by Foyle and Marine Dredging Limited. The best opportunity to identify material of archaeological potential would be by the backhoe dredger operator who would be in a position to visually identify and record any discovered finds. An agreed methodology should be set up between the backhoe dredger operator and the Site Representative so that upon discovery, the find is lifted and stored on the dredging barge, until it can be taken on-shore to a secure storage area.

For all discoveries, the Site Representative will:

- ensure that the find is photographed on the surface by the on-board operatives;
- obtain a position for the find;



- fill in a preliminary recording form (**Appendix 2**);
- forward the preliminary recording form, and any additional information, to the Nominated Contact/Project Manager;
- the Project Manager will confirm all details in the preliminary recording form are comprehensive and correct and will forward it, along with copies of any photographs, video and other relevant information; and
- on receipt of a report, the Retained Archaeologist will review the data provided and supply further advice as relevant.

For material recovered on-board:

- all material will be handled with care;
- any rust, sediment, concretion or marine growth, should not be removed, and 'groups' of items or sediments should not be separated;
- it will be assumed that the find is not isolated, and further material may be present on the seabed;
- if the discovery is determined to be an isolated find, then the find will be provided with 'first aid' conservation, including keeping the find submerged in clean, cold water until further requirements can be determined;
- the find will be moved to a secure storage area lay down area for attention by a marine archaeologist; and
- advice from the Retained Archaeologist will be provided regarding the most suitable place to store the object prior to the arrival of a marine archaeologist at the site.

Should further work be required for a major discovery, the Retained Archaeologist will liaise with the Archaeological Curator(s) and produce a methodology for the further works that will be agreed with the Archaeological Curator(s) prior to any works commencing. Only in agreement with the MS-LOT and the Archaeological Curator(s) will any action be taken to implement any potential lift and recovery operations following satisfactory completion of *in situ* inspection.

Works that could impact the seabed will not recommence within a TEZ until confirmation has been received from the Archaeological Curator(s) that the TEZ can be removed.

Finds and environmental Finds

General

All archaeological finds from excavated contexts will be recorded. Although finds of modern date (19th century or later) may be recorded on site and not retained, any finds relating to possible aircraft material or classified as 'wreck' under the *Merchant Shipping Act 1995* will be retained. Where appropriate, soil samples may be taken and sieved to aid in finds recovery. Any finds requiring conservation or specific storage conditions will be dealt with immediately in line with First Aid for Finds (Watkinson and Neal 1998) and First Aid for Underwater Finds (Robinson 1998). A full record will be made of any treatment given.

Finds and other items of archaeological interest recovered offshore in the course of investigation are the property of The Crown Estate as the landowner, with the exception of any human remains, and 'wreck' for the purposes of the *Merchant Shipping Act 1995*, or material covered by the *Protection of Military Remains Act 1986*.

If the Receiver of Wreck has not found ownership within one year, any finds left in storage with Retained Archaeologist, that are not requested by the Client or The Crown Estate, will revert to the ownership of the Retained Archaeologist for the purposes of storage, transfer to appropriate repository, or discard.

Ordnance

If items of ordnance are discovered, they will be treated with extreme care. Company Health & Safety policies and established operational procedures should always take priority over archaeological reporting of munitions and ordnance.

Any firearms and ammunition are likely to be subject to the Firearms Acts (various dates). Ammunition should be regarded as ordnance, regardless of its size.

Human remains

In the event of discovery of any human remains (articulated or disarticulated, cremated or unburnt), all excavation of the deposit(s) will cease pending the Retained Archaeologist obtaining a Ministry of Justice Licence (this includes cases where remains are to be left *in situ*).

Should human remains require removal, all excavation and post-excavation will be in accordance with the Retained Archaeologist's protocols, and current guidance documents (e.g. McKinley 2013) and the standards set out in CIfA Technical Paper *13 Excavation and post-excavation treatment of cremated and inhumed remains*. Appropriate specialist guidance/site visits will be undertaken if required. The final deposition of human remains subsequent to the appropriate level of osteological analysis and other specialist sampling/examinations will follow the requirements set out in the Ministry of Justice licence.



Treasure

The Retained Archaeologist will immediately notify the Client and Historic Environment Scotland on discovery of any material covered, or potentially covered by the Treasure Trove in Scotland, which is based on the principles of the Scots common law *bona vacantia* (ownerless goods). In Scotland, any ownerless objects found by chance or through activities such as metal-detecting, field-walking, or archaeological excavation become the property of the Crown and therefore may be claimed as treasure trove. With the exception of modern objects, any object considered to be significant, regardless of its age or composition, may be claimed as treasure by the Crown. Treasure Trove applies inland of Mean Low Water Springs (MLWS) only and therefore is not applicable offshore. Material recovered below Mean High Water Springs (MHWS) to 12 nm may be regarded as Wreck under the *Merchant Shipping Act 1996*.

Aircraft

The majority of aircraft wrecks are military and therefore fall under the *Protection of Military Remains Act 1986*. All military aircraft crash sites in the UK, its territorial waters, or British aircraft in international waters, are controlled sites under this Act. It is an offence under this Act to tamper with, damage, move or unearth any items at such sites, unless the Ministry of Defence (MoD) has issued a licence authorising such activity. Consequently, anyone wishing to recover a military aircraft or excavate a military aircraft crash site in the UK is required to obtain a licence from the Joint Casualty and Compassionate Centre (JCCC). A licence is required irrespective as to whether the aircraft was in the service of another nation's armed forces.

Any finds that are suspected of being military aircraft will be reported immediately to the Retained Archaeologist. In the case of a military aircraft being investigated under licence, any human remains will be reported immediately.

Wreck

Archaeological artefacts that have come from a ship are 'wreck' for the purposes of the *Merchant Shipping Act 1995*. The Client, via the Retained Archaeologist, should ensure that the Receiver of Wreck is notified within 28 days of recovery, for all items of wreck that have been recovered.

Environmental

All sampling will be undertaken following the Retained Archaeologist's in-house guidance, which adheres to the principles outlined in Historic England's guidance (English Heritage (now Historic England) 2011 and Historic England 2015).

If waterlogged or mineralised deposits are encountered, an environmental sampling strategy will be devised and agreed with Historic Environment Scotland, as appropriate. Specialist guidance will be provided by the Retained Archaeologist, with site visits undertaken if required.

Following specialist advice, other sampling methods such as monolith, Kubiena or contiguous small bulk (column) samples may be employed to enable investigation of deposits with regard to microfossils (e.g., pollen, diatoms) and macrofossils (e.g., molluscs, insects), soil micromorphological or soil chemical analyses.

Conservation and storage

All recovered materials, from land or underwater, will be subject to a Conservation Assessment to gauge whether special measures are required while the material is being held. This Conservation Assessment will be carried out by the Retained Archaeologist with an appropriate level of expertise, with advice from appropriate specialists. The Retained Archaeologist or an Archaeological Contractor with appropriate expertise will implement recommendations arising from the assessment. If no special measures are recommended, finds will be conserved, bagged, boxed and stored in accordance with industry guidelines (CIfA 2014b, updated 2020).

Post-excavation and reporting

Finds

All retained finds will, as a minimum, be washed, weighed, counted and identified. They will then be recorded to a level appropriate to the aims and objectives of the investigation. The report will include a table of finds by period and/or feature group.

Metalwork from stratified contexts will be X-rayed and, along with other fragile and delicate materials, stored in a stable environment. The X-raying of objects and other conservation needs will be undertaken by the Retained Archaeologist's in-house conservation staff, or by another approved conservation centre.

Artefacts and other finds will be suitably bagged and boxed in accordance with the guidance given by the relevant museum and generally in accordance with the standards of the CIfA (2014b, updated 2020).

Reporting

General

Following completion of the fieldwork and/or the assessment of the data, draft report(s) will be submitted for approval to the Client and Historic Environment Scotland, for comment. Reports may be issued for individual fieldwork or assessment packages with a final close-out report, or the work summarised in a single final report. Once approved, a final version will be submitted.

The report will typically include the following elements:

- A non-technical summary;
- The aims and methods of the work;
- The results of the work including finds and environmental remains;
- A statement of the potential of the results;
- Proposals for further analysis and publication;
- Appendices;
- Illustrations; and



- **References**

A copy of the report(s) will be deposited with HES and THC, along with surveyed spatial digital data (.dxf or shapefile format) relating to the evaluation.

Publication

If no further mitigation works are undertaken, a short report on the results of the evaluation will be prepared for publication in a suitable journal, if considered appropriate and agreed with the Client and Historic Environment Scotland.

OASIS

An OASIS online record (<http://oasis.ac.uk/pages/wiki/Main>) will be created, with key fields completed, and a .pdf version of relevant reports submitted, within six months of each report being approved by the Client. Copies of the OASIS record will be integrated into the relevant local and national records and published through the Archaeology Data Service ArchSearch catalogue. However, projects subject to any contractual requirements on confidentiality, or with the discovery of vulnerable sites, will only be uploaded to OASIS following confirmation from the Client and/or Historic Environment Scotland.

Archive Storage and curation Museum

Every effort will be made to identify a suitable repository for the archive resulting from the investigation. If no suitable repository is identified, the Retained Archaeologist will continue to store the archive, but may institute a charge to the Client for ongoing storage beyond a set period.

Relevant finds will be reported through Treasure Trove. The Scottish Archaeological Finds and Allocations Panel will either allocate the assemblage to a museum or, if no museum wishes to acquire the assemblage, it will be disclaimed as the property of the Crown and the Retained Archaeologist and Client may decide on its deposition. The Retained Archaeologist may institute a charge to the client for ongoing storage beyond a set period.

Transfer of title

On completion of the investigation (or extended fieldwork programme), every effort will be made to persuade the legal owner of any finds recovered, except those allocated through the Treasure Trove process, to transfer their ownership to the accepting institution in a written agreement.

Preparation of archive

The complete project archive, which may include paper records, graphics, artefacts, ecofacts and digital data, will be prepared following the standard conditions for the acceptance of excavated archaeological material by the receiving institution, and in general following nationally recommended guidelines (SMA 1995; Cifa 2014d (updated 2020); Brown 2011; ADS 2013). The archive will usually be deposited within one year of the completion of the project, with the agreement of the Client.

The relevant Archaeological Curator(s) and the Retained Archaeologist will agree with the receiving institution a policy for the selection, retention and disposal of recovered or excavated material, and confirm requirements in respect of the format, presentation and packaging of archive records and materials. The receiving institution will be notified in advance of any fieldwork.

All digital data will be considered part of the primary archive and will accord with the procedures recommended by The Crown Estate, Marine Environment Data and Information Network (MEDIN), Archaeological Data Service (ADS) and the accepting institution.

Data will be compiled in a format suitable for submission of Monument, Event and Source records for entry into the relevant Historic Environment Record.

Selection policy

The Retained Archaeologist will follow national guidelines on selection and retention (SMA 1993; Brown 2011, section 4). In accordance with these, and any specific guidance prepared by the museum, a process of selection and retention will be followed so that only those artefacts or ecofacts that are considered to have potential for future study will be retained. The selection policy will be agreed with the museum, and fully documented in the project archive. Material not selected for retention may be used for teaching or reference collections by the museum, or by the Retained Archaeologist.

Security copy

In line with current best practice (e.g., Brown 2011), on completion of the project a security copy of the written records will be prepared in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.

Copyright

Archive and report copyright

The full copyright of the written/illustrative/digital archive relating to the project will be retained by the Retained Archaeologist under the *Copyright, Designs and Patents Act 1988* with all rights reserved. The client will be licenced to use each report for the purposes that it was produced in relation to the project as described in the specification. The museum, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use conforms to the *Copyright and Related Rights Regulations 2003*. In some instances, certain regional museums may require absolute transfer of copyright, rather than a licence; this should be dealt with on a case-by-case basis.

Information relating to the project will be deposited with the Historic Environment Record (HER) where it can be freely copied without reference to the Retained Archaeologist for the purposes of archaeological research, or development control within the planning process.

Third party data copyright

This document, the evaluation report and the project archive may contain material that is non-Wessex Archaeology copyright (e.g., Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which the Retained Archaeologist will be able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Wessex Archaeology. Users remain bound by the conditions of the *Copyright, Designs and Patents Act 1988* with regard to multiple copying and electronic dissemination of such material.



WESSEX ARCHAEOLOGY PROCEDURES

External quality standards

Wessex Archaeology is registered as an archaeological organisation with the Chartered Institute for Archaeologists (CIfA) and fully endorses its *Code of conduct* (CIfA 2014f, updated 2019) and *Regulations for professional conduct* (CIfA 2019). All staff directly employed or subcontracted by Wessex Archaeology will be of a standard approved by Wessex Archaeology, and archaeological staff will be employed in line with the CIfA codes of practice, and will normally be members of the CIfA.

Personnel

The Protocol will be directed and supervised by an experienced archaeologist from Wessex Archaeology's core staff. The overall responsibility for the conduct and management of the project will be held by one of Wessex Archaeology's project managers, who will visit the site, as appropriate, to monitor progress and to ensure that the scope of works is adhered to. The appointed project manager and archaeologist will be involved in all phases of the investigation through to its completion.

The analysis of any finds and environmental data will be undertaken by Wessex Archaeology core staff or external specialists, using Wessex Archaeology's standard methods, under the supervision of the departmental managers and the overall direction of the project manager. A complete list of specialists can be provided on request.

Wessex Archaeology reserves the right, due to unforeseen circumstances (e.g., annual leave, sick leave, maternity, retirement etc) to replace nominated personnel with alternative members of staff of comparable expertise and experience.

Internal quality standards

Wessex Archaeology is an ISO 9001 accredited organisation (certificate number FS 606559), confirming the operation of a Quality Management System which complies with the requirements of ISO 9001:2015 – covering professional archaeological and heritage advice and services. The award of the ISO 9001 certificate, independently audited by the British Standards Institution (BSI), demonstrates Wessex Archaeology's commitment to providing quality heritage services to our clients. ISO (the International Organisation for Standardisation) is the most recognised standards body in the world, helping to drive excellence and continuous improvement within businesses.

Wessex Archaeology operates a computer-assisted project management system. Projects are assigned to individual project managers who are responsible for the successful completion of all aspects of the project. This includes monitoring project progress and quality; controlling the project budget from inception to completion; and all aspects of Health and Safety for the project. At all stages the project manager will carefully assess and monitor performance of staff and adherence to objectives, timetables and budgets, while the manager's performance is monitored in turn by the team leader or regional director.

All work is monitored and checked whilst in progress on a regular basis by the project manager, and all reports and other documents are checked (where applicable) by the team leader/technical manager, or regional director, before being issued. A series of guideline documents or manuals form the basis for all work. The technical managers in the Graphics, Finds and Analysis, GeoServices and IT sections provide additional assistance and advice.

All staff are responsible for following Wessex Archaeology's quality standards but the overall adherence to and setting of these standards is the responsibility of the senior management team in consultation with the team leaders/regional directors who also ensure projects are adequately programmed and resourced within Wessex Archaeology's portfolio of project commitments.

Health and Safety

General

Health and Safety considerations will be of paramount importance in conducting all fieldwork. Safe working practices will override archaeological considerations at all times. Wessex Archaeology will supply trained, competent and suitably qualified staff to perform the tasks and operate the equipment used on site. All work will be carried out in accordance with the *Health and Safety at Work Act 1974* and the *Management of Health and Safety at Work Regulations 1999*, and all other applicable Health and Safety legislation, regulations and codes of practice in force at the time.

Wessex Archaeology will supply a copy of the company's Health and Safety Policy and a Risk Assessment to the client before the commencement of the evaluation. The Risk Assessment will have been read, understood and signed by all staff attending the site before any fieldwork commences. Wessex Archaeology staff will comply with the Personal Protective Equipment (PPE) requirements for working on the site, and any other specific additional requirements of the principal contractor.

Insurance

Wessex Archaeology has both Public Liability (£10,000,000) and Professional Indemnity Insurance (£5,000,000).



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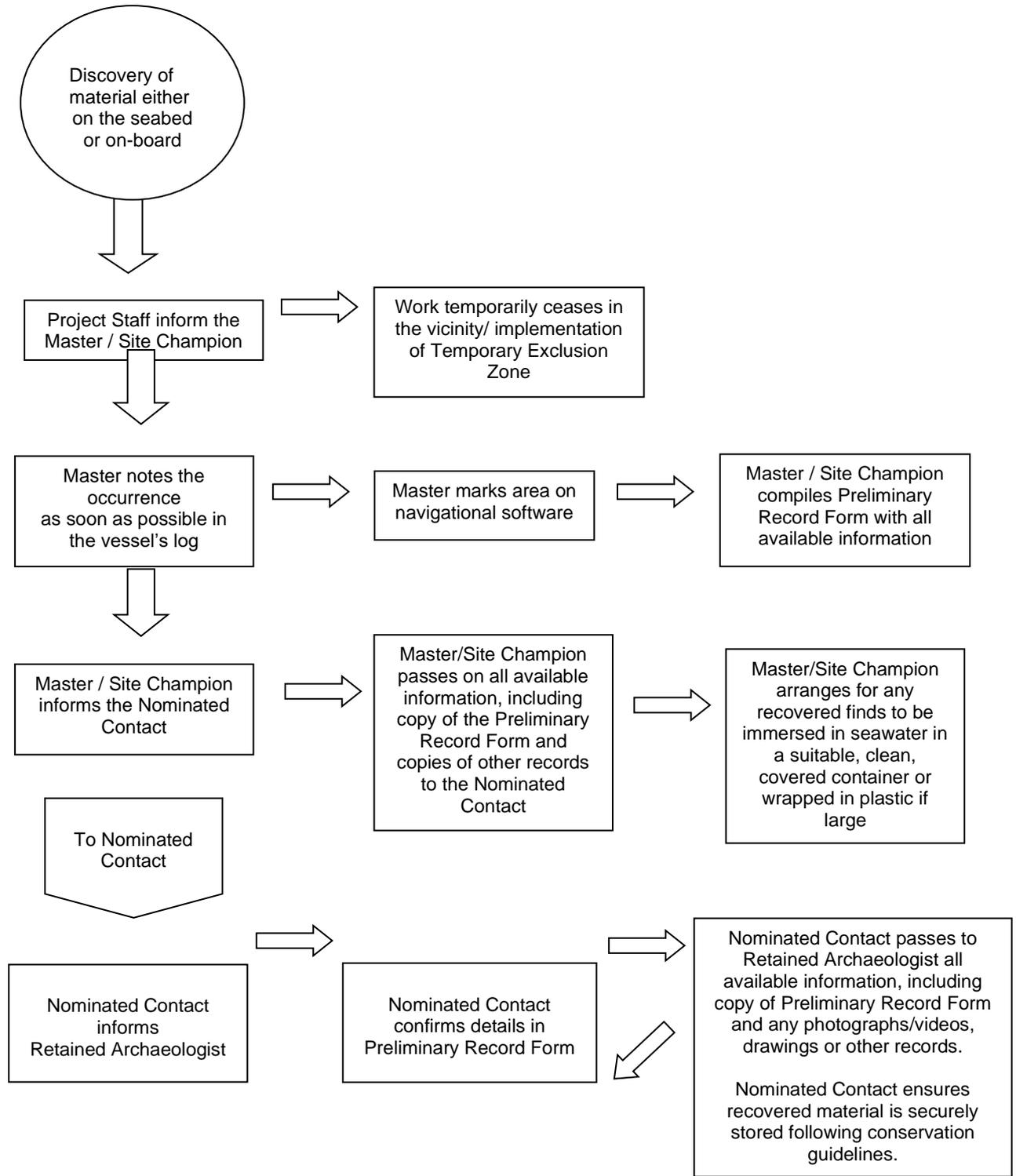
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Appendices

Appendix 1: Actions for Discoveries on the Seabed or Finds Recovered from the Seabed



The **RETAINED ARCHAEOLOGIST** reviews information and advises whether further actions are required. Subsequent actions for any finds of archaeological importance are the responsibility of the **Client** to be agreed on a case-by-case basis with the regulator and relevant **Archaeological Curator**



Appendix 3: Guides for Identifying Finds of Archaeological Interest

This text is based on the categories outlined in the Protocol for Reporting Finds of Archaeological Interest, published by the British Marine Aggregate Producer's Association (BMAPA) and English Heritage (now Historic England), 2005.

Bone

Major Archaeological Finds

Human bone is definitely of archaeological interest and is also subject to special legal requirements under the Burial Act 1857. Any suspected human bone should be reported and treated with discretion and respect.

Large quantities of animal bone may indicate a wreck (the remains of cargo or provisions) and should be reported.

Intermediate Archaeological Finds

Animal bone, teeth and tusks are of archaeological interest because they may date to periods when the seabed formed dry land and should be reported. Such bones, teeth, tusks etc. may have signs of damage, breaking or cutting that can be directly attributed to human activity.

Objects made out of bone – such as combs, harpoon points or decorative items – can be very old and are definitely of archaeological interest. All occurrences should be reported.

Pottery

Intermediate Archaeological Finds

Any fragment of pottery is potentially of interest, especially if it is a large fragment. Items with unusual shape, glaze or fabric should be reported.

Minor Archaeological Finds

Items which look like modern crockery would be considered to be a minor archaeological find, until further assessment.

Brick

Intermediate Archaeological Finds

Bricks that do not have v-shaped hollows ('frogs') and/or are small, thin, or generally appear different than modern bricks could date back to the medieval or Roman period and should be reported.

Minor Archaeological Finds

Bricks with modern proportions and 'frogs' are of little to no archaeological interest.

Wood

Major to Intermediate Archaeological Finds

If the material discovered on the seabed, or recovered to the surface, appears to represent material from a wreck site, it must be reported.



Pieces of wood that have been shaped or jointed may be of archaeological interest, especially if fixed with wooden pegs, bolts or nails. All occurrences should be reported. Objects made out of dark, waterlogged wood, such as bowls, handles, shafts and so on – can be very old and are definitely of archaeological interest. All occurrences should be reported. Roundwood that has clearly been shaped or made into a point should be reported.

Minor Archaeological Find

Light coloured wood, or wood that floats easily, is probably modern and is unlikely to be of archaeological interest. 'Roundwood' with bark, such as branches – is unlikely to be of archaeological interest.

Peat and Clay

Major Archaeological Find

Peat is black or brown fibrous soil that formed when sea-level was so low that the seabed formed marshy land, on the banks of a river or estuary, for example. The peat is made up of plant remains, and also contains microscopic remains that can provide information about the environment at the time it was formed. This information helps us to understand the kind of landscape that our predecessors inhabited, and about how their landscape changed. It can also provide information about rising sea-level and coastline change, which are important to understanding processes that are affecting us today. Prehistoric structures (such as wooden trackways) and artefacts such as stone tools, including hand axes, are often found within or near peat, because our predecessors used the many resources that these marshy areas contained. As these areas were waterlogged and have continued to be waterlogged because the sea has risen, organic artefacts made of wood, leather, textile and so on often survive together with the stone and pottery which are found on 'dry' sites.

Fine-grained sediments such as silts and clays are often found in the same places as peat. These fine-grained sediments also contain the microscopic remains that can provide information about past environments and sea-level change.

Intermediate Archaeological Finds

Isolated discoveries of peat or clay.

Stone

Major Archaeological Finds

The recovery of numerous stones may indicate the ballast mound of a wreck or a navigational cairn, and all occurrences should be reported. Additionally, if a large concentration of stone material (as described below) is encountered, it would also be considered a major archaeological find.

Intermediate Archaeological Finds

Small to medium size stones that are shaped, polished and/or pierced may be prehistoric axes. Objects such as axe heads or knife blades made from flint are also of prehistoric date. Large blocks of stone that have been pierced or shaped may have been used as anchors or weights for fishing nets. All occurrences should be reported.

Rubber, Plastic, etc.

Major Archaeological Finds

If rubber and plastic materials are discovered in the same area as aluminium objects and structures, they could indicate wreckage from a World War II aircraft, and therefore this material should be reported.

Minor Archaeological Finds



Except for the above, in most cases, rubber, plastic, Bakelite and similar modern materials are of little to no archaeological interest.

Iron and Steel

The potential range and date of iron and steel objects is so wide that it is difficult to provide general guidance. However, the following provides an outline of what might constitute a major or intermediate find.

Major Archaeological Finds

If the material discovered on the seabed or recovered to the surface appears to represent material from a wreck site.

If an area contains numerous 'concretions' (iron and steel objects covered by a thick amorphous concrete-like coating), it could represent a wreck site, and should be treated as a major archaeological find.

A concentration of pieces of metal sheet and structure may also represent a wreck site and should be treated as a major archaeological find.

Intermediate Archaeological Finds

The discovery of an isolated anchor would be considered to be an intermediate archaeological find, however, if it is discussed in association with timber or iron and steel material as discussed above, it could be part of a wreck site.

Isolated concretions, pieces of sheet metal and/or structure may also be of archaeological interest and should be reported.

Minor Archaeological Finds

Isolated modern material, such as lost fishing gear, would be considered a minor archaeological find.

Other Metals

Major Archaeological Finds

Aluminium objects may indicate aircraft wreckage from World War II, especially if two or more pieces of aluminium are fixed together by rivets. All occurrences should be reported.

Concentrations of copper and copper alloy (bronze, brass) objects, precious metal objects and coins are of interest, as they could indicate a wreck site.

Minor Archaeological Finds

Items made of thin, tinned or painted metal sheet are unlikely to be of archaeological interest.

Isolated discoveries.

Ordnance

Any ordnance that is discovered should be dealt with based on the company UXO policy, as safety takes priority over archaeological objectives. However, discoveries of ordnance may be of archaeological interest (including cannonballs, bullets and shells), and they should be reported.



Appendix 4: Guidelines for Artefact Handling and Storage

It should be noted that 'time is of the essence' in terms of the recovery of wet archaeological material. If organic objects such as wood are allowed to dry out, this can cause irreparable damage. Care in handling items is therefore paramount. A recovered object should be handled and stored in the following manner, particularly those identified as major archaeological finds:

- Handle all material with care;
- Do not remove any rust, sediment, concretion or marine growth and do not separate 'groups' of items or sediments;
- All objects should be kept completely immersed in sea water if possible; if this is not possible because of their size, they should be kept damp and wrapped in plastic to prevent them drying out;
- Objects should be kept in clean storage containers, preferably rigid plastic boxes with lids, which should be kept in a safe, sheltered location (preferably cool and dark); large objects that will not fit in containers should be kept covered so that they do not dry out;
- Each object should be marked with its unique number, either by means of a tag attached to the object(s) or by writing the number on the bag that it is stored on. If this is not possible, photographs of the artefact with a label clearly displayed on it should be taken, in order for the artefact to be identified later;
- Each small object should be kept in its own zip-lock plastic bag;
- Any sediments of interest should be collected and double-bagged into zip-lock bags, if possible; and
- If particularly delicate or significant items are recovered, the retained archaeologist should be contacted as soon as possible for further advice.

NIGG EAST QUAY DEVELOPMENT - SITE WASTE MANAGEMENT PLAN (SWMP)

	Name	Company	Position	Date
Prepared By:	Conan Quinn	Farrans	Environmental advisor	05.01.2021
Checked By:				
Approved By:				

	NIGG EAST QUAY DEVELOPMENT	Issue: 001
	SITE WASTE MANAGEMENT PLAN	Date: 05.01.2021

Project: Nigg East Quay Development

Contract: 33034

Programme

Start date: 1st March 2021

Completion: 5th April 2022

Duration: 61 weeks

Value:

Person responsible for management of the SWMP is Patrick Murray.

Project aim: To implement the Construction Environmental Management Plan (CEMP) and the Site Waste Management Plan (SWMP) to ensure that our impacts on the environment are controlled and effective, our waste minimised, and our commercial performance improved. In this regard we will ensure that procedures are established, implemented, maintained and reviewed.

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1.0 Introduction

Definition of Waste: *Waste is any substance that the holder discards or intends to discard or is required to discard.*

The construction industry in the UK uses about 420 million tonnes of materials per year, of which some 109 million tonnes ends up as waste. The SWMP aims to improve materials resource efficiency within the construction industry by reducing the amount of waste produced and encouraging recovery through reuse and recycling.

The true cost of waste is equal to:		
Purchase price & transportation costs of materials that are being wasted.	+ Cost of storage, transport and disposal of waste.	+ Cost of replacement materials.

1.1 Project Stakeholders

<p>Principal Contractor</p> <p>Farrans (Construction) Limited 99 Kingsway Dunmurry Belfast BT17 9NU</p> <p>Contact: Patrick Murray Tel: [Redacted] Email: PMurray@farrans.com</p>	<p>Principal Designer</p> <p>HBPW LLP 43 Bridgegate Retford Nottinghamshire DN22 7UX</p> <p>Contact: Paul Withers Tel: [Redacted] Email: P.Withers@HBPWconsulting.co.uk</p>
<p>Client</p> <p>Global Energy Group Nigg Energy Park Tain Ross-shire IV19 1QU</p> <p>Contact: Rory Gunn Tel: [Redacted] Email: Rory.Gunn@geggroup.com</p>	<p>Harbour Authority</p> <p>The Port of Cromarty Firth Port Office Shore Road Invergordon IV18 0HD</p> <p>Contact: Tel: Email:</p>
<p>Environmental Consultant</p> <p>EnviroCentre 8 Eagle Street Glasgow G4 9XA</p> <p>Contact: Campbell Fleming Tel: [Redacted] Email: cfleming@envirocentre.co.uk</p>	<p>Waste Contractors</p> <p>*See Section 9.0 (pg. 13)</p>

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2.0 Project Description

The East Quay development at Nigg Energy Park (NEP) is intended to provide a new wet berth with heavy duty quays to serve the marine renewable energy market as well as the North Sea oil and gas markets.

Works consist of the detailed design, construction and commissioning of a 225m long finger jetty, along with the associated dredging operations. The works also include the supply and installation of quay side furniture and fittings to be installed at the quayside and quayside lighting.

NEP is located on the north side of the Cromarty Firth, approximately 8km east of Invergordon, Scotland. The site is centred at Ordnance Survey Grid Reference NH 79527 69016. The proposed jetty will extend southwards from the existing southern boundary of NEP and is located at the east side of the existing approach channel to the dry dock.

3.0 Roles and Responsibilities

Contract Manager

- Nominate a Waste Manager/Environmental Designee for the site.
- Assist the Environmental Manager to prepare and update the Environmental and Waste Management Plans.
- Ensure Farrans "Duty of Care" is being complied with at site level.
- Co-ordinate waste management on site.
- Maintain accurate records.
- Ensure all site personnel know their responsibilities for waste management.
- Be pro-active in reducing, re-using and re-cycling.

Environmental Designee

- Ensure Farrans "Duty of Care" is being complied with
- Be aware of current and pending environmental legislation
- Collate environmental information relating to the project.
- Compile or assist in the compilation of the Site Waste Management Plan.
- Prepare Site Environmental Pack for site.
- Present environmental documents for review by Environmental Manager.
- Log weekly quantities of imported and generated waste removed from site.
- Periodically visit the waste transfer site, waste disposal site, waste exempt site and recycling plant to ensure Farrans are effectively discharging our Duty of Care.
- Provide monthly statistics to the Environmental Manager.
- Promote other aspects of waste management, including; financial impacts of waste disposal, education and best practice in the industry.

3.1 Management of Subcontractors

Consideration should be given to the following methods of managing sub-contractors:

- Agree an allowable waste percentage with each sub-contractor, if this amount is exceeded, they will be charged for additional materials. Allowable percentages can be applied to all materials or restricted to those that are expensive or regularly generate excessive waste.
- Make sub-contractors responsible for purchasing the raw materials where possible and disposing of their own waste legally.
- Make sub-contractors aware of wastage and the costs involved in dealing with it.
- Include discussions on the waste management plan in site meetings.

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4.0 Waste Minimisation

Each stakeholder in the project, whether they are client, manager, site engineer, site worker, sub-contractor, designer or supplier all have a duty to look at ways of eliminating waste throughout the life of the project.

Each site should, at an early stage, assess all planned activities and determine the following:

- What wastes will be generated?
- How will they be stored?
- Can they be reduced, reused or recycled?
- What arrangements need to be made for reusing or recycling?

Surplus or waste materials arise on site from either the materials imported to site or from those generated on site. Imported materials are likely to be concrete, bricks, steel and timber. Generated materials are those already on the project; hardstanding (concrete, asphalt), subsoils and sometimes existing buildings and contaminated ground. In order to reduce the amount of generated materials sent to landfill it is envisaged that excavated materials suitable for reuse will be maintained on site for placement later in the development. All activities will be approved and consented with the relevant stakeholders prior to placement.

All wastes and effluents arising during maintenance activities, such as rubbish or oils will be removed from site to a licensed disposal site. Sewerage will be connected into the existing local mains system or will be collected into a storage tank, which will be emptied by a sanitary contractor.

4.1 Compliance with Legislation

Farrans have a legal obligation to comply with the 'Duty of Care' requirements regarding waste. The Company is committed to the principles of waste minimisation and sustainable construction. Our waste management priorities are to: -

- Minimise raw materials used – use efficient designs, don't over order
- Reduce waste – correct storage and handling
- Reuse materials – timber shutters, surplus concrete
- Recycle wastes where possible – scrap steel, timber, cardboard packaging
- Send minimum amounts of waste to landfill – last option

When waste is within your control you must store it securely and keep it in suitable containers such as skips.

Waste material such as soil and stones must be stored so that it doesn't escape and cause pollution.

Anyone who transfers waste to a disposal site must be in possession of a 'Waste Carrier Licence'.

Waste must be transferred to a licensed waste management site or site with a waste exemption. The site management team must check that the site is licensed and that the licence permits the site to take the type and quantity of waste involved. Copies of the waste management licence or waste exemption license must be held on file.

A 'Waste Transfer Note' (WTN) must be completed by all parties involved and must be retained for a period of two years. Sub-contractors excavating and hauling waste off site must complete their own WTNs and copy them to the Farrans Project Manager. It is not necessary to have a WTN for each load of waste. A WTN can be issued weekly or monthly as a season ticket.

It is the responsibility of the site management team to ensure that other parties involved in the transport, storage and disposal of waste are legally entitled to carry out their duties.

You can check if a carrier is registered by asking to see their Certificate of Registry, by contacting SEPA, or by checking the SEPA website and viewing the 'Public Registers' section. You can also check if a waste site

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is licensed by viewing the 'Public Registers' section of the SEPA website. All construction works will be carried out in accordance with the Pollution Prevention Guidelines.

4.2 Induction and Training

Farrans will provide onsite training to all relevant sub-contractors using environmental toolbox talks and videos. These shall be held at regular intervals and shall cover topics such as waste reduction, waste transfer notes, pollution, etc. All sub-contractors will be required to attend.

The CEMP and SWMP will be highlighted in the site induction process, and employees and subcontractors encouraged to participate.

4.3 Review

Farrans will implement waste auditing protocols as part of the SHEQ internal auditing programme. Waste auditing protocols will include:

- Inspection on-site of the designated waste storage area, waste storage containers and signage.
- Review of the SWMP and waste management data sheet.
- Review of waste carrier licenses.
- Review of waste transfer notes and waste consignment notes.
- Review of receiving waste disposal site licenses and permits.

This SWMP will be included as an agenda item at project meetings, construction meetings and sub contractors' meetings. The SWMP will also be audited regularly by the Environmental Manager/Environmental Advisor.

The above measures shall ensure compliance with the Waste (Scotland) Regulations 2012 and apply the Duty of Care requirements outlined in the Environmental Protection (Duty of Care) (Scotland) Regulations 2014.

5.0 Types of Waste

Waste streams arising on site including waste category, European Waste Code (EWC) and origin of waste are summarised in Table 1.

Table 1: Wastes Generated On-site

Waste Types	Waste Category	EWC	Origins of Waste
Concrete	Active/Bio	17 01 01	Construction/Site stripping
Dredging spoil	Active/Bio	17 05 06	Construction/Dredging
Soil and Stones	Inert	17 05 04	Construction/Site stripping
Subsoils	Hazardous	17 05 03	Construction/Site stripping
Packaging	Mixed		Construction
Carboard		15 01 01	
Plastic		15 01 02	
Wooden		15 01 03	
Canteen Waste	Active/Bio	20 01 08	Construction
Timber	Active/Bio	17 02 01	Construction/Site stripping
Metals	Active/Bio	17 04 07	Construction/Site stripping
Plastic	Active/Bio	20 01 39	Construction/Site stripping

Estimated waste volumes for each waste stream are summarised in Table 2.

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Table 2: Waste Volumes

Waste type	Quantity (m ³)	*Conversion Factor	Waste Percentage (%)	Predicted Waste (Tonnes)
Concrete	3,300	1.27	0	0
Dredging spoil	165,000	0.51	89	76,500
Soil and Stones	88,000	1.25	0	0
Canteen Waste	14.04	0.2	-	2.8
Timber	tbc	0.34	-	
Packaging – Paper and cardboard	24	0.2	-	4.8
Packaging – Plastic	24	0.22	-	4.8
Packaging – Wooden	24	0.23	-	4.8
Municipal waste	36.72	0.21	-	7.7
Steel	10,952	0.42	0.1	4.6
Plastic	tbc	0.23		
Total				

*Conversion factors for meters to tonnes. (source: WRAP: Waste Volume to Mass Conversion Factors, 2014).

Table 3: Waste Minimisation to be confirmed with project management and stakeholders to ensure all waste streams are accounted for and treatment options avail of current good practice.

Table 3: Waste Minimisation

Waste type	Treatment Option
Concrete	Reuse on site
Dredging spoil	On site disposal (150,000 m ³) Reuse in quay structure (15,000 m ³)
Soil & stones	Reuse on site (25,000m ³ available)
Canteen Waste	Segregate offsite for recycling
Timber	Reuse onsite / segregate for recycling
Canteen waste	Segregate onsite for recycling
Packaging – Paper and cardboard	Segregate onsite for recycling
Packaging – Plastic	Segregate onsite for recycling
Packaging – Wooden	Segregate onsite for recycling
Municipal waste	Segregate onsite for recycling
Steel	Segregate onsite for recycling
Plastic	Segregate onsite for recycling

5.1 Dredging Spoil

In total, approximately 165,000 m³ of dredged material will be generated during construction. Of this, 150,000 m³ shall be disposed of at the licensed dredge spoil area. The remaining 15,000 m³ shall be reused within the quay structure.

5.2 Site Won Materials

Up to 25,000 m³ of aggregate material is currently available on site, generated from previous excavations at Nigg Energy Park. It is envisaged that most of this material shall be reused as fill material within the quay structure.

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6.0 Segregation of Waste

In order to maximise the potential reuse and recyclability of materials they must be segregated and stored separately from other wastes. Segregating the materials makes it much easier to pinpoint areas of work where excessive waste is being generated.

If inert waste (soil, concrete etc) is mixed with active waste (timber, cardboard etc) the load becomes contaminated and the whole load will be charged at the higher rate for active waste. It is an offence to mix hazardous waste with other waste.

7.0 Waste Management Data Sheet

The Waste Management Data Sheet has been produced to assist site staff in monitoring the production and disposal of waste on site. This sheet will also be issued as a spreadsheet to be completed and returned monthly to the Environmental Manager at Head Office. It is important that completed Waste Transfer Notes are maintained for these materials.

Printer and copier cartridges should be returned to Head Office for recycling.

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8.0 Special (Hazardous) Waste

Labels and Containers shall be used for Special Waste, to keep safe the handling and storing process. See Figures in Appendix A & B. The following actions are required to prevent spills and further contamination:

- Special Waste should be stored separately to avoid mixing of substances.
- Different types of Special Waste shall be segregated. Specific containers for each type shall be provided. The storage period should be in accordance with regulatory requirements.
- Secure Zone to prevent access for public, ideally in a closed and lockable container.
- Protected for ambient conditions (rain, wind, fog, etc.), ideally on a hard surfaced or paved area. If stored externally, it shall be covered at least for 3 lateral sides and the roof. Area shall be waterproof.
- Fire protection available in the area.
- Spill kit available in the area.
- Sign for “Dangerous” products should be visible on all storage areas. Each container has a visible label with the product characteristic and emergency response
- Signs for “no smoking area”.
- Daily inspection shall be done to verify storage area & containers conditions
- Liquid Special Waste (used fuel, expired chemicals, etc.) should be preserved inside a container/drum which should be inside of an enclosed area, this Secondary Containment Zone must comply with:
 - Waterproof to avoid any leakage out of the containment during substances handling
 - Capacity to ensure all liquid will be retain inside of the enclosed area, in case of an accidental spill, at least 110% of its capacity. It is recommended 110% capacity
 - Label with the initial storage day, like:



In case a new waste stream is identified, the Environmental Designee/Environmental Manager will advise on disposal options to all employees and subcontractors.

The Environmental Weekly Checklist will be part of the routine inspections to ensure compliance with this SWMP and regulatory requirements

The following table presents the special wastes that may be generated as a result of the construction works.

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Table 4: Special (Hazardous) wastes

CATEGORY	DESCRIPTION / EXAMPLES	DISPOSAL RECOMMENDATION
Oils and solvents	Oily rags, thinners, solvents, degreasers, hydraulic fluids, lube oils, used oil spill clean-up/absorbent materials and associated contaminated soil, and empty oil containers	Liaise with Waste Management Company (WMC), and segregate on site in containers provided by WMC. WMC to collect special (hazardous) waste and complete their own consignment notes.
Paint	Primers, paints and empty cans	“
Epoxy coatings	Used for repairing damaged factory applied coatings	“
Contaminated ground	Made ground, bituminous materials containing coal tar	“
Biocides	Disinfectant	“
Batteries	Lead acid	“
Fluorescent tubes	From site offices	“

9.0 Waste Management Contractors

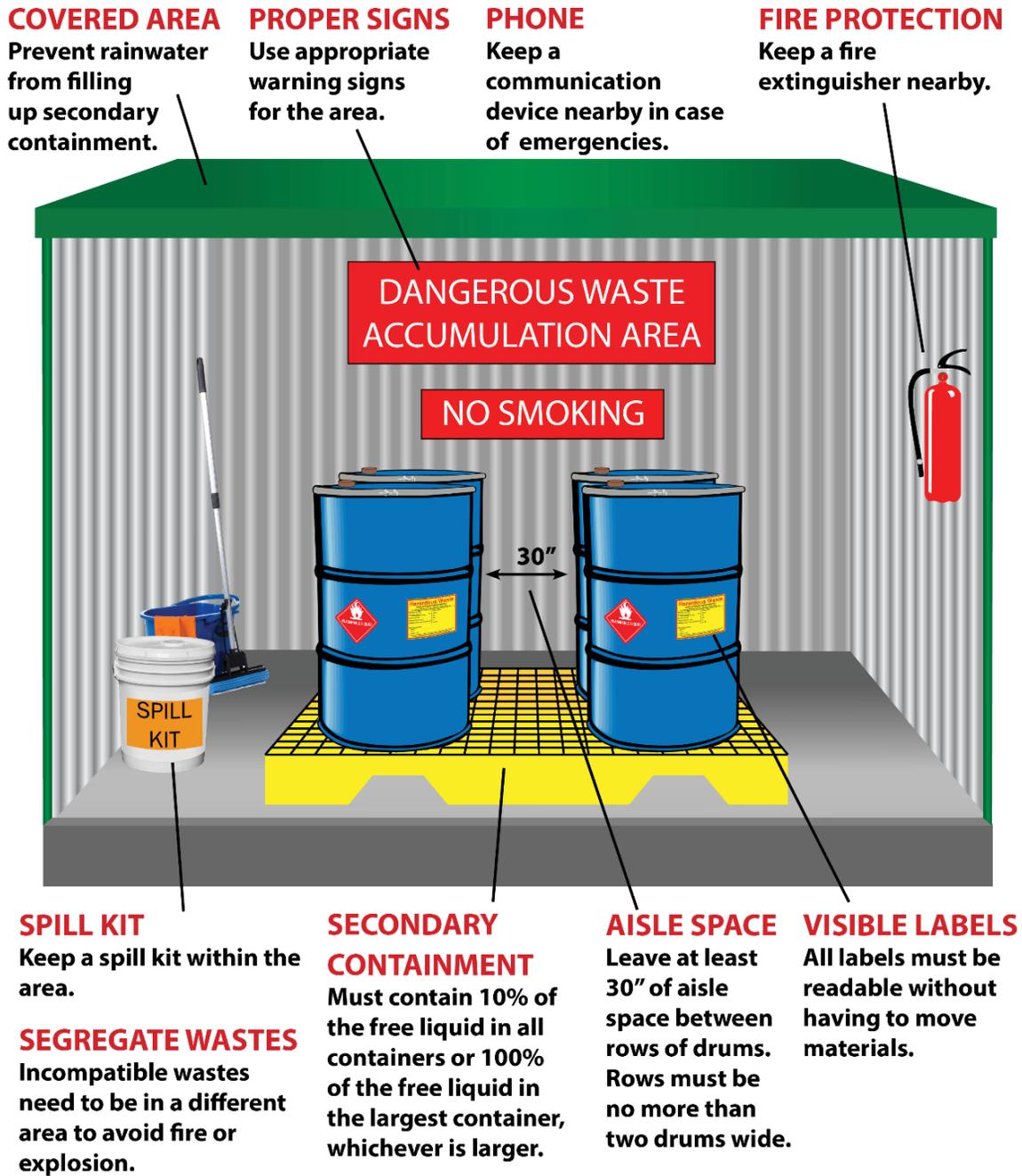
The following waste management contractors have been identified as being able to satisfy the principal contractors Duty of Care regarding disposal of Controlled and Special (Hazardous) Waste.

Table 5: Waste Carriers

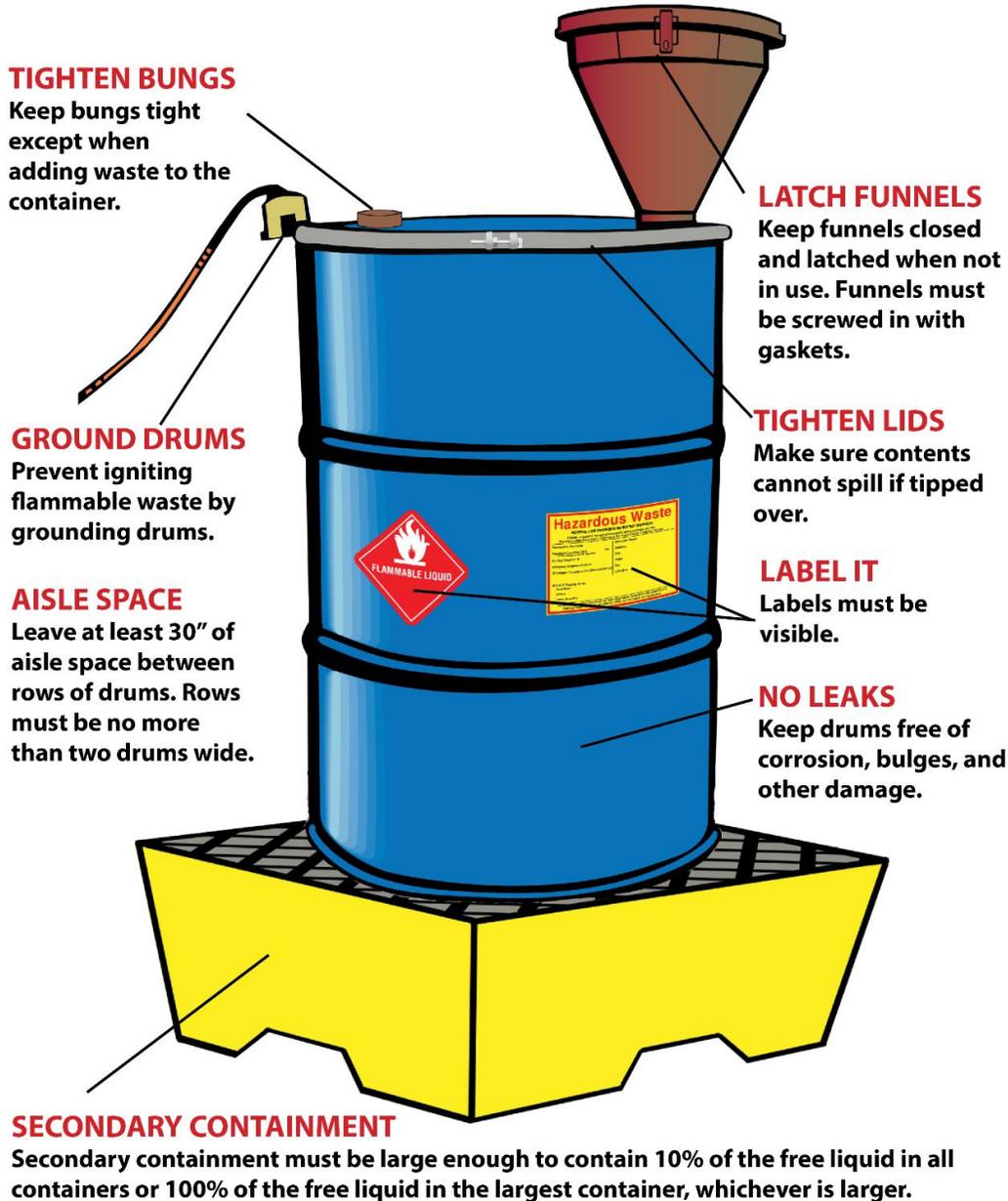
TYPE OF WASTE	WASTE CODES	NAME AND ADDRESS OF WASTE CARRIER	WASTE CARRIER'S LICENCE NUMBER
Sub-soil	17 05 04	Highland Waste Services	SNO/039531
Rock/Aggregate	17 09 99		
Plastic Metal Timber	17 02 03 17 04 07 17 02 01	Northern Recycling	SCO/046660
Municipal Waste	20 03 01	Highland Waste Services	SNO/039531
Special Waste	-	NRC Environmental Services	SNO/039458/CB

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Appendix A: Special (Hazardous) Waste Storage



Appendix B: Waste Oil Storage





NIGG EAST QUAY DEVELOPMENT – POLLUTION INCIDENT RESPONSE PLAN (PIRP)

	Name	Company	Position	Date
Compiled by:	C. Quinn	Farrans	Environmental advisor	04.01.2021
Reviewed by:				
Approved by:				

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1.0 Introduction

Farrans have produced this Pollution Incident Response Plan (PIRP) as part of the environmental management for the Nigg East Quay Development. The PIRP will:

- Follow the existing emergency response procedures and the command and control structure in place at Nigg Energy Park, as outlined in the Cromarty Firth Port Authority Oil Spill Contingency Plan.
- Detail potential environmental incidents and the appropriate response required.
- Provide details of the 24-hour Environmental Emergency Response Team to be available throughout construction.
- Provide a list of statutory bodies to be contacted in the case of a pollution incident.
- Provide a list of pollution response contractors to be contacted in the case of a pollution incident.
- Detail the appropriate reporting procedure required for near misses, incident and accidents, and a template report form for reporting (form F123).
- Require all personnel to undertake a site induction.
- Require all subcontractors to have spill response kits available at refuelling areas and to accompany mobile diesel bowsers.

1.1 Reference Documents

The following plans and guidance have been referenced which reflect current good practice.

- Farrans: Nigg East Quay Development Construction Environmental Management Plan (December 2020).
- Annex 1 To the Cromarty Firth Port Authority Oil Spill Contingency Plan. Nigg Energy Park Bunkering Facility. Oil Spill Action Plan (May 2020).
- GPP 5: Works and maintenance in or near water (February 2018).
- PPG 18: Managing fire water and major spillages (June 2000).
- GPP 21: Pollution Incident Response Planning (July 2017).
- GPP 22: Dealing with spills (October 2018).

2.0 Roles and Responsibilities

Contract Manager

The Contract Manager is responsible for the overall environmental management plan and its implementation. The contract manager must provide enough resources to the Environmental Designee to establish the PIRP.

The Contract Manager will be responsible to communicate with Nigg Energy Park (NEP) senior management, advise the relevant authorities and any other relevant stakeholders.

Environmental Designee

The Environmental Designee is responsible for providing the site with the resources (equipment and amenities) required to respond to emergencies and site instruction to ensure that all relevant personnel are trained to respond to any environmental emergency.

The Environmental Designee, as required, will:

- Complete inspections and regular checks of spill kit materials available on site.
- Ensure all wastes, including special (hazardous) wastes generated on site are stored and disposed of in accordance with the Site Waste Management Plan (SWMP).
- Complete the F123 – Environmental Incident Report Form should a pollution incident occur and submit to the Farrans management and NEP senior management for review.

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- Close out actions and report lessons learned to communicate conclusions to site staff to avoid recurrence of pollution incidents.
- Deliver toolbox talks and spill response training as necessary to site staff.

All Employees and Subcontractors

All employees and subcontractors shall report as soon as possible the pollution incident detected to Farrans management and NEP senior management. All staff should collaborate with the Environmental Designee to organise the emergency response, to bring the situation to normal operations following the pollution incident.

Specialised Clean Up Contractors

In the event of a major incident, specialist contractor services will be availed of. The specialist contractor performing this service will be made familiar with the logistics of the site through the induction process and be available to respond on a 24 hour / 365 day basis. Contact details for the specialist contractor will be detailed in the Emergency Contact Notice and this will be displayed at the site office.

3.0 Potential Environmental Incidents

The following generic control and mitigation measures will be adopted during the construction phase of the project in connection with potential sources of pollution identified. The scope covers typical issues associated with pollution control for marine construction and operation activities, including:

- Site investigation drilling and excavations.
- Dredging and associated disposal of materials
- Surface water, erosion and sediment run-off management controls.
- Diversion of utilities and services.
- Construction / establishment of site compound, car-parking and plant storage area.
- Use of vehicles, plant and equipment.
- Delivery, storage, handling and use of chemical and oils.
- Refuelling.
- Waste management.
- Contaminated land management.
- Waste water management (sewerage and foul water).
- Concrete washout

An emergency at Site may be precipitated by any of the following conditions:

- Fire
- Explosion
- Vapour/Toxic Fumes Release
- Hazardous material spillage/release
- Oil Spillage
- Storage Tank Collapse
- Serious Injury
- Other incidents of a serious nature

Accidental site hazards are always associated with the presence of a hazardous material or a material that is in a potentially hazardous physical state (e.g., at high pressure), or with the handling operations of these materials. It is important to know where, within the Site, significant amounts or hazardous materials are located. These materials should be identified on site with warning signals accord with the relevant Regulations:

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- Explosive Materials
- Oxidizing
- Flammable or Highly Flammable Materials
- Combustible Materials.
- Toxic or Very Toxic Materials
- Environmentally Dangerous substances
- Corrosive, Harmful, Irritant, Poisonous or Lethal
- State:
 - Gases and Vapours
 - High or Low Temperature Materials.
 - Refrigerated Liquefied Materials.
 - High Pressure Liquids, Gases or Vapours.
 - Highly Reactive Materials.
 - Chemically Unstable Materials.
 - Pressure-Sensitive Materials.

3.1 Mitigation Measures

Pollution prevention controls are mitigation measures incorporated into designs, specifications and method statements. It is the intention of Farrans to adopt the following principals based on the principles of prevention:

- **Avoidance** – by elimination and usually best addressed during the design /planning stage.
- **Reduction** – examination of alternatives and the incorporation of mitigation measures.
- **Compensation** – compensating for the residual effects through measures that are proportionate, relevant and appropriate to the environmental effect.
- **Remediation** – where adverse effects are unavoidable, it may be possible to carry out some subsequent remediation works.

3.2 Response Actions

The potential for environmental incidents during construction on site will generally be in relation to fuel, oil or chemical spills, sediment contaminated run-off, and the uncontrolled release of sediment during dredging activities. To a lesser extent, pollution incidents may arise from concreting activities and waste management failures.

The table below sets out potential environmental incidents and the suggested response to prevent significant environmental impacts.

Table 1: Environmental Emergency Response

TYPE OF INCIDENT	EMERGENCY RESPONSE
1. Fuel, oil, or chemical spill (Minor spill – Low risk)	On discovering a spill, ensure no smoking, turn off sources of ignition, check COSHH assessments for advice, and wear appropriate PPE.
	<ol style="list-style-type: none"> 1. Stop or reduce flow 2. Contain spillage (use spill kit) 3. Inform Farrans management and NEP senior management 4. Farrans to assess seriousness of spill

	<p>If there is a small amount of product lost:</p> <ol style="list-style-type: none"> 1. Clean up using spill kit 2. Place contaminated spill kits, any oil/chemicals collected and any other contaminated materials into a covered and appropriately labelled container and remove from site according to WI – 002 3. Environmental Designee to complete 'F123 - Incident Form'
<p>2. Fuel, oil, or chemical spill (Major spill – High risk)</p>	<p>On discovering a spill, ensure no smoking, turn off sources of ignition, check COSHH assessments for advice, and wear appropriate PPE</p>
	<ol style="list-style-type: none"> 1. Stop or reduce flow 2. Contain spillage (use spill kit) 3. Inform Farrans management and NEP senior management 4. Farrans to assess seriousness of spill
	<p>Farrans Contract Manager or Project Manager to telephone the relevant emergency number as below:</p> <ul style="list-style-type: none"> • Pollution Hotline 0800 80 70 60. • Inform Farrans Environmental Manager and Insurance Services Department. • If in doubt, phone the Environmental Manager on 028 9055 1212.
<p>CLEAN UP OPERATION</p>	
<p>Minor spill</p>	<ol style="list-style-type: none"> 1. Place contaminated spill kits, any oil/chemicals collected and any other contaminated materials into a covered and appropriately labelled container and remove from site according to WI – 002. 2. Environmental Designee to follow the Corrective/Preventive Action procedure.
<p>Major spill</p>	<p>If spill is to Surface Water:</p> <ol style="list-style-type: none"> 1. Deploy boom downstream from spill entry point 2. Recover floating product by using absorbent cushions 3. Check area downstream for evidence of escaped oil
	<p>If spill is to Site Drainage System</p> <ol style="list-style-type: none"> 1. Secure all drains by blocking off entry point 2. Close off discharge point 3. Recover ponded product with absorbent mats or cushions 4. Clean drains before being reopened
	<p>If spill is to Groundwater</p> <ol style="list-style-type: none"> 1. Appoint hydrogeologist to co-ordinate clean up with Contract Manager 2. Hydrogeologist to issue clean up certificate on completion of clean up

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	<ol style="list-style-type: none"> 1. Place contaminated spill kits, any oil/chemicals collected and any other contaminated materials into a covered and appropriately labelled container and remove from site according to WI – 002 2. Environmental Designee to follow the Corrective/Preventive Action procedure
3. Suspended solids (silt) entering controlled waters	<ol style="list-style-type: none"> 1. Cease the activity immediately 2. Slow down the rate of discharge and filter using appropriate means 3. Divert runoff away from watercourse by digging cut-off trench providing this does not add more silt to the runoff water 4. Excavate settlement pit to settle out the suspended solids 5. Take samples of the silt laden water and send to laboratory for analysis 6. Compare results of tests with recommended criteria 7. Inform the Environmental Designee 8. Farrans Project Manager to inform the relevant environmental regulatory body. In the event of a pollution incident contact the incident hotline number on 0800 80 70 60 9. Environmental Designee to carry out a thorough investigation and report to the client and relevant regulators.
4. Burst water main	<p>If a water main is accidentally damaged, the following procedure should be adopted:</p> <ol style="list-style-type: none"> 1. Stop work immediately 2. Contact Local Water authority immediately and request them to turn off line valve to stop the flow 3. Divert run-off away from watercourse by digging cut-off trench. If water main is too close to a watercourse do not use digging techniques; this could cause more suspended solids to enter the watercourse 4. Excavate settlement pit to settle out the suspended solids if far enough away from watercourse 5. Pump escaped water from water main to an area away from watercourse 6. Inform the Environmental Designee 7. The Environmental Designee to inform the relevant environmental regulatory body via the incident hotline on 0800 80 70 60 8. Compare results of tests with recommended criteria
5. Gas pipeline	<p>If a Gas pipeline is accidentally damaged, the following procedure should be adopted:</p> <ol style="list-style-type: none"> 1. Stop work immediately 2. Contact Local Gas authority immediately and request them to turn off line valve to stop the flow 3. Contact the Fire Brigade (call emergency number) 4. Evacuate the area and close the access to the site 5. Ensure no powered equipment is working, switch off all of them 6. Verify no smoking in the area 7. Locate the fire extinguishers in case are required 8. Inform the Environmental Designee & SHEQ Manager
6. Electrical Line	<p>If a Electrical line is accidentally damaged, the following procedure should be adopted:</p>

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	<ol style="list-style-type: none"> 1. Notify the supervisor, and advise SHEQ personnel and/or SHEQ Manager, who will call to emergency services, and the Electrical Service Provider Company to take corrective measures 2.If a machine or equipment is in charge, loaded, or energize and the operator is inside the machine: <ul style="list-style-type: none"> • he must stay inside without moving and, • only will be able to go outside once the voltage is off and receive the proper instruction for it. 3.If machine/equipment in on fire, the operator must jump avoiding touching the metal parts of the machine.
7. Fire	<ol style="list-style-type: none"> 1. Who had detected the fire shall immediately advise Farrans management, SHEQ personnel and/or SHEQ Manager and Fire Team. 2. The Project Manager shall coordinate the first fire extinguishing works and shall communicate its existence to the relevant parties. 3. To try to extinguish the fire, as possible with the available equipment (fire extinguishers, water and/or dust). 4. Not to ever use any type of material impregnated with dangerous substances, or water contaminated with these substances (oils, release agents, curing liquid, etc.) 5. When in doubt about the fire control themselves, the Project Manager or designated Emergency Controller will advise to External Emergency Services (Fire Brigade) and, if necessary, the medical services. 6. Once extinguished the fire, that area shall be cleared of any residual from the fire extinction. For this purpose, these will be identified as hazardous waste, managing them properly. 7. It will be restored the fire material used as soon as practicable
Hazardous Substances Container Breakdown	<ol style="list-style-type: none"> 1. Who had detected the spill or tank failure shall immediately advise Farrans management. The Project Manager shall coordinate with External Emergency Services if required and, if necessary, the medical services, and to communicate and to advise Authorities and/or Supply companies 2.To plug up container/drum/tank to reduce the spill or to cut off the supply in case of a breakdown of valves, key, machinery or gasket leak. To contain the spill with the available equipment, place a bund or use absorbent material (spill kit) if needed for leakage stopping. To rectify failure as soon as possible. 3.If bund is used to recover the liquid for its reuse as possible. If it is not possible to use it again, it shall be spread on the liquid clay, sand or other absorbent material, collect it and treat it as a hazardous waste

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	<p>4.If contaminated soil is generated during the spill it will be considered as hazardous waste. To remove it and replace by similar original material.</p> <p>5.If Marine and/or Groundwater is contaminated it should be provided the required measures & equipment to re-establish the damaged environment</p> <p>6.Material used on emergency response will be restored</p>
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4.0 Emergency Contact Details

IN THE EVENT OF A LOST TIME ACCIDENT, DANGEROUS OCCURRENCE, OR POLLUTION INCIDENT			
CONTRACT:	33034		
SITE TELEPHONE NUMBER:			
SITE ADDRESS:	Nigg Energy Park, Tain IV19 1QU		
LOCATION OF FIRST AID BOX:	Site office		
Emergency Services:	999		
Local Police:	Police Scotland, Victoria Road, Tain IV19 1AU 01786 289070		
Doctor / Hospital (Name & Address):	County Community Hospital, Saltburn Road, Invergordon IV18 0JR 01349 852496		
Environmental Hotline:	0800 80 70 60 (24 hr Emergency Hotline)		
Environmental Regulator (Local Office):	Marine and Coast Guard Agency Scottish Environment Protection Agency Marine Scotland		
Port Authority: MCA Aberdeen: SEPA Highland Council: Nigg Oil Terminal: Marine Scotland: Scottish National Heritage: Specialist Advice: Specialist Clean Up Contractors: Adler and Allen	Office Hours	Out of Hours	
	01349 852308		
	01224 592334		
	0800 807060		
	0800 838009	01349 886690	
	01862 851900		
	0300 244 4000		
	01349 865333	07699 761509	
0800 592 827	0800 592 827		
COMPANY CONTACTS	Office Hours	Out of Hours	
	First Aider:		
	Regional Manager:		
	Contract Manager: Patrick Murray	028 9055 1200	07977 287061
	Site Agent / Manager:		
Foreman:			

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SHEQ Manager: Darren McClean	028 9055 1200	07392 283333
Environmental Manager: Kevin McGarvey	028 9055 1326	07720 947383
Environmental Advisor: Conan Quinn	07384 797178	07384 797178

5.0 Reporting Procedure

When an emergency or incident is identified, details, including location, nature and magnitude of the incident, will be reported to the Environmental Designee immediately. The details will be entered on the Environmental Incident Report Form (F123), a copy of which will be emailed immediately by the Environmental Designee to Farrans management and NEP senior management. See Appendix A for a copy of the F123 form.

The emergency response procedures and reporting of environmental incidents will be subject to management review and will be reviewed, and revised where necessary, after each emergency. Where practicable the emergency procedures will be tested periodically.

The basic environmental induction will familiarise site staff with the emergency reporting procedures.

Following an environmental incident, the Environmental Designee will carry out a thorough investigation and:

- Work out how and why the incident happened.
- If necessary, alter site practices to prevent the incident happening again.
- Ensure all site workers are aware of what to do to prevent recurrence. Lesson Learned registered and divulged.
- Increase monitoring for similar activities.

6.0 Incident Response Training

All Farrans personnel working on site will receive basic spill response training as part of the site induction. Personnel with responsibilities dealing with environmental incidents and for handling hazardous liquids with the potential to cause pollution (such as refuelling operations or oil change maintenance) will have received specialist spill response training. Records of spill response training shall be documented and maintained and available for inspection. An example of a typical Toolbox Talk on 'Spill Control' is available in Appendix B.

An individual will be assigned the responsibility for periodic testing of emergency procedures, this will be at site managements discretion. Records of the emergency response training will be documented and retained at the site office for review.

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Appendix A

ENVIRONMENTAL INCIDENT REPORT FORM			
CONTRACT:	Nigg East Quay Development	CONTRACT No:	33034
DATE OF INCIDENT:		TIME:	
LOCATION:			
CHAINAGE: <i>(If applicable)</i>			
RAISED BY:			
ACKNOWLEDGEMENT BY:			
NATURE OF INCIDENT: <i>Eg: pollution of river; ground contamination; excessive dust; excessive noise; excessive vibration; waste problem</i>			
MAGNITUDE OF INCIDENT: <i>Eg: How long did it last? Was there a fish kill? How much ground was contaminated?</i>			
AUTHORITIES INFORMED: <i>Eg: EHS / SEPA / EA / EPA / Local Council / HSE / HSA</i>		TIME	
INFORMED BY:			
CAUSE(S) OF INCIDENT: <i>Eg: Oil or fuel leak from machine; fuel spill whilst refuelling; use of noisy equipment</i>			
IMMEDIATE ACTION TAKEN:			
ACTION TAKEN TO PREVENT RECURRENCE:			
REPORT RECEIVED BY ENVIRONMENTAL MANAGER:			
Signature:		Date Received:	

Appendix B



Construction Confederation

TOOLBOX TALK

No 1

SPILL CONTROL

WHAT?

Accidental releases of oils and chemicals from construction sites make up a large number of pollution incidents that occur each year.

Many spillages can be prevented. It is important that everyone on site knows how to control a spill to minimise its impact.

Would you know what to do?



WHY?

- ❑ **Minimise potential harm:** Spills spread very quickly and lead to environmental harm.
- ❑ **Avoid prosecution:** Fines and clean up costs can be expensive
- ❑ **Public relations:** Avoid negative publicity for the company and our clients and maintain our workload.

DO

- ✓ STOP WORK immediately
- ✓ If spillage is flammable, extinguish all possible ignitions.
- ✓ Identify the source of pollution and rectify the problem
- ✓ Contain the spillage – on land use earth/sand to construct a bund around the spill to stop it spreading. Use booms to contain oil spills that have already entered a watercourse
- ✓ Contact your Line Manager
- ✓ Put on appropriate PPE – typically rubber gloves
- ✓ Protect sensitive areas (e.g. watercourses or surface water drains – use drain covers or use earth/sand to construct a bund)
- ✓ Clean up the spill. Use absorbent granules/pads to mop up spills. Large pools of oil or spills which cannot be absorbed should be removed by gulper
- ✓ Dispose of all contaminated materials (soil/absorbent materials) correctly – those containing substances such as oil, diesel or paint will be hazardous waste. Ensure any contaminated water is taken to an appropriately licensed disposal site.
- ✓ Notify your line manager of actions taken

DON'T

- ✗ DON'T ignore it! STOP WORK and ACT immediately.
- ✗ DON'T hide the incident – ensure you report it and implement controls.
- ✗ DON'T ever hose a spill into the drainage system. Always use absorbent materials.

