2026

BANGOR MARINA CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

[redacted] – SHEQ MANAGER
[redacted] – H&S ADMIN

BANGOR MARINA

Reviewed 29/04/2026 – V3

Amendment Record

Amendment (Section No.)	Description of Change	Changed By	Date
7.3.5 7.3.6	Sections 7.3.5 & 7.3.6 added following comments from DEARA regarding the marine license application. Further detail included on in-water works and the proposed mitigation measures to cover the install of a new outfall.	[redacted]	
7.1.2 10.0 Appendix 4	Further detail added to the CEMP following comments by NIEA Water Management Unit dated the 16/08/24. Updates seek to address discharge of condition 16.	[redacted]	
7.3.1 7.3.3	Site details added to Section 7.3.1. Section 7.3.3 - Figure 5 updated.	[redacted]	
2.3 7.2, 7.3.4 10	*Update for extra works* Works zone layout Clandeboye Stream info added Mitigation updated	[redacted]	30/01/2026
7.5.2.1 & page 41	Included Birds – New outfall	[redacted]	29/04/2026
Page 7	Changed to Like architects	[redacted]	29/04/2026

Contents

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 project are met. This document has been prepared by MSM Contracts and applies to the development site outlined in planning application LA06/2023/1500/F.

The CEMP is considered a live document and will be updated and reviewed as necessary as works progress to ensure they 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.

A full copy of the approved CEMP and associated suite of environmental documents shall be kept on site and will be made available for inspection upon request. This CEMP has been produced as a follow on from the Outline Construction Environment Management Plan (OCEMP) by Doran Consulting 192042 - Queens Parade Development Bangor - August 2019

2.0 Project Description

The site is currently a combination of brownfield and mixed-use development. It is proposed to develop the site into commercial, leisure, residential and office space. Open space and recreational areas to include soft and hard landscaping are included within the development. The existing site has an area of approximately 5.03ha. The first phase of the project will focus on Marine Gardens, and development of the public realm space along the marina at Queens parade.

2.1 Location

The Queens Parade development site is located opposite the marina in Bangor, County Down. The site is located between Southwell Road, King Street, Main Street and the marina. The Queen's Parade Road runs east to west through the site.

The sites topography slopes from south to north, from a level of 12.75m AOD on King Street to 3.75-4 m AOD on Queens Parade / Marine Gardens Car Park.

Figure 1: Site Location

2.2 Construction Methodology and Timings of Work

The construction methodology for the scheme divides the construction works into 4 clear phases:

MSM Contracts have been awarded the 1st phase to date and this CEMP refers only to the 1st

phase only.

Phase 1: (59 weeks)
Marine Gardens public realm area which includes event space, 2 nr pavilion buildings, 4 nr kiosks and new modern playpark.

2.3 Construction Zone Plan

The development has been split into 4 distinct phases. The first phase of the works encapsules all Marine Gardens, covering the public realm space between the marina and Queens parade that includes an event space, 2 nr pavilion buildings, 4 nr kiosks, new playpark and a main focal centre piece.

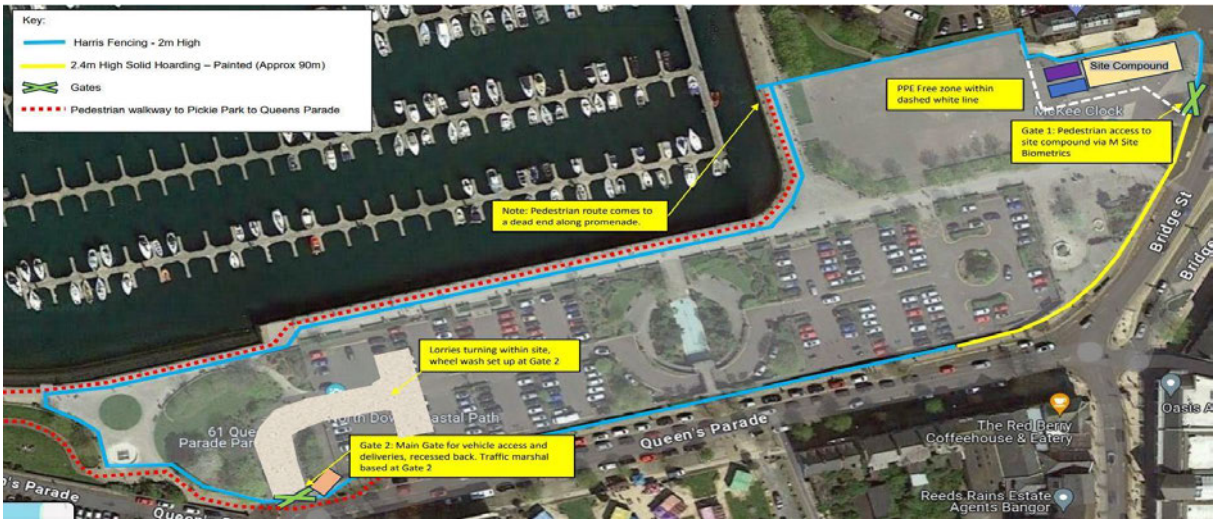
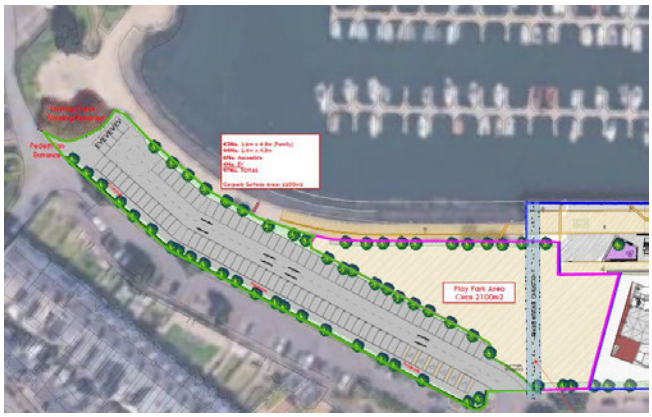


Figure 2: Construction zone plan for Phase 1: Marine Gardens public realm

These works have now been extended to include the extension of the site into the new proposed playpark area *so to create a new parking area.*



3.0 Project Stakeholders

Table 1: Project Stakeholders

Client	**Bangor Marine Limited** 4-10 Donegall Square West, Belfast. BT1 5HD Contact: [redacted] Tel: 028 9442 5600
Principal Designer/ Agent	**Hasco Europe Ltd** 32a Frances Street Newtownards Co. Down BT23 7DN Tel 028 91812500
CIVIL AND STRUCTURAL	**Doran Consulting** Norwood House, 96-102 Great Victoria Street, Belfast. BT2 7BE Tel: [redacted] Email: [redacted]
M&E ENGINEER	**AECOM** 9th Floor, The Clarence West Building, 2 Clarence Street West, Belfast. BT2 7GP Tel: [redacted] Email: [redacted]
Architect	**Like Architects** 3 Linenhall St W, Belfast BT2 8DY Ciaran Vaudequin Email: [redacted]
Landscape Architect	**Park Hood** Hawarden House, 163 Upper Newtownards Road, Belfast. BT4 3HZ Tel: [redacted] Email: [redacted]
Principal Contractor	**MSM Contracts Ltd** Unit 45a Seagoe Ind. Estate Craigavon Co. Armagh BT63 5QE Tel:-02890684943

4.0 Roles and Responsibilities

A Project Organisation Chart is attached in Appendix 1.

4.1 Project Manager

The Project Manager shall:

- Provide information on contract requirements, including Scope of Works, to the SHEQ Advisor following contract award and prior to start of works on site, and when any changes occur.
- Nominate SHEQ Advisor 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 oil, including diesel are stored in properly bunded tanks / bowsers / drip trays.
- Ensure Waste Transfer Notes / Hazardous Waste Consignment Notes are checked against invoices before payment.
- Report incidents and non-conformances to the SHEQ Advisor.
- Ensure the SHEQ Advisor 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 SHEQ Advisor

The SHEQ Advisor shall:

- Report major incidents to the Contract Manager immediately, the Company Environmental Manager, the Company Insurance Department, the EA and other statutory authorities where required.
- Carry out thorough investigations and provide reports to the Project Manager and Environmental Manager after an environmental incident.
- Log and monitor incidents and non-conformances.
- Obtain prior agreement from the Project Manager and Environmental Manager for any deviations from Environmental Procedures.
- Disseminate information issued by the Project 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 Project Manager for delivery at progress meetings.
- Complete Environmental "Action Lists" and forward to the Project 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 SHEQ Department when unsure of requirements.

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

4.3 Sub-Contractors

When subcontractors are transporting waste to licensed tips they shall:

- Be in possession of a Waste Carrier Licence.
- Please Note: 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 / Hazardous Waste Consignment Notes and submit to the SHEQ Advisor.
- 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 SHEQ Advisor.

4.4 Ecological Clerk of Works (ECoW)

The ECoW (Ulster Wildlife representative) will be on site when required to monitor ecologically sensitive works and to ensure that no wildlife comes to harm. ECoW duties include, but are not limited to:

- Monitor works in ecologically sensitive areas.
- Provision of status reports and updates.
- Provision of advice to and liaison with workers on site.
- Identifying ecological risks and recommendations for controls.
- Liaison with the project team, including the SHE Advisor and Environmental Manager.

4.5 All Staff

All Staff shall:

- In the event of an incident, stop work, implement control procedures and report the incident to the Project Manager.
- Inform the Project Manager when waste needs collecting.
- Pass any queries or correspondence on environmental issues to the SHEQ Advisor and/or Environmental Manager.
- Work in accordance with MSM Contracts Operating Procedures, Environmental Work Instructions, the projects suite of Environmental Management Plans and Method Statements.

5.0 Training Awareness

All staff and operatives, including subcontractors employed on the project will receive an environmental induction as part of the overall site induction. As a minimum this shall include notification of any protected flora & fauna or invasive species, provide location details of any exclusion zones, the designated waste storage area, spill response equipment, and refuelling area(s).

All staff and operatives will be trained in the use of spill response equipment as part of the emergency preparedness programme. Periodic spill response training will be organised as the need arises.

Environmental training will be completed via Toolbox Talks with subcontractors. The SHEQ department shall provide advice on topics to be covered which are relevant to the works, and records of attendance will be maintained in site records.

Training awareness notes are included in Appendix 2.

6.0 Consultation and Communication

It is the intention of MSM Contracts that consultations and dialogue will continue throughout the planning and construction phases of the project to ensure the environment is protected. Where consultations are required, these will be highlighted in the CEMP and the amendment record sheet updated to summarise changes made.
Issues raised on site will be discussed at the weekly construction meetings and appropriate action taken by the responsible person identified. In the event of a pollution incident, the SHEQ Advisor will complete the Onos online Environmental Incident Report Form and the Project Manager will contact NIEA via the Pollution Hotline.

7.0 Environmental Controls

The following section details the proposed environmental controls to mitigate potentially adverse impacts that could arise during construction. The planned mitigation measures are summarised in Section 10.0.

7.1 Ground Conditions

The Marina car park sits adjacent a landscaped area, including a pond, a fairground and a paved area which includes a fountain and clock tower. The site is drained via gully system which discharges to outfalls located along the wall adjacent to the Marina. Water supply mains are also located within and surrounding the site. Made ground is present throughout the site, the car park is of asphalt surfacing and features planter beds of brick construction, planted with ornamental trees and shrubs. Pedestrian walkways are paved and there are areas of amenity grassland located centrally in the car park and to the western car park entrance.

The Geological Survey of Northern Ireland (GSNI) Geoindex online maps indicate the ground conditions underlying the development site and surrounding area. These maps only provide a 'first pass' assessment and further ground investigation is required to produce an accurate assessment of the underlying geology and hydrogeology.

- Superficial geology – Till
- Bedrock geology – Sandstone
- Bedrock aquifer located to south of site. Moderate yields unusual and low yields more common. Regional flow limited, mainly shallow and local flow
- Superficial aquifer – none
- Groundwater vulnerability – 2. The British Geological Survey (BGS) note five levels of vulnerability, with 5 being the highest and 1 the lowest. The groundwater vulnerability rating is based on the thickness and hydraulic conductivity of the overlying deposits.

Historical planning submissions for the development site have included desktop and intrusive ground investigations to assess ground conditions and contaminated land. Original assessments include Atkins (2014) Environmental Land Quality Assessment, a Preliminary Risk Assessment (PRA) and a Generic Quantitative Risk Assessment (GQRA), and Atkins (2019) Contaminated

Land Assessment. However, previous intrusive investigations were confined to the southern end of the site and do not include the Marina car park area to the north of Queens Parade road.

7.1.1 Asbestos Containing Materials (ACM)

Asbestos containing materials (ACM) were identified during previous intrusive ground investigations, with loose fibres of Amosite & Chrysotile types recorded in boreholes in close proximity to Queens Parade, where demolition of a number of buildings was previously undertaken prior to contract award. As a potential pathway exists for the mobilisation of asbestos fibres to operatives and site users during construction, the following control measures shall apply to ensure a safe working environment and to remediate contaminated soil to an acceptable level which is safe for end users.

- Check if the work could require a licence. When work does not need a licence, check if it is notifiable, if so, notify the relevant authorities (HSENI).
- Appoint a licensed asbestos removal specialist to undertake the works.
- Agree plan of work i.e. remediation strategy detailing the methods to be utilised (e.g. leave in-situ, encapsulation, on-site treatment, on-site disposal, off-site treatment, and off-site disposal).
- Appropriately trained operatives undertaking the task are to wear Personal Protection Equipment (PPE) including face fitted Respiratory Protective Equipment (RPE).
- Used PPE & RPE, machine air filters and any other potentially contaminated items such as rags should be disposed of at the end of shift, double bagged and placed in the hazardous waste bins provided on site.
- Air monitoring for airborne fibres to be place during intrusive groundworks where there is potential to disturb ACM.
- ACM fragments are to be handled with care. Consideration should be given to the friability, i.e. is there a high chance of fibre release when disturbed?
- ACM fragments should be double bagged and placed in the designated hazardous waste bin earmarked for offsite disposal.
- Waste documentation to be retained in the site office. Waste consignment notes are required to be held for a minimum of 3 years.
- Complete further asbestos sampling of soil & stone material to be retained on site to demonstrate no ACM remains.

7.1.2 Remedial Strategy

Given the proposed end uses of the site, residential and open public space, it is considered that on-site treatment via physical separation and off-site disposal will be availed of. Removal of ACM by way of a hand pick exercise to remove visible fragments and if necessary, mechanical sieving are the considered the most appropriate methods to remediate. ACM will be disposed off-site by a licenced waste carrier to a suitably licensed waste facility.

MSM Contracts construction will appoint at 3rd party specialist to complete a detailed remediation strategy.

Condition 20: *The development hereby permitted shall not commence until a detailed remediation strategy to address all unacceptable risks to environmental receptors identified in Atkins Ltd Contaminated Land Assessment, Queens Parade, Bangor August 2019. This strategy must be submitted in writing and agreed with the Council and should identify all unacceptable risks on the site, the remedial objectives/criteria and the measures which are proposed to mitigate them (including maps/plans showing the remediation design, implementation plan detailing timetable of works, remedial criteria, monitoring program, etc).*

7.1.3 Proposed Mitigation

Based on the composition of made ground it is likely soils destined for off-site disposal will be predominantly classified as being *Non-hazardous Soils and Stones (EWC 17-05-04)*. Soil & stone material contaminated with ACM, if encountered, will be classified as *Hazardous Soils and Stones (EWC 17-05-03)*.

- Removal of ACM to be completed by a suitably licensed asbestos removal specialist.
- Excavated materials should be segregated into stockpiles, this includes asphalt, concrete, topsoil and subsoil.
- Samples should be collected as necessary for WAC Analysis and WM3 testing to confirm if material is inert, non-hazardous, hazardous or mirror hazardous.
- Use a suitably licensed waste carrier and waste facility.
- Complete duty of care checks for waste carrier licenses & waste facility permits/exemptions.

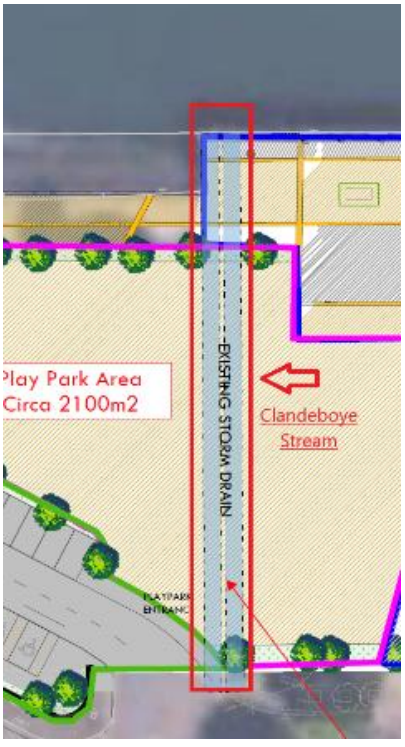
7.2 Ground Water

Groundwater flows north towards Belfast Lough and there is the potential for saltwater to enter the groundwater system. Belfast Lough is a natural intertidal sea lough at the mouth of the River Lagan. Belfast Lough is hydrologically linked to site.

The Outer Ards SPA, Ramsar and ASSI are located approximately 210m north of the site.

The Clandeboye Stream runs directly through the works area via an underground duct. There are no plans to interfere with this stream during works.

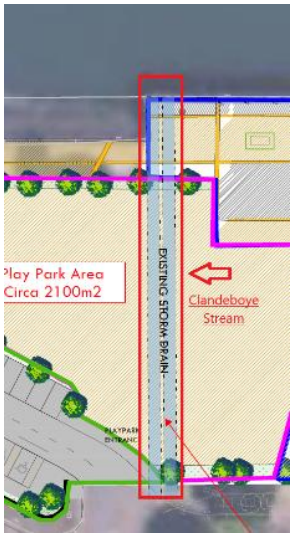
The below plan shows the location of the stream.



7.2.1 Proposed Mitigation

Pumping may be required during excavations or service diversions. The following controls will apply during pumping operations.

- Before discharging water to a foul sewer, seek permission / discharge consent from the local water service provider.
- When discharging pumped water anywhere other than to a foul sewer, a discharge consent must be requested from the environmental regulator, NIEA.
- Pumped water must not be discharged directly to controlled waters.
- Suspended solids must be settled out prior to discharge and monitored to ensure compliance with regulatory limits.
- Please note, there is piling operations occurring in the area were the Clandeboye Stream storm drain is located. MSM will ensure the piling layout does not interfere with this storm drain. To ensure this, the route of the storm rain will be marked out with spray paint, and an exclusion zone will be set up during piling operations to ensure no interference with the storm drain. Note MSM does not need to carry out any works to the storm drain so as a result, no surface water or silt will enter this drain as it is fully enclosed on site. The location of the storm drain is below.



7.3 Site Drainage

The existing drainage network will be identified prior to the commencement of works on site. All necessary temporary and/or permanent diversions shall be completed to maintain continuity of sub-surface groundwater flows.

Surface water drains will be marked up and protected to ensure no contaminated water escapes to the storm water drainage system.

The installed drainage system shall ensure segregation of clean runoff from up gradients areas of the construction works and potentially silt laden construction runoff. To manage any potential silt run-off, the following procedures will be implemented.

7.3.1 Surface Runoff

There is a potential risk that intrusive groundworks in or near controlled waters or the existing drainage network can cause pollution in the event of inappropriate silt control management via the following activities:

- Working in, over, under or beside controlled waters.
- During the installation or modification of the drainage network.
- Storing of excavated soil & stone on site.
- Uncontrolled dewatering and over-pumping of excavations.
- Inappropriate sizing or choice of silt removal equipment.
- Uncontrolled runoff from exposed ground.
- Mud caked vehicles arriving to departing from the site.
- Uncontrolled washing of plant & machinery.

To manage potential silt runoff, the following procedures will be implemented:

- Reduce surface water runoff entering the works area or stockpiled soil & stone material which could result in silt mobilisation.
- A Risk Assessment & Method Statement (RAMS) will be prepared by the appointed drainage subcontractor. The RAMS shall include detail on the control measures proposed for any working areas within or adjacent to controlled waters, the drainage network or other sensitive water receptor. The method statement will provide detail of:
    - Location of any sensitive ecological receptor, namely the Belfast Lough and the associated designated sites (Outer Ards SPA, Ramsar and ASSI).
    - Location of the existing drainage network, as per the drainage details drawings produced by Doran Consulting.
    - Direction of slope, which generally falls in a northernly direction, towards the Marina car park.
    - Adjacent watercourses, including direction of flow and control measures to protect the Clandeboye Stream & Ward Park Stream.
    - Location and type of any silt or flow control measures, including the location of drain guards, silt fences, silt traps and any other silt treatment control measures to be installed.
    - Safe de-watering zones and point of discharge. The point of discharge shall be documented in the Trade Effluent consent, which covers discharge activity to the foul sewer.
    - Location of storage areas. Bunded COSHH storage to be provided on site, suitably sited away from sensitive water receptors. All fuel storage containers are to comply with the Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010.
    - Emergency preparedness. A spill kit station will be sited adjacent the refuelling area * COSHH storage facilities, in case of an accidental oil or chemical spill.
- In areas prone to surface runoff, a diversion drain may be cut to reduce the volume of ‘clean surface water entering the working area and in turn reduce the volume of silt laden water requiring treatment.
- Prior to breaking ground, drain guards and silt fencing may be installed at sensitive water receptors.
- Following install of control measures, MSM Contracts site management team shall undertake a daily inspection of the control measures to ensure they are operating effective and efficient.

7.3.2 Dewatering Excavations

All plant & equipment proposed for use during dewatering operations shall comply with the requirements set out in the Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010.

Should dewatering (over-pumping) of excavations become necessary, the following control measures will be implemented:

- The location of safe dewatering zones will be evaluated on a case by case to ensure the point of discharge is compliant with consent requirements.
- At sensitive locations it may be appropriate to install additional silt or surface water flow control measures surrounding the safe dewatering zone, these will be carefully designed, monitored and maintained by MSM Contracts site management team, with input from the Environmental Manager & ECoW as necessary.
- The use of any proposed safe dewatering zone will be weather and ground condition dependent. No flows will be passed to these zones where the ground is already saturated, snow covered or frozen.
- Where a safe dewatering zone area cannot be established it will either be discharge to the sewer, approved with Northern Ireland Water and a trade effluent consent in place.
- The type of silt removal equipment (settlement tanks, filtration sock, pipe reactor) to be utilised to treat any pumped water prior to discharge to a safe zone will be carefully selected by the Environmental Manager in consultation with MSM Contracts site management team. Treatment options will be evaluated upon the volume of water that requires treatment, retention time necessary to remove silt, quality of original water at the location and capacity of the safe dewatering zones.
- Where passive SuDS measures i.e. settlement lagoons are required, further consultation with the relevant stakeholders will be completed. Should traditional passive SuDS measures prove ineffective, the use of chemical flocculant will be considered. Type of flocculant proposed consists of polyacrylamide and MSM Contracts Environmental manager will confirm with regulator it is safe for use.
- If contaminated groundwater is encountered during dewatering operations, works shall cease and the root cause identified. The working methods will be reviewed and amended accordingly, and agreed in consultation with the relevant stakeholders.

Figure 3. Proposed Drainage layout

Figure 4. Locations of storm Discharge

7.3.3 Drainage Assessment

A detailed drainage assessment is currently being developed by Doran Consulting (Condition 43). This will include a new outfall pipe through the marine wall in centre location of the site, relieving pressure on the already full capacity culverts to the east and west. The drainage assessment will be updated within the CEMP as the project and details are developed.

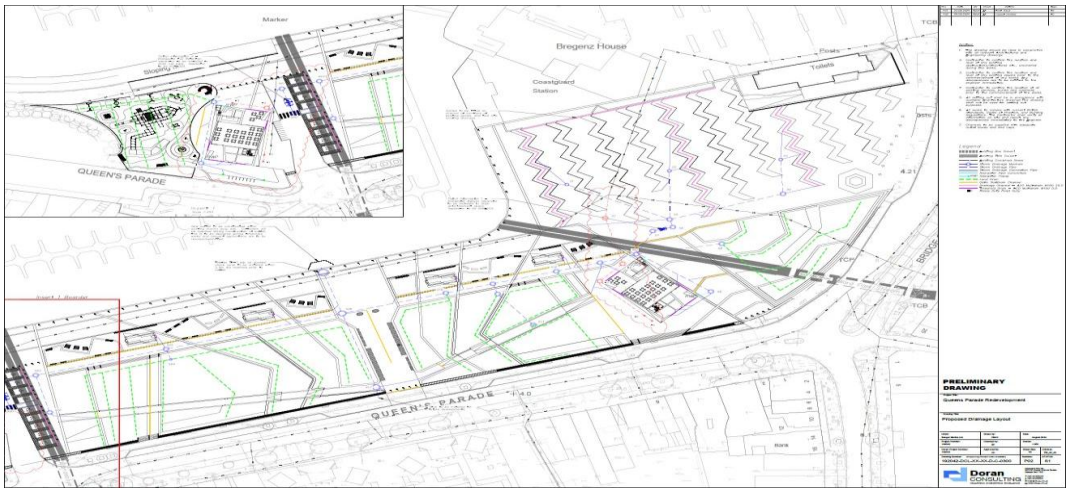


Figure 5. Proposed Drainage

Please note, there is piling operations occurring in the area were the Clandeboye Stream storm drain is located. MSM will ensure the piling layout does not interfere with this storm drain. To ensure this, the route of the storm rain will be marked out with spray paint, and an exclusion zone will be set up during piling operations to ensure no interference with the storm drain. Note MSM does not need to carry out any works to the storm drain so as a result, no surface water or silt will enter this drain as it is fully enclosed on site. The location of the storm drain is below.

7.3.4 Proposed Mitigation

- Surface water run-off from the working area will be checked daily, prior to discharge into the existing surface water drainage system.
- Daily visual checks for turbidity and oil sheen are to be completed by MSM Contracts Engineer and support provided as necessary by the SHEQ department.
- Fuel, oil, and chemicals must be stored in bunded containers that can be securely locked.
- Plant operators will be required to check their machines for leaks on a daily basis and record their findings. All fuel and oil leaks must be reported and repaired immediately.
- Designated spill response stations will be strategically placed on site and operatives informed of their location in the site induction.
- No direct discharge of concrete wash water will be permitted on site.
- Trucks delivering concrete must wash out in designated areas. Designated concrete washout will be suitably sited, away from controlled waters and surface water drains.

7.3.5 In-Water Works

Discharge of surface water from the Bangor Marina development will necessitate the install of a new outfall to accommodate future phases of the development. As such, in-water (tidal) construction works will be required to progress the install of a new 750mm outfall, which is located at Irish Grid Reference J 50360 81948.

The temporary works design is currently being progressed. Further detail will be provided on the sequence of works, including the cofferdam construction and deconstruction methodologies once made available and included as an update in this CEMP. Prior to construction works on the new outfall commencing, the appointed subcontractor will submit to MSM Contracts for review a copy of their Risk Assessment and Method Statement (RAMS) to ensure appropriate environmental control measures are included.

Due to the potential risk of water pollution associated with construction works in-water, MSM Contracts will install control measures that align with best practice guidance, including Guidance on Pollution Prevention, specifically GPP 5: Works and maintenance in or near water.

7.3.6 Proposed Mitigation

- In-water construction works are to be timed with the out-running tide. The site management team will refer to the tide tables and instruct the appointed subcontractor when works must start and finish at the morning daily briefing.
- To help minimise the risk of spreading non-native species, biosecurity measures will include an inspection of all plant and equipment in use, prior to being moved elsewhere or removed from site, in accordance with guidance issued by DAERA and Invasive Species NI, i.e. inspect, remove, clean, dispose and report.
- The temporary works design shall incorporate a containment system to prevent escape of contaminated water that could cause a pollution incident.
- Spill kit materials will be made available at the works location and spill response training delivered to subcontractor operatives undertaking the works.
- No direct discharge will be permitted to the water environment. Refer to Section 7.3.2 Dewatering Excavations.
- Daily visual checks and weekly water quality monitoring will be undertaken to ensure compliance with consented limits.
- Placement of concrete, cement and grout shall be completed when the excavation is dry.

Over-pumping of the excavation will be completed as necessary to prevent washout of alkaline water.

- No concrete washout will be permitted at the outfall excavation. A designated concrete washout facility will be provided on site, suitably sited away from controlled water and site drains and gullies.
- No refuelling of plant or equipment will be permitted within the confines of the outfall excavation. A designated refuelling area will be available on site, suitably sited on hardstanding, at least 10m from controlled water and site drains and gullies.
- A COSHH store will be made available on site for the storage of oils, chemicals and any other liquid that may pose a risk to the water environment. All COSHH materials will be removed from the works area at the end of shift and locked in the COSHH store. The COSHH store will contain a bund which provides 110% capacity for the volume of liquids stored.
- Excavated materials are to be stockpiled at least 10m from water's edge.
- Waste generated during the excavation works will be removed from site by a licensed waste carrier and disposed of at an appropriately licensed waste facility.
- Excavated materials (e.g. crushed concrete and stone material) suitable for reuse on site, will be segregated and stockpiled at the use location.

In the event of a pollution incident occurring, MSM Contracts site management team will inform NIEA via the pollution incident hotline on **0800 80 70 60** and follow the procedures outlined in the Environmental Emergency Response Plan (EERP).

7.4 Ground Gas

Ground gas can be a hazard due to explosive and toxic properties, and in high concentrations can cause breathing difficulties and asphyxiation. Previous rounds of ground gas monitoring were completed to the south of the site and indicate that the gas regime is classified as Characteristic

Situation 1 in accordance with CIRIA C665. The risk classification is very low and the measured levels are typical of made ground with little biodegradable material.

7.5 Ecology and Biodiversity

Ecology means 'all living things, such as trees, flowering plants, insects, birds and mammals, and their habitats'.

Biodiversity means 'the entire variety of life on earth; this means species, genetic variations within species, and the communities, habitats and ecosystems and habitats within which they occur'.

A Preliminary Ecological Appraisal Report was prepared by RPS to support the planning application. The mitigation proposed during the construction phase has been considered and included in this CEMP. The site is largely devoid of ecology and biodiversity and primarily consists of hardstanding and made ground. Therefore, no impacts on ecology or biodiversity are envisaged, however the project management team should remain vigilant during the breeding bird season (March to August inclusive).
The following mitigation measures will be implemented to prevent adverse noise/vibration pollution entering Belfast Lough. The approach highlighted in the JNCC "Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals during piling" (JNCC, 2010) will be followed. The key procedures highlighted in this document include the following:

- Piling should commence using an agreed soft start procedure. The soft-start procedure will vary according to hammer and pile design and other factors.

- Establishment of a 'mitigation zone' a pre-defined radius (e.g. 500m) around the piling site, prior to any piling. Within this mitigation zone, observations of marine mammals will be undertaken by a Marine Mammal Observer (MMO).
- Prior to the commencement of piling, a pre-piling search will be undertaken by the MMO to determine that no marine mammals are within the mitigation zone. Piling will not be commenced if marine mammals are detected within the mitigation zone or until after an agreed period after the last visual detection.
- During piling the MMO will observe the mitigation zone to determine that no marine mammals are within this area. Construction workers will be alerted if marine mammals are identified and piling activity will cease whilst any marine mammals are within the mitigation zone. Piling will recommence when the marine mammal exits the mitigation zone and there is no further detection after 30 minutes.
- If there is a pause in the piling operations for any reason for a period of time exceeding one hour, then the pre-piling search and soft-start procedure will be repeated before the piling recommences.

7.5.1 Bats

No evidence of bat was recorded onsite. There is no roosting potential within the site boundary and the exposed nature of the site offers limited or no potential for connections to foraging habitats for bats in the wider area. No further surveys are required. No significant impacts are predicted upon the local bat population.

7.5.2 Birds - Trees

No evidence of suitable nesting opportunity for bird species were recorded onsite and no significant impacts are predicted upon bird population. As a precaution vegetation removal should take place outside the bird breeding season which extends between 1st March and 31st August inclusive to ensure breeding birds are protected from harm.

A watching brief was completed by Ulster Wildlife in February 2024 prior to removal of ornamental trees earmarked for felling located within the confines of the Marina car park. No nests were recorded in the area and a very low number of birds were recorded, with sightings of Dunnock, Robin, Pied wagtail, Blackbird and Starling recorded. A copy of the ecologists report is included in Appendix 5.

7.5.2.1 Birds – Outfall

Surface water from the development is proposed to be discharged directly to Bangor Marina via a new dedicated outfall. The outfall shall be constructed as part of Phase 1 of the works and sized and positioned to accommodate the future phases of development. The new dedicated outfall is proposed as betterment to the local sewer infrastructure, offering a more sustainable solution, removing clean water from the combined sewer system and relieving pressure from the proposed DFI Rivers culvert network.

As we are now in the bird breeding season which extends between 1st March and 31st August MSM will commission an ecologist to inspect and provide a report confirming no presence of nesting birds around the new outfall. A copy of the ecologist's report is included in Appendix 5 once received.

7.5.3 Terrestrial Mammals

Historical records indicate the presence of badger, hedgehog and grey squirrel in the locality of site. Construction works are unlikely to impact on local populations given the lack of suitable habitat, however care should be taken when clearing vegetation to avoid harming the species mentioned above.

The ECoW should be contacted for further advice if nesting young hedgehogs are identified between May to October, and/or if hibernating hedgehogs are identified between November and March. In the event of a hedgehog being identified in the working area, and it is without young, it should be carefully relocated to a safe and covered area outside the construction site.

7.5.4 Invasive Non-Native Species

Japanese Knotweed an invasive non-native species (INNS) listed under Schedule 9 of the Wildlife (Northern Ireland) Order 1985 was identified on-site within four locations to the west of the site, outside the footprint of the Marina car park. Excavation and removal from site and install of a root barrier was deemed the most appropriate control methods for the stands of Japanese Knotweed and these works were completed in November 2019. Refer to Appendix 6 for a copy of WYG's verification report.

A follow up visit was completed in September 2021 to identify if any regrowth was present at infested areas previously treated. Refer to Appendix 7 *WYG Japanese Knotweed Excavation Verification Report – Additional Works 2021*. These works comprised the removal of Japanese knotweed from 2 locations, including the removal of 93 tonnes of soil.

A pre-start walkover was completed by MSM Contracts Environmental Manager in July 2025 to confirm no regrowth was present at the previously treated stands of Japanese Knotweed. No visual signs of regrowth were recorded on site, however due to the time of year inspected it is recommended further inspection is completed in the growing season.

7.5.5 Proposed Mitigation

The proposed mitigation measures include:

- Avoid removing trees and vegetation during the nesting bird season (March to August inclusive). If works to trees or vegetation are required in the nesting bird season, consult with Ulster Wildlife representative who shall complete a watching brief and advise.
- Nests identified on site must be protected until the young have fledged the nest.
- Ensure artificial lighting is sensitive of the surrounding environment and is not directed at sensitive receptors, including bat roosts and suitable foraging habitat.
- Ensure all holes and excavations are covered over after each work shift to prevent animals becoming trapped or injured. If this is not possible, a sheet or plank should be placed into the hole to provide a ramp out.
- Regular Toolbox Talks are to be delivered by MSM Contracts with subcontractor supervisors & operatives. Topics covered should be relevant to the environmental constraints associated with the works being undertaken, including Japanese Knotweed

identification, nesting birds, etc

7.6 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 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, MSM Contracts and their contractors will ensure that all vehicles and items of plant and equipment are correctly adjusted and maintained.

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. A Dust Management Plan is included in Appendix 8.

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. Refer to Work Instruction WI – 008 ‘Control of Dust’.

Burning of materials will **not be permitted** on site.

7.6.1 Proposed Mitigation

The proposed mitigation measures include:

- Operation of construction plant in accordance with the manufacturers written recommendations.
- Vehicles and plant will be switched off and secured when not in use.
- Construction vehicles to conform to the current EU emissions standards and where reasonably practicable, their emissions should meet the upcoming standards prior to the legal requirement date for the standard.
- Vehicles and construction plant exhausts to be directed away from the ground and positioned at a height to facilitate appropriate dispersal of exhaust emissions.
- The enclosure, shielding or provision of filters on plant likely to generate excessive quantities of dust beyond the site boundaries.
- Devices such as dust extractors, filters and collectors on equipment will be used, where reasonable and practicable.
- Movement of construction traffic around the site will be kept to the minimum reasonable for the effective and efficient operation of the site and construction of the project.
- Construction plant will be located away from site boundaries which are close to sensitive receptors, where reasonable and practicable.
- Site access point will be designed to minimise queuing traffic adjacent to access points.
- The use of diesel or petrol-powered generators will be reduced by using mains electricity or battery powered equipment were reasonably practicable.
- Non-Road Mobile Machinery (NRMM) will use ultra-low sulphur diesel.
- Cutting and grinding operations will be conducted using equipment and techniques which

reduce emissions and incorporate appropriate dust suppression measures.
- Damping down of dust generating equipment and vehicles with the site and the provision of dust suppression in all areas of the site that are likely to generate dust.
- Measures to keep roads and access ways clean, including water-assisted dust sweepers on the access and local roads.
- Vehicle, plant and equipment maintenance records will be kept on site and reviewed regularly.

7.7 Noise and Vibration

The agreed construction programme and noise limits will be established in accordance with the Local Authority prior to project commencement and should then be monitored as works progress to demonstrate that noise has been actively managed.

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.

Noise levels are to be kept within the specified noise band as described below. Advice notes on noise and vibration levels may be obtained from the Local Authority. Refer to BS 5228 for guidance on noise levels, and BS 5228:2009 Part 2 for guidance on vibration on construction and open sites

7.7.1 Proposed Mitigation

The proposed mitigation measures include:

General mitigation

- Change the working method to use equipment or modes of operations that produce less noise.
- Careful orientation of plant and equipment to minimise noise propagation.
- Ensure that noise control features on plant are used, keeping doors and hoods closed at all times.
- Keep noisy plant as far away as possible from public areas and residential properties.
- Adopt working hours to restrict noisy activities to certain periods of the day, as far as reasonably practicable. Breaking out and excavation to be completed in day light hours whenever possible reduce noise emissions during night works.
- Arrange delivery times to suit the area – daytime for residential areas.
- Route construction vehicles to take account of the need to reduce noise and vibration.
- Keep haul roads well maintained.
- Use mufflers or silencers to reduce noise transmitted along pipes or ducts.
- Minimise the drop height into lorries or other plant (reducing the drop height by a factor of 10 reduces noise by about 10 dB).
- Liaise with local authorities to minimise noise disturbance.

Plant

- Use plant conforming with relevant standards and directives on emissions.
- When operating plant, use noise control equipment such as covers on compressors and shrouds on piling rigs. Hoods and doors on compressors and generators etc should not only be closed but also be tightly fitted and well-sealed.
- Use electrically powered plant instead of diesel-powered equipment where available to do so.

- Operate plant properly so that it does not cause excessive noise.
- Shut down plant when not in use.
- Maintain plant properly, operators to complete daily check sheet, ensuring plant is adequately lubricated and nuts and bolts are tightened to reduce rattling.
- When available, install effective silencers for plant deemed to cause excessive noise.
- Ensure that audible warning systems (including reversing alarms) are switched to the minimum setting required by the HSE.

Screening

- Where applicable, erect acoustic barriers / screens close to the source of noise. All gaps to be sealed, including gaps at the bottom of the screen.

7.8 Material Use

In general, the use of materials on site will be based on a 'reduce, re-use, recycle' approach.

Materials will be stored to avoid wastage and deterioration of quality. High value materials e.g. copper pipe is to be removed and stored safely off site and the end of each working day.

All timber products must be derived from a sustainably managed source, with a written declaration from the supplier (Forestry Stewardship Council or similar). Timber will be stored under cover to avoid deterioration and wastage.

The objective of MSM Contracts and our subcontractors will be to conserve natural resources where possible. 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).

7.9 Energy

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.

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.

As most work will be carried out in daylight hours, 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 with regard to lighting and heating when working in offices. Posters will be displayed highlighting energy wastage.

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

7.10 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

Table 2 summarises the potential types of wastes that will likely be generated during construction and indicates the most appropriate method of disposal.

Table 2: Construction Wastes

ACTIVITY	WASTE GENERATED	DISPOSAL RECOMMENDATION
Site preparation	C&D waste Blacktop Green waste	Send to a recycling facility off-site. C&D waste may be suitable for re-use on-site for temporary construction methods, i.e. piling platform, hardstanding or access tracks
Site operations	Office rubbish, paper, packaging, canteen refuse, etc	Recycle as much as possible, canteen refuse to landfill.
	Waste from site	Collect in covered skips and send to a licensed waste disposal site.
	Scrap metal and re-bar	Send to recycling facility.
	Wood	If unable to chip on site, send for recycling to a licensed waste transfer station.
	Concrete	Re-use surplus for blinding layers, etc, or break up for re-use as hardcore.
	Sewage	Disposal by appointed waste management contractor.
Site maintenance of plant	Workshop waste, e.g. paints, oil, etc	Collect for recycling, e.g. used oil, or send to licensed waste transfer station, probably classified as hazardous waste.
Excavations	Pumping silty water from excavations	Dewatering of excavations to be directed to settlement tanks. Suitable discharge location to be advised by site engineer or SHEQ Advisor.
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.
	Temporary fencing	Re-use elsewhere.

Table 3 below indicates the types of hazardous waste that could potentially be generated during the construction phase.

Table 3: Hazardous Wastes

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, historical contamination associated with previous land uses such as car parking
Biocides	Disinfectant
Batteries	Lead acid
Fluorescent tubes	From site offices
Drilling muds	Only if contaminated as bentonite muds are generally used

7.11 Hazardous Substance Management

Examples of hazardous substances will include those mentioned in Table 3. Subcontractors will be required to submit COSHH assessments for review by an appointed member of MSM Contracts 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 a MSM Contracts SHEQ Advisor.

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.

If asbestos containing materials (ACMs) are identified within the site, removal will be undertaken fully in accordance with current regulations and HSE guidance, in advance of main operations. These hazardous materials will be disposed of at suitably licensed landfill site and as per the Hazardous Waste Regulations and Control of Asbestos Regulations. As each work area is cleared of asbestos, clearance testing and certification will be undertaken. Once areas have been cleared, the soft strip-out can then begin in advance of the main demolitions.

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 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.
Hazardous waste will be segregated and disposed of in accordance with *The Hazardous Waste Regulations.* The regulations prohibit the mixing of hazardous waste without a permit. MSM Contracts and subcontractors must ensure that waste described as hazardous must not be mixed with different categories of hazardous waste, non-hazardous waste, or any other substance or material. Each category of hazardous waste must be separated for disposal.

7.12 Traffic and Transport

The main access to the site will be from Gray's Hill via Byransburn Rd. This is to minimise disruption to the main part of the town where there is heavy pedestrian footfall. Gate 2 is at this side of the site which as a turning circle inside the gates for vehicles, with a full-time traffic marshal to control movements and ensure health and safety is paramount. Traffic is to be minimised on local roads during construction and the site management team will ensure that vehicle and pedestrian segregation is in place.

Existing roads and pathways will be kept clear of any debris/spoil emanating from the site, with regular inspections completed throughout the working day to ensure that they are maintained in good condition. A road sweeper will be deployed as and when required.

A wheel wash will be in operation for all vehicles. If available and deemed appropriate by the site management team, the vehicle wash will consist of a closed loop system that recycles water for ruse and has no discharge. If space constraints dictate such as system is not appropriate for use on site, wheel washing will be completed via a power washer, with discharge directed to a suitably sized interceptor before discharging to the public foul sewer.

All delivery vehicles coming to the site will do so by prior arrangement and should be completed outside of peak traffic times to avoid additional traffic congestion.

Coordination meeting to be set up to discuss logistics and traffic management. An agreed system and plan need to be implemented to control traffic and pedestrians safely.

7.13 Emergency Incident Response

MSM Contracts will produce an Environmental Emergency Response Plan (EERP) as part of the Environmental Management plan for the Contract. The EERP 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 – Onos Environmental Incident Report.
- 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 "Toolbox" workshop that includes EERP.

A copy of the EERP is included in Appendix 11.

7.14 Community Relations

To ensure that the project has minimal disruptions, the Project Manager will maintain ongoing liaison with neighbours regarding potentially disruptive works and out of hours operations.

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 with local residents and neighbours.

The site will sign up to the Considerate Constructors Scheme.

8.0 Summary of Environmental Aspects

	Description	*Tick as applicable* (✓)
(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	✓
(5)	Hazardous 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 plant 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	✓
(32)	Working near foul sewers / septic tanks	✓
(33)	Vehicle washing	✓
(34)	Soil handling and storage	✓

9.0 Summary of Environment Impacts

	Description	*Tick as applicable* (✓)
(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 species of plants	
(21)	Damage to trees	✓
(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, water pollution from suspended solids	✓

10.0 Planned Mitigation Measures

ACTIVITY / PRODUCT / SERVICE / ISSUE	ASPECT	ENVIRONMENTAL IMPACT	OPERATIONAL CONTROL MEASURES	RESPONSIBILITY
General operational activities	Light emission through inappropriately sited temporary lighting for work activities	• Light pollution	• Ensure that lights are sited to avoid glare and are not directed at sensitive receptors. • Set up lights and check if causing glare	Site Engineer SHEQ Advisor
Delivery and storage of materials	Damage to materials through inappropriate off loading and storage methods	• Damaged materials cause unnecessary waste creation and use of natural resources	• 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

Operational and office activities	Waste generation	• Pollution and site untidiness	• 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.
			• Remember: Copies of Waste Transfer Notes must be held for 2 years, and Waste Consignment Notes held on file for 3 years to comply with legislation
			• 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
			• Refer to Guidance for Pollution Prevention (GPP) documents, including:
			  • GPP 1 Understanding you environmental responsibilities – good environmental practices
			  • GPP 6: Working on construction and demolition sites.
				Site Engineer
				SHEQ Advisor

Storage and use of oils, diesel, and chemicals	Release of oils, diesel, and chemicals from storage area	• Unplanned release of oils, diesel, and chemicals can cause	• Establish centralised, suitably bunded, dedicated storage areas with adequate spill kit provision, i.e., oil absorbent material • Keep small quantities of fuel and oil in leak-proof containers, in the site store within bund tray	Project Manager Site Engineer SHEQ Advisor

		land contamination and water pollution	• 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.
			• Refer to Guidance for Pollution Prevention (GPP) documents, including:
			  • GPP 1 Understanding you environmental responsibilities – good environmental practices
			  • GPP 2: Above ground oil storage
			  • GPP 5: Works and maintenance in or near water
			  • GPP 6: Working on construction and demolition sites
			  • GPP 8: Safe storage and disposal of used oils
			  • GPP 22: Dealing with spills
			  • GPP 26: Safe storage – drums and intermediate bulk containers
			• All fuel storage containers, drums, tanks and secondary containment systems must comply with the requirements set out in Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010.	

Excavation and drainage activities	• The potential for uncontrolled release of diesel during filling • Potential for leaks from hydraulic hoses • Accidental damage to existing live pipe-	• Diesel can kill vegetation and cause severe water pollution and land contamination • Water pollution and land contamination from leaking or burst hydraulic hoses • Noise • Pollution of nearby waterway(s) from	• Refuel using funnel or hose with trigger handle. • Mop up small spillage using oil absorbent spill kit. • Dispose of contaminated spill materials as hazardous 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. • Equipment to be maintained, operated, and inspected by competent person(s) • Use plant that is suitably silenced	Project Manager Site Engineer SHEQ Advisor

	work leading to flooding
	• Discharge of suspended solids via land drains
		surface run-off containing suspended solids
		• Pollution of nearby waterway(s) from suspended solids escaping down land drains
			• 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
			• 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 drainage network. Pump to a settlement tank or pit. If available, leave strip of grass alongside discharge point, use straw bales to filter runoff. Dig cut off trenches where ground slopes to waterway.
			• Any clay slurry excavated during piling is to be removed from site immediately.
			• 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 Guidance for Pollution Prevention (GPP) documents, including:
			  • GPP 1 Understanding you environmental responsibilities – good environmental practices
			  • GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer
			  • GPP 5: Works and maintenance in or near water
			  • GPP 6: Working on construction and demolition sites.
			  • GPP 20: Dewatering underground ducts and chambers
			  • GPP 21: Pollution incident response planning
			  • GPP 22: Dealing with spills
			  • GPP 26: Safe storage – drums and intermediate bulk containers	

			• All fuel storage containers, drums, tanks and secondary containment systems must comply with the requirements set out in Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010.	

Concrete works / Storage of cement	Release of cement to controlled waters	• Pollution of water from cement washings from concrete trucks and tools	• 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 away from waterways and drains leading to a waterway
			• 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
			• Refer to Guidance for Pollution Prevention (GPP) documents, including:
			  • GPP 1 Understanding you environmental responsibilities – good environmental practices
			  • GPP 5: Works and maintenance in or near water
			  • GPP 6: Working on construction and demolition sites
			  • GPP 21: Pollution incident response planning
			  • GPP 22: Dealing with spills
			  • GPP 26: Safe storage – drums and intermediate bulk containers
				Site Engineer

Shuttering for concrete works	Release of shutter oil to land and water	• Pollution of water and contamination of land	• 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
			• Don't spray or spill shutter release oil on the ground. Cover ground with polythene.
			• Refer to Guidance for Pollution Prevention (GPP) documents, including:
			  • GPP 1 Understanding you environmental responsibilities – good environmental practices
			  • GPP 2: Above ground oil storage
			  • GPP 5: Works and maintenance in or near water
			  • GPP 6: Working on construction and demolition sites.
			  • GPP 8: Safe storage and disposal of used oils
			  • GPP 21: Pollution incident response planning
			  • GPP 22: Dealing with spills
			  • GPP 26: Safe storage – drums and intermediate bulk containers
				Site Engineer

			• All fuel storage containers, drums, tanks and secondary containment systems must comply with the requirements set out in Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010.	

Operational activities	Drainage systems	• Failure to replace to original condition	• Drainage systems will be reinstated after construction to provide the same drainage regime.
			• Drains must be identified and marked for ease of re-location.
			• Refer to Guidance for Pollution Prevention (GPP) documents, including:
			  • GPP 1 Understanding you environmental responsibilities – good environmental practices
			  • GPP 3: Use and design of oil separators in surface water drainage systems
			  • GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer
			  • GPP 5: Works and maintenance in or near water
			  • GPP 6: Working on construction and demolition sites
			• All fuel storage containers, drums, tanks and secondary containment systems must comply with the requirements set out in Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010.
				Site Engineer

Ecology	Working close to wildlife	• Temporary loss of existing natural habitat	• Temporary loss of habitat due to removal of trees and vegetation. Ensure removal works are completed outside of the breeding bird season. • Engage with the project Ecologist / ECoW to ensure appropriate control measures are enacted • The site will be enhanced with new planting.	SHEQ Advisor
Ecology	Working close to existing trees	• Construction activities can damage trees and make them susceptible to windthrow. In addition, work may need to be carried out in close proximity to trees or may require their removal. • Soil compaction can cause waterlogging and removal of air from the soil making it difficult for tree roots to breath.	• Trees to be retained on site to be fenced off, with a suitable exclusion zone or Root Protection Area (RPA) in place. • Work should be carried out i.a.w. the National Joint Utilities '*Guidelines for the Planning Installation and Maintenance of Utility Services in Proximity to Trees'* (NJUG 10).	Project Manager Site Engineer SHEQ Advisor

		• Overall net loss of trees to construction activities.		
Ecology	Dense vegetation and hedgerow removal	• Loss of habitat • Damage to vegetation	• Not a significant issue on this project. No hedges will be removed.	SHEQ Advisor
Ecology	Breeding Birds - trees	• Disruption, harm, or injury	General measures to avoid disturbance to nesting birds: • Avoid nesting season March-August inclusive, or • Retain the nest in-situ, protected. Delay works within vicinity of nest until vacated. • If required, contact Ulster Wildlife for guidance	Project Manager Site Engineer Ecologist
Ecology	Aquatic life	• Potential impacts to the integrity of controlled waters	• The discharge of water collected in excavations will be disposed in accordance with good practice as set out in the Guidance on Pollution Prevention. Where possible the water will be filtered to reduce sediment before discharge by pumping through settlement tanks. Water discharging from settlement tanks will be monitored for residual suspended solid content. • Measures to control surface water run-off into waterways will be taken such as retaining un-stripped width either side of waterways and use of settlement tanks or pits. • Earth moving operations that have the potential to give rise to contaminated drainage will be undertaken in compliance with BSI Code of Practice for Earthworks, BS 6031, 1987. • All mitigation measures employed to maintain the integrity of the waterways and hydrology will contribute to the overall minimisation of impacts on the fisheries. • Refer to Guidance for Pollution Prevention (GPP) documents, including: • GPP 1 Understanding you environmental responsibilities – good environmental practices • GPP 5: Works and maintenance in or near water • GPP 6: Working on construction and demolition sites. • GPP 21: Pollution incident response planning • GPP 22: Dealing with spills • All fuel storage containers, drums, tanks and secondary containment systems must comply with the requirements set out in Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010.	Project Manager Site Engineer SHEQ Advisor

Hydrology	• Storage of fuels
	• Re-fuelling activities
		• Pollution of water resources by fuel and oil spills during construction.	• 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 EA 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.
			• Oil absorbers and grab packs will be available on all vehicles and further materials, including booms, will be carried by MSM Contracts emergency team at the main construction site base.
			• An Environmental Emergency Response Plan will be prepared prior to construction in accordance with best practice guidance.
			• Refer to Guidance for Pollution Prevention (GPP) documents, including:
			  • GPP 1 Understanding you environmental responsibilities – good environmental practices
			  • GPP 2: Above ground oil storage
			  • GPP 5: Works and maintenance in or near water
			  • GPP 6: Working on construction and demolition sites.
			  • GPP 8: Safe storage and disposal of used oils
			  • GPP 21: Pollution incident response planning
			  • GPP 22: Dealing with spills
			  • GPP 26: Safe storage – drums and intermediate bulk containers
			• All fuel storage containers, drums, tanks and secondary containment systems must comply with the requirements set out in Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010.
				Site Engineer

Hydrology	• Use of portable toilets	• Pollution of water resources by sewage spillage.	• Should portable toilets be required, they 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 SHEQ Advisor

Noise and Vibration	• Construction operations	• Noise and vibration can be a nuisance to people and animals nearby	• 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 08:00 - 18:00 Sat. Hours outside this period and any night-time working which is required will be kept to a minimum and discussed in advance with the relevant Environmental Health Officer. • 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'	Project Manager Site Engineer
Noise and Vibration	• Construction operations		• Vibration may occur locally • Ripping methods will be employed where possible	Project Manager
Socio-economics	• All work activities	• Disruption to Footpaths / Alleged Rights of Way	• Shared access will be maintained.	Project Manager Site Engineer
Traffic	• Movement of plant and vehicles along the footprint of the project	• Potential significant negative impact on local traffic levels	• 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	Project Manager Site Engineer
Traffic	• Movement of plant and vehicles along the footprint of the project	• Potential significant negative impact on road structure.	• Roads will be reinstated in accordance with RAUC "Reinstatement of Openings in Roads".	Site Engineer
Natural Resource	• Fuel in transporting plant and materials to site.	• Depletion of natural resource	• Use of local suppliers were possible • Minimising journeys through careful planning and optimum use of space.	Procurement Manager All staff
Natural Resource	• Use of construction materials	• Depletion of natural resource	• The use of construction materials to be minimised were possible	Project Manager
Natural Resource	• Use of construction materials	• Waste creation	• Where possible MSM Contracts will ensure that materials are either re-used or recycled • Requirements to be stated within the Site Waste Management Plan.	Project Manager Site Engineer

Natural Resource	• Construction of access roads	• Depletion of natural resource	Impacts minimised by: • 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; • Reuse imported stone locally subject to waste management requirements.	Project Manager Site Engineer
Piling works	• The potential for damage to existing storm drain for Clandeboye Stream	• Potential impacts to the integrity of controlled waters	• Site management have been made aware of the storm drain and marked up on plans. • Site management – with regards to the piling layout, consideration must be taken to ensure there is clash with storm drain. • Route of storm drain to be marked out with spray paint and area closed off during piling operations.	Project Manager Site Engineer
Ecology	• The potential to disturb nesting birds in area around new outfall	• Disruption, harm, or injury to wildlife	• General measures to avoid disturbance to nesting birds: • 3rd party ecologist's inspection of the area and report • Retain the nest in-situ, protected. • Delay works within vicinity of nest until vacated. • If required, contact Ulster Wildlife for guidance	Project Manager Site Engineer Ecologist

12.0 Environmental Monitoring

The Project Manager will ultimately be responsible for the implementation of mitigation measures and monitoring. They will be supported by the site management team and SHEQ Department.

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.

MSM Contracts 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.

The SHEQ Advisor 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.

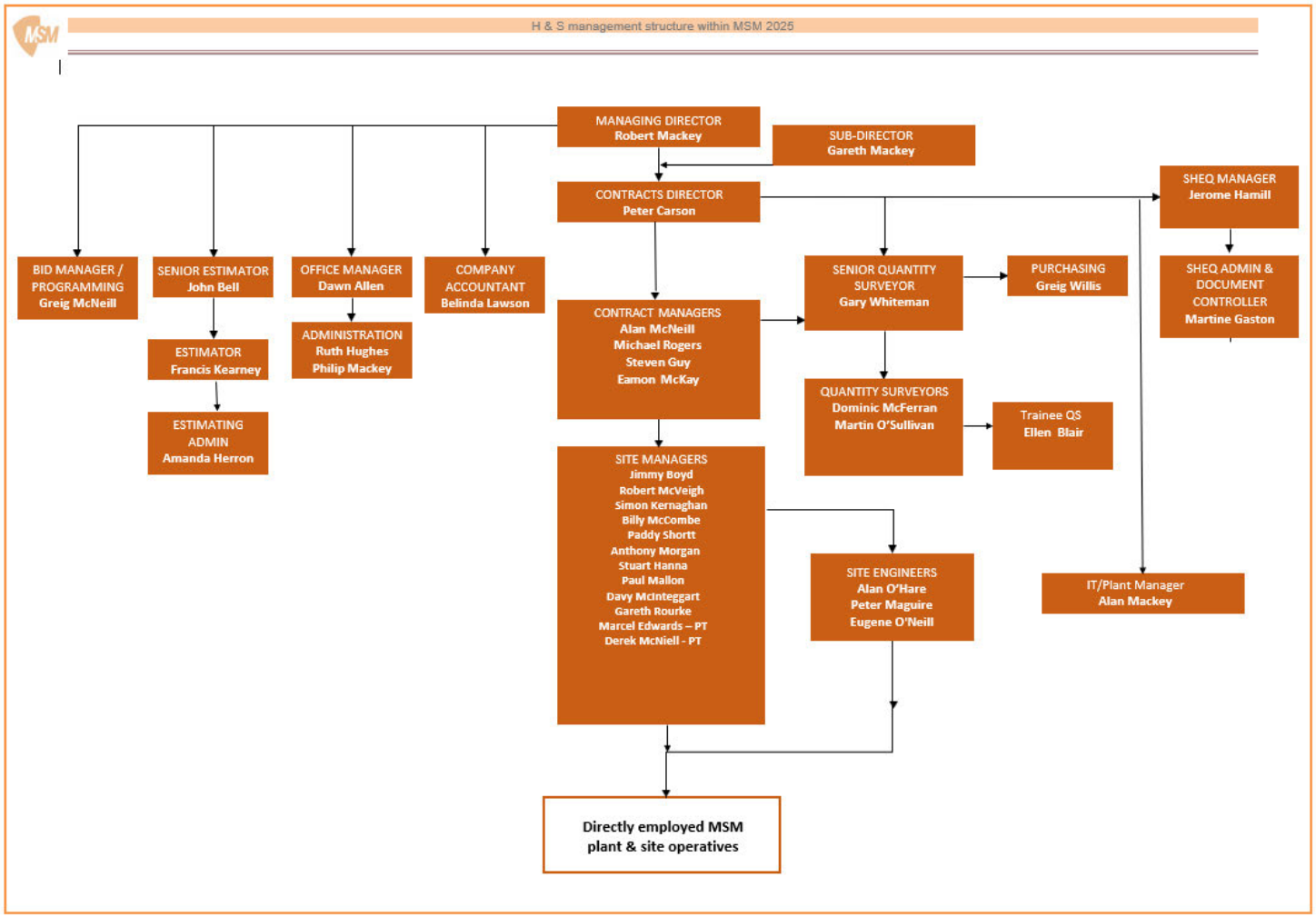
In addition, the SHEQ Advisor will undertake continuous monitoring during construction to verify the construction team's environmental performance and compliance with environmental plan, procedures, work instructions, and method statements.

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

Water quality monitoring will be completed for discharge emanating from site during over-pumping of excavations. A Water Quality Management Plan is included in Appendix 8.

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

Appendix 1 Organisational Chart



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.

- 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 into 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 site staff 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 Archaeologist programme of work has been submitted and approved. There is no archaeological interest in phase 1 marine gardens, due to the history of the site and essentially made ground. The project archaeologist will be present in phase 2 of the works as details in the POW. The following information is provided for general information and guidance.

If bones, coins, broken pottery, burned or blackened material, brick or tile fragments, skeletons,

timber joists or post holes, brick or stone foundations, in-filled ditches, or objects of possible historic interest are uncovered you should observe the following rules: -

- Stop work and inform site management
- Do not remove any object from the site
- Protect the find by fencing / blocking it off
- Aid the Archaeologist when requested to do so
- The Environmental Adviser will consult with the Project Archaeologist

9. Noise

- Ensure plant and equipment have properly operating silencers / mufflers. Notify site 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.

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.
- Dampen down dust in operations which create dust.
- Ensure that vehicles leaving site do not leave mud on the road.

A dust management plan has been created as part of a separate planning condition (Condition 38) and is attached in Appendix 8.

11. Fire

Dry grass and scrub vegetation 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.

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.

MSM Contracts Environmental Policy is available for anyone to read. It is displayed in the Site

Office. If unsure of environmental requirements, ask the Project Manager.

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
WI - 026	Re-Use of Asphalt
WI - 027	Control of Asbestos
WI - 028	Trade Effluent Discharge Consent

Appendix 4 Guidance for Pollution Prevention (GPPs)

GPP 1: Understanding your environmental responsibilities – good environmental practices
GPP 2: Above ground oil storage tanks
GPP 3: Use and design of oil separators in surface water drainage systems
GPP 4: Treatment & disposal of wastewater where there is no connection to the public foul sewer
GPP 5: Works and maintenance in or near water
GPP 6: Working at construction and demolition sites
GPP 8: Safe storage and disposal of used oils
GPP 13: Vehicle washing and cleaning
GPP 19: Vehicles: Service and repair
GPP 20: Dewatering underground ducts and chambers
GPP 21: Pollution incident response planning
GPP 22: Dealing with spills
GPP 24: Stables, kennels, catteries
GPP 25: Hospitals and health care establishments
GPP 26: Safe storage – drums and intermediated bulk containers
PPG 27: Installation, decommissioning and removal of underground storage tanks
GPP 29: Microbreweries and micro-distilleries

Note:
The Guidance for Pollution Prevention (GPPS) are the documents that replace the old series of guidance document (PPGs). In northern Ireland please consider the remaining PPGs, the ones that have not been updated and reprinted as GPPs, as a source of information on good practice only.

All GPP documents are available online at https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/

Appendix 5 Nesting Bird Survey

Ulster Wildlife

Nesting Bird Survey

Project Information

Site Name & Location	Queens Parade Carpark, Bangor
Report Number	UWT-24-04-01
Client Name	Farrans
Site Proposals	Re-development of existing Carpark

Methods

Field Survey	The survey was undertaken on 26th February 2024 by David Smith (Principal Ecological Consultant, Ulster Wildlife Trust. The Nesting Bird Survey took the form of both passive and active observation. Active observation involved a slow walkover of the carpark and conducting a detailed inspection within the shrub beds for evidence of active nests, or for signs of behaviour suggestive of nesting birds being present. Passive observation involved the careful and methodical scanning of the site using binoculars. Observations were undertaken from a variety of vantage points scattered at strategic locations within, and adjacent to, the study area. Any evidence indicative of the presence of nesting birds was noted, e.g. visible nests, birds carrying nesting materials or agitated/territorial behaviour suggestive of birds holding breeding territories.

Weather Conditions	Temperature (°C)	Cloud Cover (%)	Wind Force (Beaufort)	Precipitation
	6 - 7	10-90%	NNW 2-3	Nil

Results

Habitats Surveyed	Ornamental shrubs and scattered trees. Species included various varieties of *Berberis, Cotoneaster, Sencio greyii, Buddleia davidii, Hypericum, Oleria, Hebe vars, Garrya elliptica, Mahonia aquilinum,* The trees were mainly young <25 years old and included a range of species including palms.
Species Recorded	Dunnock *Prunella modularis* Robin *Erithacus rubelcela* Pied wagtail *Motacilla alba* Blackbird *Turdus meralus* Starling *Sturnus vulgaris* A very low number of birds were recorded with one, possibly two singing dunnocks. One was recorded at the eastern end and another in the central circular area. No birds exhibited any agitation and no alarm calls were heard during the site survey.
Evidence of Nesting Activity	An old robin/dunnock nest was located in the central shrub bed. Whilst every effort was made to search all the shrubberies there were some areas where the vegetation was too thick to make any direct observations (mainly where ivy

Ulster Wildlife

	had mixed in with the *Berberis* or *Pyracantha*) but these areas are relatively small and low.

Actions/Recommendations

1. The vegetation clearance should be completed by 1st March 2024.
2. The clearance should clear the shrubberies first and then clear the trees later as they have less potential as nest sites.
3. The works should prioritise the larger denser shrub beds first.
4. If a nest is discovered the operatives should stop work, install a 5 m exclusion zone and contact [redacted] for further advice.
5. If works extend beyond 1st March the site should be re-checked for nesting birds.

Quality Assurance

Date	Version	Author	Checked & Approved By
26/02/2024	Draft	[redacted]	

Appendix 6 Japanese Knotweed Excavation Verification Report

Queen's Parade, Belfast

Japanese Knotweed Excavation Verification Report

Client: Whitemountain

Ref: A112759

Date: January 2020

Prepared on behalf of WYG Environmental and Planning (Northern Ireland) Limited.

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Queen's Parade, Bangor
Japanese Knotweed Excavation Verification Report

Document control

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Client:	Whitemountain
Job Number:	A112759
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Queen's Parade, Bangor
Japanese Knotweed Excavation Verification Report

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Queen's Parade, Bangor
Japanese Knotweed Excavation Verification Report

1.0 Introduction

1.1 Instruction

WYG Environmental & Planning (N.I) Ltd (WYG) was instructed by Whitemountain on behalf of the Department for Communities (DfC) to verify the excavation of Japanese Knotweed (JKW) from 4no. infested locations at Queens Parade in Bangor, Co. Down.

1.2 Development Context

As outlined in the project's work information (Ref. 656525SNA), the Department for Communities (DfC) is realising the site for development. Part of these works requires the removal of JKW from 4no. infested areas outlined in the WYG Japanese Knotweed Report (Ref. A112759, June 2019). This will involve the removal of vegetation material and the excavation of infested soils as far as reasonably practicable.

1.3 Legislative Context

Whilst it is not an offence for JKW to be present on privately owned land, JKW is listed under Part II of Schedule 9 of the Wildlife (Northern Ireland) Order 1985 (as amended), as being subject to Article 15, which states that '*any person plants or otherwise causes to grow in the wild any plant which is included Part II of Schedule 9, he shall be guilty of an offence*'.

Additionally, under the Controlled Waste (Duty of Care) Regulations (Northern Ireland) 2002, material infested with JKW is considered controlled waste. If disposed of off-site, it must be to a suitably licenced facility. Should herbicide be used, there is the potential for any wastes to be considered as 'hazardous' under the Hazardous Waste Regulations (Northern Ireland) 2005.

1.4 Terms and Conditions

Attention is drawn to the report conditions, included in Appendix A, and the terms and conditions of the engagement as detailed in WYG's accepted proposal.

2.0 Background

2.1 Site Description

The c. 1.95-hectare site is located in a residential and commercial area of Bangor in Co. Down.

The site currently comprises a mixture of semi-derelict residential and commercial buildings with some private gardens; open creative spaces with temporary modular buildings; tarmac hardstanding and some soft landscaping.

The site is located c. 75m from Bangor harbour at its closest point.

The site location is shown in Figure 1 and the site boundary in Figure 2.

2.2 WYG Japanese Knotweed Report

2.2.1 Report Summary

WYG issued a Japanese Knotweed Report in June 2019 (Ref. A112759) that identified 4no. infested areas referenced as JK1 to JK4. A summary of the report's findings is provided below; however, reference should be made to the full report where required.

Table 1: JK Location Summary

Location	Grid Ref.	Approx. Area	Notes
JK1	J 50337 81823	Approximately 80m²	Rear of No. 37 Queen's Parade Mature growth greater than 2m tall with dead stems from previous year(s).
JK2	J 50341 81823	Approximately 40m²	Rear of No. 36 Queen's Parade Mature growth greater than 2m tall with dead stems from previous year(s).
JK3	J 50346 81784	Approximately 2m²	Rear to No. 17 Southwell Road adjacent to boundary wall and footpath. In rear garden. Sporadic areas of growth with dead stems from previous year(s).
JK4	J 50338 81783	Approximately 2m²	Front of No. 17 Southwell Road Single junior stand at the corner of the house surrounded by other vegetation.

The locations of the infested areas are shown in Figure 3 and a photographic record before excavation is provided in Appendix B.

Infested areas JK1 and JK2 were located in adjacent rear gardens separated by a block wall,

whilst JK3 and JK4 were located along the boundary wall of No. 17 adjacent to the footpath.

It was inferred at the time of survey that infested areas JK1 and JK2 may be connected by a single rhizome network, and areas JK3 and JK4 may also be connected by a single rhizome network. However, due to dense vegetation and health and safety constraints, it was not possible to determine any connection during the survey.

2.2.2 Management Options

The following management options were provided by WYG:

- Option 1 – Chemical control
- Option 2 – Excavation and landfill
- Option 3 – Excavation and burial
- Option 4 – Excavation and bund
- Option 5 – Screening.

Again, reference should be made to the previous WYG report for addition detail. However, Option 2 was selected as the preferred option due to the following constraints:

- Accelerated development project timeline.
- Limited area of burial and/or bunding.
- The requirement for a robust approach.

Option 2 required the removing of all JK vegetation and the excavation and disposal of infested soils to an appropriately licenced waste management facility. A summary of the excavation works is provided in Section 3 of this report.

2.3 WYG Waste Classification (2019)

To support the disposing of the excavated material in compliance with waste management and duty of care legislation, WYG collected 4no. samples on 19th September 2019 to support the undertaking of a waste classification assessment.

The 4no. samples were analysed for a range of contaminants including heavy metals, organic hydrocarbons, asbestos and several inorganic parameters. All 4no. samples were also submitted for waste acceptance criteria testing.

Reference should be made to this report in full where required, but in summary, all samples were classified as non-hazardous and as being suitable for disposal to an inert waste landfill.

3.0 Excavation Works (2019)

The excavation works were undertaken between 28th October and 29th November 2019.

The excavation works were undertaken according to contemporary guidance from the Environment Agency (2013)[1], Property Care Association (2014)[2] and Invasive Species Ireland[3] and were supervised by a certified Japanese Knotweed Surveyor.

A photographic record of the works undertaken is provided in Appendix B.

3.1 Aims and Objectives

The overall aim of the excavation works was to remove, as far as reasonably practicable, the JK vegetation and infested soils from the 4no. infested areas. The technical objectives were as follows:

- Clear and remove JK and non-JK vegetation to establish, where possible, the likely lateral extent of the infested areas.
- Excavation of infested soils to their lateral and vertical extents where possible.
- Supervise the loading of all surface vegetation and infested soils for disposal to suitably licenced waste management facilities.
- Supervise the segregation of non-infested soils where only incidental occurrences are possible from grossly infested soils.

In addition to the technical objectives outlined above, and as outlined in the following sections, where JK was off-site, additional measures were required to prevent the returning of JK to the site from off-site infested areas.

3.2 Bio-Security Protocols

The bio-security protocols comprised the following:

- Establishing a fenced-off works area to the rear of No. 36 and No. 37 Queen's Parade with a single access and egress point.

[1] Environment Agency (EA) Managing Japanese Knotweed on Development Sites, the Knotweed Code of Practice (v3. 2013).
[2] Property Care Association (v. 2.7 2014) Code of Practice for the Management of Japanese Knotweed
[3] Invasive Species Ireland Best Practice Management Guidelines Japanese Knotweed (Fallopia Japonica)

- Establishing a clean down area for personnel, plant and machinery with hard-bristle brushes, herbicide spray and an area to clean down apparel and footwear. The clean down area was lined with sheet plastic.
- Plant and machinery that entered the segregated works area was in place for the duration of the works, unless cleaned down and inspected before leaving.
- On completion of the works, the plant and machinery were cleaned down and inspected by a certified Japanese Knotweed Surveyor. The sheet plastic was lifted, and any overspill placed in the waste disposal skip.

3.3 Material Excavation and Root Barrier Installation

Excavation works were undertaken by F. McParland & Co. Ltd using the following plant and machinery:

- Takeuchi TB125 3-tonne mini tracked excavator with a toothless bucket.
- Hyundai 80CR-9 7-12-tonne medi-tracked excavator with a toothless bucket.
- A 10-tonne roll-on roll-off skip.
- A hand-held shovel and spade.

The works were undertaken in the following 3no. phases, all of which were supervised.

3.3.1 Phase 1 – Excavation of JK1 and JK2

The Phase 1 excavation works were undertaken in the following sequence between 28th October and 8th November 2019:

- The vegetation from infested areas JK1 and JK2 was cut back and disposed off before the party wall between the rear gardens of No. 36 and No. 37 Queen's Parade was demolished and stockpiled for reuse. The demolished material was inspected by a certified JK Surveyor before being set aside.
- The JK crowns were then removed by a targeted excavation to their lateral and vertical extents and any extending rhizomes chased out. This included removing a partial concrete slab from both rear gardens that was again inspected and set aside for reuse.
- An over dig was then undertaken to inspect the remaining soils for infested material. Where any rhizomes were encountered, they were chased, excavated and removed out to their vertical and lateral extents.
- Targeted excavation extended to an average depth of c. 2-metres below ground level.

3.3.2 Phase 2 – Excavation of JK3 and JK4

The Phase 2 excavation works were undertaken in the following sequence between 9th and 18th November 2019:

- The boundary wall was removed to provide access and the infested area JK4, and the supporting walls for the raised vegetation areas were also largely demolished.
- The JK crowns were then removed by a targeted excavation to their lateral and vertical extents and any extending rhizomes chased out.
- An over dig was then undertaken to inspect the remaining soils for infested material. Where any rhizomes were encountered, they were chased, excavated and removed out to their vertical and lateral extents where possible.
- The single stand JK3 was excavated by hand and the rhizome chased to its lateral and vertical extent.
- Targeted excavation extended to an average depth of c. 2.0-metres below ground level.

The Phase 2 excavation was subject to the following limitations:

- The excavation of JK4 was extended to the boundary with the footpath where JK rhizomes were observed to have spread beneath the path. Measures to prevent any regrowth are detailed below.
- The excavation of JK3 was extended to its maximum lateral and vertical extent. The rhizome was observed to have grown between mortar joints of the foundations and was removed where possible.

Photographs of both excavations are shown in Appendix B.

3.3.3 Phase 3 – Installation of Root Barrier Membrane

Following completion of the excavation of JK4, the following works were undertaken:

- A ReRoot2000/RootStop high-density polyethylene (HDPE) root barrier membrane was installed to a maximum depth of 2.0m below the ground level of the adjoining footpath of King Street.
- To account for the decreasing ground level, where required, the HDPE membrane was overlapped over the base of the excavation.
- All joints and pipe penetrations were sealed using double-sided bitumen tape and finished with single-sided overlap tape.

- To protect the membrane from penetrations, either side of the membrane was backfilled with fine-grade crushed fill material.

Photographs of the root barrier membrane installation are provided in Appendix B.

4.0 Waste Disposal

As outlined in Section 1 of this report, the disposal of waste infested with JK and infested material is regulated under the Controlled Waste (Duty of Care) Regulations (Northern Ireland) 2002.

Copies of the Controlled Waste Duty of Care Transfer Notes and receipts from the receiving landfills are provided in Appendix C.

During the works, material infested with JK was segregated from 'clean' material where JK and JK rhizomes were not visible, but incidental and small occurrences were possible. This was undertaken by inspecting the material was it was tipped to a segregated stockpile location and inspection of the sides and base of each excavation for JK material and rhizome inclusions.

A table showing the volumes of controlled waste and 'clean material' disposed of to landfill is provided in Appendix D and is summarised below.

Table 1 – Waste Volume Summary

Waste Description	EWC Code[a]	Total Volume (tonne)	Landfill Tax
Non-JK Plant Tissue	02 01 03	2.64	Standard Rate
JKW Soil	17 05 04	220.61	Standard Rate
JKW 'Clean' Sub-Soil	17 05 04	68.96	Low Rate

[a] European Waste Catalogue Code
[b] Rounded to two decimal places

The total volume of material excavated for disposal was 292.21-tonnes.

5.0 Conclusions & Recommendations

WYG was commissioned to supervise the excavation of JK from 4no. locations at Queen's Parade in Bangor. These works comprised:

- The removal and disposal of c. 2.64-tonnes of non-JK vegetation;
- The removal of JK vegetation and excavation of c. 290-tonnes of soil to suitably licenced waste facilities; and,
- The installation of a HDPE root barrier membrane along the sites boundary with King Street to prevent regrowth from beneath the adjoining footpath.

Regarding the aims and objectives outlined in Section 3.0, the JK vegetation and infested soils were excavated as far as reasonability practicable. Also:

- The lateral and vertical extents of infested areas JK1 and JK2 were established, excavated and removed.
- Infested areas JK3 and JK4 were found to be connected. Their lateral and vertical extents were established where possible. Infested soils were excavated subject to the limitations of possible minimal spread below the foundations of No. 17 and the presence of JK rhizomes off-site below the footpath of King Street.
- All excavated JK vegetation, infested material and non-infested soils were disposed of to appropriately licenced waste facilities.
- Additional measures were undertaken to prevent the returning of JK to the site from off-site infestations.

As outlined above, the aim and objectives are considered to have been achieved and the potential for nominal and insignificant infested soils to remain is present but limited.

5.1 Limitations

The inspection and excavation works were subject to the following limitations:

- Access restrictions to heavily vegetated and derelict areas.
- The lateral spread of JK outside the site's boundary; and,
- Maintaining structural integrity of adjoining structures.

Further to these limitations, the works carried out by WYG were subject to the prevailing ground conditions and period of perennial JK growing season.

Given the nature of JKW the potential for re-infestation could occur from various sources, it is

therefore recommended that prior to any works an inspection is undertaken to review the site conditions and the potential for any re-occurrence of JKW.

5.2 Recommendations for Future Works

Where future works may affect the integrity of the root barrier membrane installed at the site's boundary with King Street, WYG recommend that a suitably qualified JK survey and/or Ecologist is consulted regarding the potential for growth to spread from off-site infested soils.

Figure 3: Infested Areas

Queen's Parade, Bangor
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Appendix D – Waste Table

Table 1: Waste Disposal Volume Summary

Date	Type	EWC Code	Weight (tonne)	Disposal Location	Tax Band
29/10/2019	Non-JK Green Waste	02 01 03	2.1	McParland Waste Transfer	Standard
			0.54	Alpha Mullaghglass Depot	Standard
30/10/2019	Infested Soils	17 05 04	4.1	Biffa, Cottonmount	Standard
31/10/2019	Infested Soils	17 05 04	3.4	Biffa, Cottonmount	Standard
31/10/2019	Infested Soils	17 05 04	6.96	Biffa, Cottonmount	Standard
31/10/2019	Infested Soils	17 05 04	7.24	Biffa, Cottonmount	Standard
04/11/2019	Infested Soils	17 05 04	9.84	Biffa, Cottonmount	Standard
04/11/2019	Infested Soils	17 05 04	8.14	Biffa, Cottonmount	Standard
05/11/2019	Infested Soils	17 05 04	9.96	Biffa, Cottonmount	Standard
05/11/2019	Infested Soils	17 05 04	10.94	Biffa, Cottonmount	Standard
05/11/2019	Infested Soils	17 05 04	11.84	Biffa, Cottonmount	Standard
06/11/2019	Infested Soils	17 05 04	10.14	Biffa, Cottonmount	Standard
06/11/2019	Infested Soils	17 05 04	9.4	Biffa, Cottonmount	Standard
06/11/2019	Infested Soils	17 05 04	10.92	Biffa, Cottonmount	Standard
06/11/2019	Infested Soils	17 05 04	10.44	Biffa, Cottonmount	Standard
07/11/2019	Infested Soils	17 05 04	13.52	Biffa, Cottonmount	Standard
07/11/2019	Infested Soils	17 05 04	7.32	Biffa, Cottonmount	Standard
07/11/2019	'Clean Soils'	17 05 04	10.78	Biffa, Cottonmount	Low
08/11/2019	'Clean Soils'	17 05 04	8.9	Biffa, Cottonmount	Low
08/11/2019	'Clean Soils'	17 05 04	11.4	Biffa, Cottonmount	Low
08/11/2019	'Clean Soils'	17 05 04	9.26	Biffa, Cottonmount	Low
08/11/2019	'Clean Soils'	17 05 04	12.18	Biffa, Cottonmount	Low
08/11/2019	'Clean Soils'	17 05 04	10.24	Biffa, Cottonmount	Low
11/11/2019	Infested Soils	17 05 04	11.74	Biffa, Cottonmount	Standard
11/11/2019	Infested Soils	17 05 04	5.9	Biffa, Cottonmount	Standard

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12/11/2019	Infested Soils	17 05 04	10.38	Biffa, Cottonmount	Standard
12/11/2019	Infested Soils	17 05 04	5.84	Biffa, Cottonmount	Standard
13/11/2019	Infested Soils	17 05 04	10.2	Biffa, Cottonmount	Standard
14/11/2019	Infested Soils	17 05 04	8.24	Biffa, Cottonmount	Standard
14/11/2019	Infested Soils	17 05 04	11.18	Biffa, Cottonmount	Standard
15/11/2019	Infested Soils	17 05 04	11.15	Biffa, Cottonmount	Standard
15/11/2019	Infested Soils	17 05 04	11.82	Biffa, Cottonmount	Standard
18/11/2019	'Clean Soils'	17 05 04	6.2	Biffa, Cottonmount	Low

Appendix 7 Japanese Knotweed Excavation Verification - Additional Works

Queen's Parade, Belfast

Japanese Knotweed Excavation Verification Report – Additional Works 2021

Client: Whitemountain

Ref: A112759

Date: September 2021

Prepared on behalf of WYG Environmental and Planning (Northern Ireland) Limited.

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Queen's Parade, Bangor
Japanese Knotweed Excavation Verification Report

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Japanese Knotweed Excavation Verification Report

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1.0 Introduction

1.1 Instruction

WYG Environmental & Planning (N.I) Ltd (WYG) was instructed by Whitemountain on behalf of the Department for Communities (DfC) to revisit the site to verify the excavation of Japanese Knotweed (JKW) from a further 2no. infested locations at Queens Parade in Bangor, Co. Down. Following from the original investigation in November 2019 and subsequent removal works.

1.2 Development Context

As outlined in the project's work information (Ref. 656525SNA), the Department for Communities (DfC) is realising the site for development. Part of these works requires the removal of JKW from 2no. infested areas outlined in the WYG Japanese Knotweed Report (Ref. A112759, December 20). This will involve the removal of vegetation material and the excavation of infested soils as far as reasonably practicable.

1.3 Legislative Context

Whilst it is not an offence for JKW to be present on privately owned land, JKW is listed under Part II of Schedule 9 of the Wildlife (Northern Ireland) Order 1985 (as amended), as being subject to Article 15, which states that '*any person plants or otherwise causes to grow in the wild any plant which is included Part II of Schedule 9, he shall be guilty of an offence'.*

Additionally, under the Controlled Waste (Duty of Care) Regulations (Northern Ireland) 2002, material infested with JKW is considered controlled waste. If disposed of off-site, it must be to a suitably licenced facility. Should herbicide be used, there is the potential for any wastes to be considered as 'hazardous' under the Hazardous Waste Regulations (Northern Ireland) 2005.

1.4 Terms and Conditions

Attention is drawn to the report conditions, included in Appendix A, and the terms and conditions of the engagement as detailed in WYG's accepted proposal.

2.0 Background

2.1 Site Description

The c. 1.95-hectare site is located in a residential and commercial area of Bangor in Co. Down.

The site currently comprises a mixture of semi-derelict residential and commercial buildings with some private gardens; open creative spaces with temporary modular buildings; tarmac hardstanding and some soft landscaping.

The site is located c. 75m from Bangor harbour at its closest point.

The site location is shown in Figure 1 and the site boundary in Figure 2.

2.2 WYG Japanese Knotweed Report

2.2.1 Report Summary

WYG issued a Japanese Knotweed Report in June 2019 (Ref. A112759) that identified 4no. infested areas referenced as JK1 to JK4. Following removal works in October 2019 and a subsequent follow up site visit in December 2020 2 additional stands of knotweed were identified. A summary of the the additional JKW stands are provided below; however, reference should be made to the previous reports report where required.

Table 1: JK Location Summary

Location	Grid Ref.	Approx. Area	Notes
JK5	J 50337 81823	Approximately 50m²	Rear of No. 37 Queen's Parade Growth of some junior strands up to 300mm in height around the existing garage of No.36 queen's parade. These were traced to the eastern boundary of the site.
JK6	J 50341 81823	Approximately 20m²	Rear of No. 36/37 Queen's Parade Growth of some junior strands identified along the wall which forms the western boundary between No.36 and No.37 queen's parade. Rhizomes were identified beneath the existing wall between the properties.

The locations of the infested areas are shown in Figure 3 and a photographic record before excavation is provided in Appendix B.

Infested areas JK5 and JK6 were located in the adjacent rear gardens separated by a block wall.

It was inferred at the time of survey that infested areas JK5 and JK6 may be connected by a single rhizome network, however, due to dense vegetation and health and safety constraints, it was not possible to determine any connection during the survey.

2.2.2 Management Options

The following management options were provided by WYG:

- Option 1 – Chemical control
- Option 2 – Excavation and landfill
- Option 3 – Excavation and burial
- Option 4 – Excavation and bund
- Option 5 – Screening.

Again, reference should be made to the previous WYG report for addition detail. However, Option 2 was selected as the preferred option due to the following constraints:

- Accelerated development project timeline.
- Limited area of burial and/or bunding.
- The requirement for a robust approach.

Option 2 required the removing of all JK vegetation and the excavation and disposal of infested soils to an appropriately licenced waste management facility. A summary of the excavation works is provided in Section 3 of this report.

2.3 WYG Waste Classification (2019)

To support the disposing of the excavated material in compliance with waste management and duty of care legislation, WYG collected 4no. samples on 19th September 2019 to support the undertaking of a waste classification assessment.

The 4no. samples were analysed for a range of contaminants including heavy metals, organic hydrocarbons, asbestos and several inorganic parameters. All 4no. samples were also submitted for waste acceptance criteria testing.

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Reference should be made to this report in full where required, but in summary, all samples were classified as non-hazardous and as being suitable for disposal to an inert waste landfill.

3.0 Excavation Works (2021)

The excavation works were undertaken between 21st June and 25th June 2021.

The excavation works were undertaken according to guidance from the Environment Agency (2013)[1], Property Care Association (2014)[2] and Invasive Species Ireland[3] and were supervised by a certified Japanese Knotweed Surveyor.

A photographic record of the works undertaken is provided in Appendix B.

3.1 Aims and Objectives

The overall aim of the excavation works was to remove, as far as reasonably practicable, the JK vegetation and infested soils from the 2no. infested areas. The technical objectives were as follows:

- Clear and remove JK and non-JK vegetation to establish, where possible, the likely lateral extent of the infested areas.
- Excavation of infested soils to their lateral and vertical extents where possible.
- Supervise the loading of all surface vegetation and infested soils for disposal to suitably licenced waste management facilities.
- Supervise the segregation of non-infested soils where only incidental occurrences are possible from grossly infested soils.

In addition to the technical objectives outlined above, and as outlined in the following sections, where JK was off-site, additional measures were required to prevent the returning of JK to the site from off-site infested areas.

3.2 Bio-Security Protocols

The bio-security protocols comprised the following:

- Establishing a fenced-off works area to the rear of No. 36 and No. 37 Queen's Parade with a single access and egress point.

[1] Environment Agency (EA) Managing Japanese Knotweed on Development Sites, the Knotweed Code of Practice (v3. 2013).
[2] Property Care Association (v. 2.7 2014) Code of Practice for the Management of Japanese Knotweed
[3] Invasive Species Ireland Best Practice Management Guidelines Japanese Knotweed (Fallopia Japonica)

- Establishing a clean down area for personnel, plant and machinery with hard-bristle brushes, herbicide spray and an area to clean down apparel and footwear. The clean down area was lined with sheet plastic.
- Plant and machinery that entered the segregated works area was in place for the duration of the works, unless cleaned down and inspected before leaving.
- On completion of the works, the plant and machinery were cleaned down and inspected by a certified Japanese Knotweed Surveyor. The sheet plastic was lifted, and any overspill placed in the waste disposal skip.

3.3 Material Excavation

Excavation works were undertaken by F. McParland & Co. Ltd using the following plant and machinery:

- Takeuchi TB125 3-tonne mini tracked excavator with a toothless bucket.
- Hyundai 80CR-9 7-12-tonne medi-tracked excavator with a toothless bucket.
- A 10-tonne roll-on roll-off skip.
- A hand-held shovel and spade.

The works were undertaken in the following 3no. phases, all of which were supervised.

3.3.1 Phase 1 – Excavation of JK5

The Phase 1 excavation works were undertaken in the following sequence between 21st June and 23rd June 2021:

- The garage at the back of No.36 was demolished before any excavation of soils containing JK.
- The demolished material was inspected for the presence of JK.
- The soil adjacent to and below the Garage was inspected with any JK crowns being then removed by a targeted excavation to their lateral and vertical extents and any extending rhizomes chased out. This included removing a wall adjacent to the garage to the west where rhizomes could be traced going beneath the foundations. Any clean soils were inspected and set aside for reuse.
- An over dig was then undertaken to inspect the remaining soils for infested material. Where any rhizomes were encountered, they were chased, excavated and removed out to their vertical and lateral extents.
- Targeted excavation extended to an average depth of c. 2-metres below ground level.

- The excavation was then made safe by levelling it off with the demolished material and the soils which had been inspected as being free from JK.

Photographs of both excavations are shown in Appendix B.

3.3.2 Phase 2 – Excavation of JK6

The Phase 2 excavation works were undertaken in the following sequence between 24th June and 26th June 2021:

- The boundary wall between property No.36 and No.37 was demolished to allow identified rhizomes to be traced. The garage/shed in No.37 was then demolished as rhizomes could been seen extending beneath its concrete slab.
- The demolished material was inspected before being set aside.
- The soil adjacent to and below the boundary wall and shed of property No.37 was inspected any JK crowns were then removed by a targeted excavation to their lateral and vertical extents and any extending rhizomes chased out. Any clean soils were inspected and set aside for reuse.
- An over dig was then undertaken to inspect the remaining soils for infested material. Where any rhizomes were encountered, they were chased, excavated and removed out to their vertical and lateral extents.
- Targeted excavation extended to an average depth of c. 1.5-metres below ground level.
- The excavation was then made safe by levelling it off with the demolished material and the soils which had been inspected as being free from JK.

4.0 Waste Disposal

As outlined in Section 1 of this report, the disposal of waste infested with JK and infested material is regulated under the Controlled Waste (Duty of Care) Regulations (Northern Ireland) 2002.

Copies of the Controlled Waste Duty of Care Transfer Notes and receipts from the receiving landfills are provided in Appendix C.

During the works, material infested with JK was segregated from 'clean' material where JK and JK rhizomes were not visible, but incidental and small occurrences were possible. This was undertaken by inspecting the material was it was tipped to a segregated stockpile location and inspection of the sides and base of each excavation for JK material and rhizome inclusions.

A table showing the volumes of controlled waste and 'clean material' disposed of to landfill is provided in Appendix D and is summarised below.

Table 1 – Waste Volume Summary

Waste Description	EWC Code[a]	Total Volume (tonne)	Landfill Tax
JKW Soil	17 05 04	93.82	Standard Rate

[a] European Waste Catalogue Code
[b] Rounded to two decimal places

The total volume of material excavated for disposal was 93.82-tonnes.

5.0 Conclusions & Recommendations

WYG supervised the excavation of JK from 2no. locations at Queen's Parade in Bangor. These works comprised:

- The removal of JK vegetation and excavation of c. 93-tonnes of soil to suitably licenced waste facilities;

Regarding the aims and objectives outlined in Section 3.0, the JK vegetation and infested soils were excavated as far as reasonability practicable. Also:

- The lateral and vertical extents of infested areas JK5 and JK6 were established, excavated and removed.
- All excavated JK vegetation, infested material and non-infested soils were disposed of to appropriately licenced waste facilities.
- All excavations where backfilled with clean material and made safe prior to leaving site.

As outlined above, the aim and objectives are considered to have been achieved and the potential for nominal and insignificant infested soils to remain is present but very limited.

5.1 Limitations

The inspection and excavation works were subject to the following limitations:

- Access restrictions to heavily vegetated and derelict areas.
- The lateral spread of JK outside the site's boundary; and,
- Maintaining structural integrity of adjoining structures.

Further to these limitations, the works carried out by WYG were subject to the prevailing ground conditions and period of perennial JK growing season.

Given the nature of JKW the potential for re-infestation could occur from various sources, it is therefore recommended that prior to any works an inspection is undertaken to review the site conditions and the potential for any re-occurrence of JKW.

5.2 Recommendations for Future Works

As previously advised where future works may affect the integrity of the root barrier membrane installed at the site's boundary with King Street, WYG recommend that a suitably qualified JK survey and/or Ecologist is consulted regarding the potential for growth to spread from off-site

infested soils.

Figure 3: Infested Areas

Appendix 8 Air Quality & Dust Management Plan

BANGOR MARINA AIR QUALITY & DUST MANAGEMENT PLAN (AQDMP)

1.0 Introduction

The purpose of the Air Quality & Dust Management Plan is to provide clear and concise methods for managing air quality and reducing dust levels for the construction works as part of the Bangor Marina redevelopment. The Plan covers methods of reducing the impact of air pollution on human health, reducing dust at source, supressing dust and monitoring dust generated. The objective is to achieve air quality compliance and to minimise the amount of dust generated for the benefit of the health of the workforce, the local community, and surrounding environment.

The AQDMP will set out the potential sources of air pollution and dust and the associated construction activities, how we will monitor air quality and dust generated to assess the level of impact and provide measures for control. The AQDMP will be used as a live document, with input from monitoring and reporting to ensure continuous improvement as highlighted in Figure 1 below.

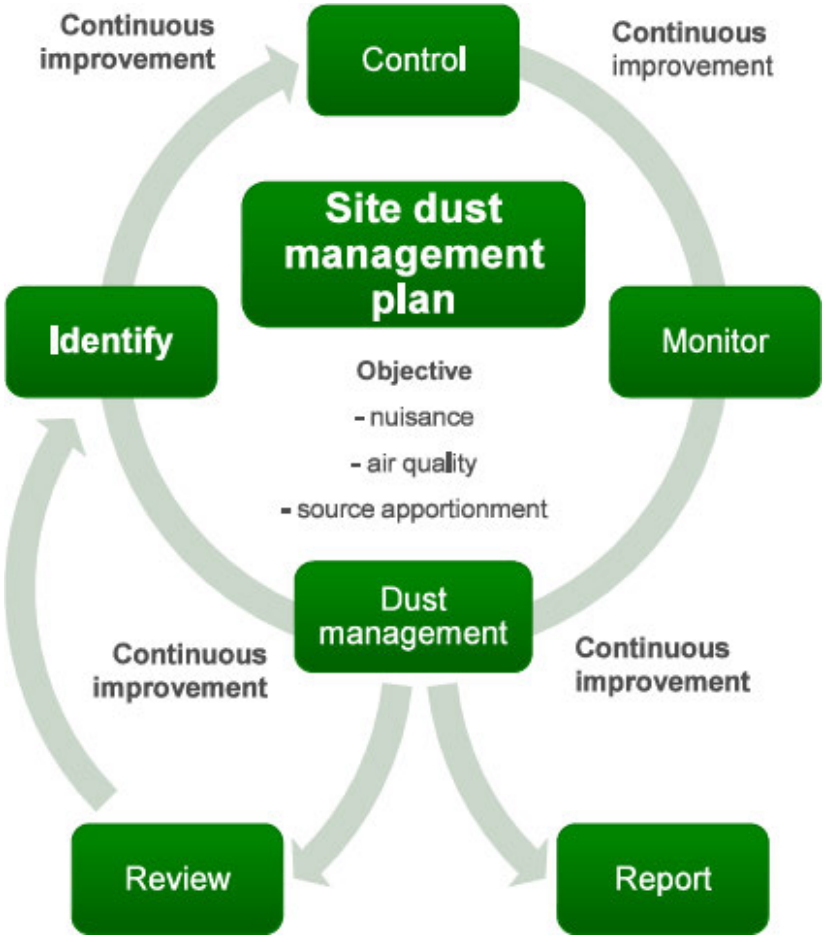


Figure 1. Site Dust Management Process

Figure 2. Site Location

2.1 Scope of Works

The site is currently a combination of brownfield and mixed-use development. It is proposed to develop the site into commercial, leisure, residential and office space. The proposal includes a 70/80 bed hotel which will be situated facing on to the Bangor Marina. Open space and recreational areas to include soft and hard landscaping are included within the development. The existing site has an area of approximately 5.03ha. The first phase of the project will focus on Marine Gardens, and development of the public realm space along the marina at Queens parade.

3.0 Requirements

MSM Contracts environmental management team maintain an up-to-date register of environmental legislation that is referenced in the aspects and impacts register. Below is a summary of legislation relevant to air quality:

- Pollution Prevention and Control Act 1999 (c. 24)
- Environment Act 2021
- Air Quality Regulations (Northern Ireland) 2003 (SI 2003/342)
- The Air Quality Standards Regulations 2010 (SR 2010/188)
- Air Quality Limit Values Regulations (Northern Ireland) 2002 (SR 2002/94)

- Air Quality (Ozone) Regulations (Northern Ireland) 2003 (SR 2003/240).

3.1 Guidance

MSM Contracts has taken the following guidance into consideration when compiling this plan:

- IAQM - Guidance on the Assessment of Dust from Demolition and Construction, 2014
- IAQM - Guidance on Monitoring in the Vicinity of Demolition and Construction Sites, 2018
- DEFRA - Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007

4.0 Roles & Responsibilities

Project Manager

- Report major incidents to the SHEQ department immediately, the EA and any other statutory authorities where required.
- Monitor the progress in closing out corrective actions and observations raised during audits.

Environmental Advisor

- Carry out investigations and provide reports to the project management team after an environmental incident.
- Log and monitor incidents and non-conformances.
- Provide advice, deal with queries and correspondence on environmental issues.
- Undertake inspections to ensure controls are in place and working effectively.
- Maintain a complaints log to ensure issues raised by the public are addressed.

MSM Contracts will require all staff and its sub-contractors to control and limit dust, air pollution, odour and exhaust emissions during the construction works as far as reasonably practicable and in accordance with Best Practicable Means (BPM). This will include the following, as appropriate:

- Adherence to air quality standards set forth in legislation.
- Reference to the general site management and good housekeeping procedures (relevant to limiting dust and air pollution).
- Controls and measures to control or mitigate the effect of potential nuisance caused by the construction works, as determined by an up-to-date and site-specific assessment of risks.
- Dust and air pollution monitoring measures to be employed during construction.
- Measures relevant to control risks associated with asbestos dust.

5.0 Aspects & Impacts

Typical dust generating activities on construction sites include soil stripping, the excavation of foundations, the movement and placement of granular materials, site traffic movements etc. The resultant dust may cause nuisance through, surface soiling, loss of visibility due to deposition and effects on flora and fauna. Since it is difficult to suppress dust once it is airborne it is preferable, where possible, to prevent dust from being generated in the first place. In addition to this, increased vehicular and construction plant movements can also increase particulate emissions such as Carbon Dioxide and Nitrogen Oxide, which can reduce the air quality in the surrounding area.

5.1 Sensitive Receptor Locations

The potential sensitive receptors include:

- Local residents and businesses
- Site workers
- Street going public (including tourists)
- Wildlife (including habitats, flora and fauna)

6.0 Management of Air Quality

Measures to reduce potential impacts on air quality include:

6.1 Site Management

The site layout will be planned to locate machinery and dust causing activities away from sensitive receptors, were reasonably practicable. Methods, such as the erection of hoarding or other barriers along the site boundary will be used, where appropriate, to mitigate the spread of dust.

6.2 Construction Plant, Vehicles & Equipment

Measures will be implemented to limit emissions from construction plant and vehicles which will include the following as appropriate:

- Operation of construction plant in accordance with the manufacturers written recommendations.
- Vehicles and plant will be switched off and secured when not in use.
- Construction vehicles to conform to the current EU emissions standards and where reasonably practicable, their emissions should meet the upcoming standards prior to the legal requirement date for the standard.
- Vehicles and construction plant exhausts to be directed away from the ground and positioned at a height to facilitate appropriate dispersal of exhaust emissions.
- The enclosure, shielding or provision of filters on plant likely to generate excessive quantities of dust beyond the site boundaries.
- Devices such as dust extractors, filters and collectors on equipment will be used, where reasonable and practicable.
- Movement of construction traffic around the site will be kept to the minimum reasonable for the effective and efficient operation of the site and construction of the project.
- Construction plant will be located away from site boundaries which are close to sensitive receptors, where reasonable and practicable.
- Site access point will be designed to minimise queuing traffic adjacent to access points.
- The use of diesel or petrol-powered generators will be reduced by using mains electricity or battery powered equipment were reasonably practicable.
- Non-Road Mobile Machinery (NRMM) will use ultra-low sulphur diesel.
- Cutting and grinding operations will be conducted using equipment and techniques which reduce emissions and incorporate appropriate dust suppression measures.
- Damping down of dust generating equipment and vehicles with the site and the provision of dust suppression in all areas of the site that are likely to generate dust.

- Measures to keep roads and access ways clean, including water-assisted dust sweepers on the access and local roads.
- Vehicle, plant and equipment maintenance records will be kept on site and reviewed regularly.

6.3 Transportation, Storage & Handling of Materials

Dust and air quality management measures will be implemented to limit pollution arising from the transportation and storage of materials, including the following, as appropriate:

- Covering materials, deliveries or loads entering and leaving the construction site for the purposes of preventing materials and dust spillage – this will apply to the transport of materials by road, rail or waterway.
- Vehicles transporting materials within or outside the construction site will not be overloaded.
- Stockpiles and mounds will be kept away from sensitive receptors (including natural and historic features), watercourses and surface drains where reasonably practicable, and sited to consider the predominant wind direction relative to sensitive receptors.
- Stockpiles and mounds will be maintained to avoid material slippage.
- Materials stockpiles likely to generate dust will be enclosed or securely sheeted, kept watered or stabilised as appropriate.
- Fine dry material will be stored inside buildings or enclosures with measures in place to ensure no escape of material and overfilling during delivery.
- Mixing of large quantities of concrete will be undertaken in enclosed or shielded areas.
- The number of handling operations for materials will be kept to the minimum reasonably practicable.
- Materials handling areas will be maintained to constrain dust emissions using measures such as watering facilities to reduce or prevent escape of dust from the site boundaries.
- Mixing of grout or cement-based materials will be undertaken using appropriate techniques/mitigation suitable for the prevention of dust emissions.

6.4 Excavations & Groundworks

Dust pollution from excavations and earthworks activities will be limited using the following measures, as appropriate:

- All surfacing materials (concrete / paving / blacktop) will be carefully removed to avoid risks associated with dust generation.
- Fine material will not be stockpiled to an excessive height in order to prevent exposure to wind or dust nuisance.
- Topsoil will be stripped as close as reasonably practicable to the period of the excavation or other earthworks activities to avoid risks associated with run-off or dust generation.
- Drop heights from excavators to vehicles involved in the transport of excavated material will be kept to the reasonably practicable minimum.
- Distances from crushing plant to stockpiles to be kept to a minimum practicable to control dust generation associated with the fall of materials.
- Materials will be compacted after deposition, except for topsoil and subsoil on land to be restored for, landscaping and wildlife habitats.
- Soiling, seeding, planting of completed earthworks to be completed as soon as reasonably practicable, following completion of earthworks.
- Water will be used as a dust suppressant, where applicable.

6.5 Grouting Activities

Dust pollution associated with grouting activities will be limited through the use of the following measures, as appropriate:

- Scabbling (roughening of concrete surfaces) will be avoided if possible.
- Sand and other aggregates will be stored in bunded areas and not allowed to dry out.
- Bulk cement and other fine powder materials are to be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- Dust extractors, filters and collectors on silos.
- The mixing of grout or cement-based materials will be undertaken using a process suitable for the prevention, as far as reasonably practicable, of dust emissions.

6.6 Dust Barriers

If unavoidably dusty works are to be carried out, this will be sectioned off with barriers. Our site perimeter will compromise suitable hoarding for the works proposed in the area. This will also assist in reducing the risk of windblown dust across the site.

We will ensure effective water suppression is used during demolition operations. Hand-held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. We will ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling to prevent dust.

7.0 Air Quality Monitoring

MSM Contracts will require its contractors to implement inspection and monitoring procedures to assess the effectiveness of measures to prevent dust and air pollutant emissions. Relevant local authorities will be consulted on the monitoring procedures to be implemented, which will include the following measures, as appropriate:

- Site inspections covering the establishment of operation of the construction site.
- Inspection procedures for areas adjacent to the construction site to visually assess any dust and air pollution which may be generated.
- Plans for undertaking continuous automatic monitoring of airborne dust and setting a relevant site action level (defined as a measurement threshold above which investigation will be required).
- Reference to inspection and maintenance schedules for construction vehicles, plant and machinery.
- Inspection procedures relating to the level of traffic movements, use and condition of haul routes.

If requested, reports of the monitoring will be made available to the local authority. These will include, where appropriate, the interpretation of any continuous automatic monitoring data, any site action level alarms, investigations and remedial actions.

Where there are potentially dust-emitting activities on site, as a minimum, a daily visual inspection will be made, and a yes/no record kept of whether there is a risk of dust emissions that day.

Dust monitoring will be logged under the following six headings:

- **Location** defines the area in which the dust is generated.
- **Operation** defines the activity that generates the dust.
- **Period** defines the time scale the dust is generated over.
- **Extent** defines the area that is affected by the dust**.**
- **Impact** defines the visual effect of the dust.
- **Action** to be taken to mitigate dust

"*Nuisance Dust*" is the most likely category of dust to be encountered on and surrounding site and it is unlikely that the source of the dust will be ambiguous. For this reason, the primary type of monitoring will be visual. MSM Contracts Site Management will ensure best practice techniques are implemented and will log any breaches in the Dust Monitoring Log as headings listed above.

Constant visual monitoring will identify if excessive "Dust Clouds" are generated and works will be ceased until a resolution is achieved. A longer-term approach will be monitoring of "Dust Deposition" on surfaces. This will include a daily inspection of cars parked on adjacent streets (during high risk works) and inspections of road surfaces and adjacent façade inspections, particularly windows. This process involves dust monitoring through "Surface Soiling" as discoloration (obscuration) occurs through dust build up on a surface over a time period.

Monitoring of dust and particulate matter during construction of the project will be undertaken following the current best practice guidance (currently IAQM 2012).

Instruments should be used if requested by the local authority, for continuous automatic monitoring of dust as airborne PM10. These instruments will send an alarm (via the internet or mobile phone system) when a pre-determined site action level is reached. The site action level will be determined as appropriate from current best practice guidance. The alarm will be sent to a delegated representative of the site management team

If the alarm is triggered, the following on-site process will be followed:

- The delegated representative will investigate activities on site, as quickly as reasonably practicable, to ascertain if any visible dust is emanating from the site or if any activities are occurring on site that are not in line with the dust control measures.
- Any identified causes will be rectified where practicable and actions recorded in the site logbook, and reported to the project manager, who will report this to the relevant authority as soon as reasonably practicable.
- If the source of the incident cannot be identified as originating from the site operations, operations of other nearby construction sites and other activities will be investigated for potential causes of the alarm. Other sites' particulate matter monitoring data may be available to assist this investigation.
- If the source of the alarm is not related to the site operations, the outcome of any investigation and associated actions will be recorded in the site logbook.

7.0 Dust Reduction

MSM Contracts approach to dust reduction is engaged at every stage of the scheme from design through to the operation of the completed development. Working closely with our designers, MSM Contracts will specify and coordinate layouts with an understanding of product modules to reduce waste, reduce site cutting and in turn reduce the amount of dust generated.

Within our Method Statements and Risk Assessments, mitigation measures will be identified to reduce dust. This will include the following typical examples:

- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Avoid site run-off of water or mud.
- Spraying and wetting down any structure prior to demolition and during the works.
- Piped water connected to cutting tools e.g. site grinder.
- Damping down of surfaces prior to sweeping.
- Spraying down of ground works during dry periods.
- Avoiding activities in high winds that may generate excessive dust or airborne particles.
- Washing of vehicles, where possible, prior to leaving site to avoid transfer of mud to surrounding streets (this could lead to nuisance dust in long dry periods).

To ensure these Method Statements are implemented, they are reviewed with the operatives and supervisors during site induction and further refreshed with regular toolbox talks.

7.1 Waste Management

Maintaining a high standard of site cleanliness is essential to allow works to progress on site safely and reduce the risk of dust. Our approach to site cleanliness is to have a multi-task labour force, directly employed, who will police site cleanliness and coordinate the removal of waste containers filled by the supply chain contractors. A designated waste management compound will be set up within the site. This will allow for the segregation of waste in separate skips, which will be covered if at risk of spreading dust, and may include:

- Hazardous Waste (i.e. oil drums, paint tins, spray cans etc.)
- Waste timber for recycling
- Waste metal for recycling
- General waste
- Food / canteen waste

8.0 Considerate Constructors Scheme (CCS)

As part of the CCS requirement, and in line with the MSM Contracts policies, the procedures we put in place to reduce the impact on the local community includes dust reduction.

Through community engagement, issues regarding dust (if they arise) are much easier to resolve when the lines of engagement have already been established. This enables matters to be resolved

quicker and more effectively to ensure a good relationship is maintained between the site and the local community.

We will put in place a complaints procedure, which will include 24/7 contact details for the site management team, a logging system for complaints, and a process for remedial action to be identified and implemented. This will include displaying the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the SHEQ Advisor/Environment Manager/Engineer or the Site Manager.

8.0 Conclusion

The construction works have the potential to create air quality emissions, primarily associated with nuisance dust. During construction it will therefore be necessary to apply a package of mitigation measures to minimise emissions. MSM Contracts objective is to implement the mitigation measures identified in this report and to reduce the risk of nuisance dust generated by the construction of the Bangor Marine development. With these measures in place, it is expected that any residual effects will be negligible to slight adverse (not significant). However, it must be recognised that, even with a rigorous management plan in place, it is not possible to guarantee that the mitigation measures will be effective all the time. For instance, under adverse weather conditions controls may be interrupted or deemed ineffective.

Appendix 9 Site Waste Management Plan (SWMP)

BANGOR MARINA SITE WASTE MANAGEMENT PLAN (SWMP)

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.

Waste minimisation and management on the project will help reduce the significant quantities of construction waste sent to landfill. '*The principle objective of good practice waste management is to use materials more efficiently and to reduce the amount of waste requiring final disposal. Adopting the waste hierarchy (see figure 2) to reduce, reuse, recycle, recover and dispose makes good business sense both for clients and the construction sector*' (WRAP, 2019).

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.

Figure 1: Zero Waste Hierarchy

2.0 Project Stakeholders

Principal Contractor	Client
MSM Contracts **Construction** 99 Unit 45a Seagoe Ind. Estate Craigavon Co. Armagh BT63 5QE Tel:-02890684943	**Bangor Marine Limited** 99 Kingsway Dunmurry BT17 9NU Contact: [redacted] Tel: Email: [redacted]
Principal Designer	**Waste Carrier**
Skope Murrays Exchange 1 Linfield Road Belfast BT12 5DR Contact: [redacted] Tel: [redacted] Email: [redacted]	**Riverridge Recycling Ltd** 91 Moy Road, Portadown Co. Armagh BT62 1QW Tel : 028 9531 3313 Email : info@riverridge.co.uk

3.0 Project Description

The site is currently a combination of brownfield and mixed-use development. It is proposed to develop the site into commercial, leisure, residential and office space.Open space and recreational areas to include soft and hard landscaping are included within the development. The existing site has an area of approximately 5.03ha. The first phase of the project will focus on Marine Gardens, and development of the public realm space along the marina at Queens parade.

3.1 Site Location and Description

The Queens Parade development site is located opposite the marina in Bangor, County Down. The site is located between the Southwell Road, King Street, Main Street and the marina. The Queen's Parade Road runs east to west through the site.

General arrangements for the site layout are noted in the Construction Environmental Management Plan.

4.0 Roles and Responsibilities

Environmental Manager:

- Ensure MSM Contracts "Duty of Care" is being complied with on a company basis.
- Be aware of current and pending environmental legislation.
- Co-ordinate waste management initiatives and gathering data about waste on sites.
- Prepare Environmental and Waste Management Plans.

Environmental Advisor:

- Collate environmental information relating to the project.
- Compile CEMP in liaison with Contract Manager and/or Project Manager.
- 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.

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 MSM Contracts “Duty of Care” is being complied with at site level.

Project Manager:

- 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.

Site Environmental Designee/Waste Manager:

- Log weekly quantities of imported /exported / reused materials on a Materials Management Log.
- Log weekly quantities of generated waste removed from site.
- Periodically visit the waste transfer station, waste treatment or disposal facility, waste exempt site, and recycling plant to ensure we are effectively discharging our Duty of Care.
- Provide monthly waste statistics to the Environmental Manager

Other aspects of waste management which require a team approach are financial impacts of waste management or disposal, education and reviewing.

4.1 Management of Subcontractors

Co-ordination will be key when managing waste on site where there are a large number of sub-contractors.

The site will, at an early stage, assess all planned activities and determine the following:

- How can sub-contractors minimise waste generation.
- Plan anticipated waste streams.
- What types of waste will be generated.
- How they will be treated - reused, recycled or is difficult to recycle.
- How will they be stored.
- What arrangements need to be made to maximise reuse or recycling.

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

- Agree a minimum diversion from landfill target i.e., 90% +, waste percentage with each sub-contractor, to maximise the reuse and recycling of wastes generated by sub-contractors.

- 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.

5.0 Waste Minimisation

The project team 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 include, but not limited to, stone paving, drainage, topsoil, timber, aggregate, street furniture, concrete, cable and ducting, and drainage materials.

Generated materials are those already on the project: this will include metal, brick, soils, asphalt, and vegetation. To reduce the number of generated materials sent to landfill it is envisaged that materials suitable for reuse will be maintained on site for placement later in the development or sent for reuse off site. 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.

5.1 Compliance with Legislation

MSM Contracts 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. Adhering to Regulation 17 of The Waste Regulations (NI) 2011, and Paragraph 19 Exemption of the Waste Management Licensing Regulations (NI) 2003, our waste management priorities are to:

- Minimise raw materials used, use efficient designs and don’t over order.
- Reduce waste through correct storage and handling of materials.
- Reuse materials, including timber shutters and surplus concrete for fill.
- Recycle waste where possible, including scrap steel, timber and plastics.
- Dispose of minimal amounts of waste to landfill

When waste is within your control you must store it securely and keep it in suitable containers such as skips. Waste, such as soil and stone, must be stored so that it doesn’t escape and cause pollution.

Anyone who transfers waste to a treatment or 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 project site management team must check that the waste management site is licensed and that the licence permits the waste management 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' 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 Waste Transfer Notes and copy them to the Project Manager.

It is not necessary to have a Waste Transfer Note for each load of waste; a WTN can be issued weekly or monthly as a season ticket. A season ticket is a single WTN that can cover multiple transfers over a period of up to 12 months. A season ticket can be adopted if the following remain the same:

- The description of the waste being transferred.
- The parties involved in the transfer (the waste producer and the waste carrier.
- The place where the waste is transferred from one party to the other.

If either of these requirements change, a new WTN must be created.

Hazardous wastes removed from site should be accompanied by a Waste Consignment Note, detailing the hazardous properties of waste. Additionally, DAERA must be notified at least 72 hours prior to the transfer of hazardous waste.

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

You can check if a carrier is registered by asking to see their Certificate of Registry, by contacting DAERA, or by viewing DAERA's Waste Carrier and Brokers register.

6.0 Induction and Training

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

The Construction Environmental Management Plan (CEMP) and Site Waste Management Plan (SWMP) will be highlighted in the site induction process, and employees and subcontractors encouraged to participate.

7.0 Waste Management on Site

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
Plastics	AN	20 01 39	Construction
Metals	MN	17 04 07	Construction/Site stripping
Asbestos	MH	17 06 05	Site stripping

Bituminous mixtures	MN	17 03 02	Construction/Site stripping
Subsoils	MN	17 05 04	Construction/Site stripping
Subsoils	MH	17 05 03	Construction/Site stripping
Topsoil	MN	17 05 04	Construction/Site Stripping
Packaging Carboard Plastic Wooden	AN	15 01 01 15 01 02 15 01 03	Construction
Canteen Waste	AN	20 01 08	Construction
Timber	MN	17 02 01	Construction/Site stripping
WEEE	AN	20 01 36	Site stripping
Brick	MN	17 01 07	Site stripping
Plasterboard	MN	17 08 02	Construction
Vegetation	AN	20 02 01	Site stripping
Concrete	MN	17 01 07	Construction/Site stripping

Estimated waste volumes for each waste stream are summarised in Table 2. The table is to be updated when more information on waste streams is available.

Table 2: Forecast Waste Types

Waste type	Predicted Waste (m^3)
Asphalt	TBC
Brick	TBC
Soils (subsoil and topsoil)	TBC
Concrete	TBC
Canteen Waste	TBC
Timber	TBC
Scrap metal	TBC
Packaging – Paper and cardboard	TBC
Packaging – Plastic	TBC
Packaging – Wooden	TBC
Total	

Table 3: Waste Management 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
WEEE	Segregate on site for offsite recycling

Metals	Segregate on site for offsite recycling
Plastic	Segregate on site for offsite recycling
Timber	Reuse on site / segregate for offsite reuse
Canteen waste	Segregate on site for offsite composting
Packaging – Paper & Cardboard	Segregate on site for offsite recycling
Packaging – Plastic	Segregate on site for offsite recycling
Packaging – Wooden	Segregate on site for offsite recycling
Vegetation	Segregated on site for reuse
Concrete	Segregate on site for reuse on site
Brick	Segregate on site for reuse / recycled with Riverridge
Soils / sub soils	Segregate on site for reuse on site

7.1 Segregation of Waste

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 types.

Landfill Tax:

Current charges are £3.25 per tonne for inactive (inert) waste such as rocks and soil. For active waste, the charge is currently set at £ 102.10per tonne. These charges are in addition to the landfill operator's operational fee.

8.0 Waste Management Data Tracking

At MSM Contracts we aim for 90% and above reuse/ recycling rate and an incineration target of no more than 5% waste for recovery for energy and diversion from landfill. To assist in achieving this target, we will utilise an online portal to assist staff in the recording and monitoring of waste on site. The portal allows for: the tracking of real-time movements of all waste containers; the generation of recycling and recovery reports broken into segregated waste streams; and the arranging of invoicing and downloading of waste transfer notes. Having access to the waste portal data allows us to regularly monitor our waste performance against targets and report results back to the wider project team to help identify waste streams and volumes and plan reuse / recycling strategies better to minimise waste to landfill.

It is important that proper Waste Transfer Notes are maintained. Printer and copier cartridges should be returned to Head Office for recycling.

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.

9.0 Hazardous Waste

Labels and waste 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:

Figure 3: Hazardous Waste Label

While it is important to prevent spills and further contamination, MSM Contracts also have an obligation to minimise hazardous waste thus truly embracing the waste hierarchy. To achieve this, the following measures are implemented:

- Utilising non-hazardous or less hazardous material alternatives for materials and components.
- Minimising the need/frequency for cleaning equipment: more efficient work practices help reduce our production of potentially contaminating effluents.

- Improving the efficiency of our processes to reduce the quantity of materials that are used.
- Recovering materials - some of these can be reused on site following remediation and treatment, where reasonably practical, others can be sent off site for recycling, treatment, or recovery.

An additional procedure for hazardous waste minimisation is the remediation of contaminated soils/ground conditions, rather than their removal as a waste. In the event of contamination resulting from construction works, a specialist is utilised to reduce contaminants to levels which are 'suitable for use'. Following remediation, follow-up inspections will be conducted to ensure the effective removal of contaminants.

Table 4 presents the hazardous wastes that may be generated as a result of the construction works.

Table 4: Hazardous Wastes

CATEGORY	DESCRIPTION / EXAMPLES	DISPOSAL RECOMMENDATION
Asbestos containing materials (ACM)	Building insultation materials, boilers and pipes, floor tiles, roofing sheets, etc.	Source specialist waste contractor for safe removal and disposal to hazardous waste facility
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 hazardous waste and complete their own consignment notes., which will be kept in the site waste file.
Paint	Primers, paints and empty cans	
Epoxy coatings	Used for repairing damaged factory applied coatings	
Contaminated ground	Made ground, refuelling areas	Source specialist waste contractor for safe removal and disposal to hazardous waste facility
Biocides	Disinfectant	
Batteries	Lead acid	
Fluorescent tubes	From site offices	

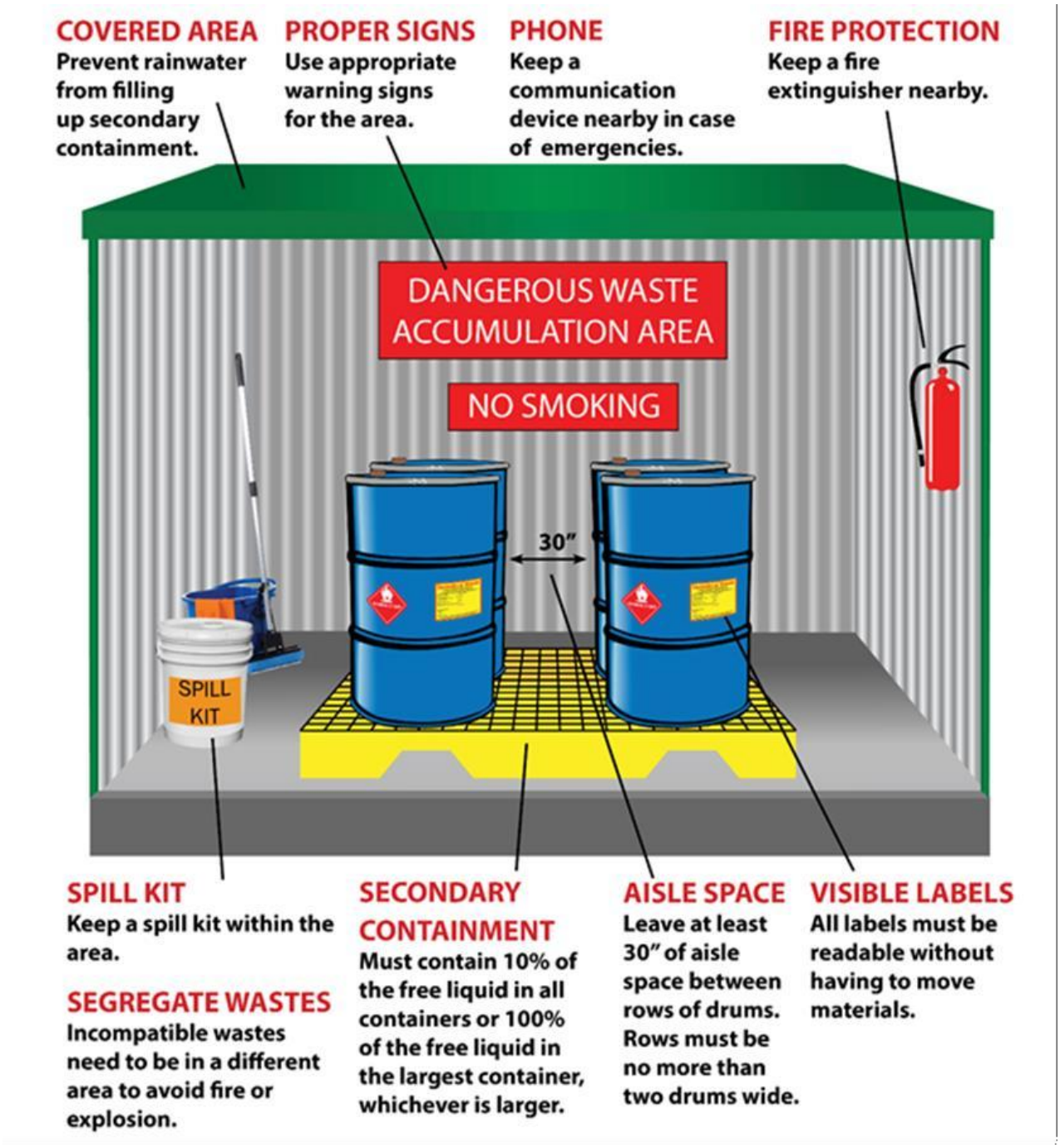
10.0 Waste Carriers

The following waste carriers' have been identified as being able to satisfy MSM Contracts Duty of Care with regard to disposal of Controlled and Hazardous Waste. Waste carriers are subject to change as the works progress and different waste streams are generated on site.

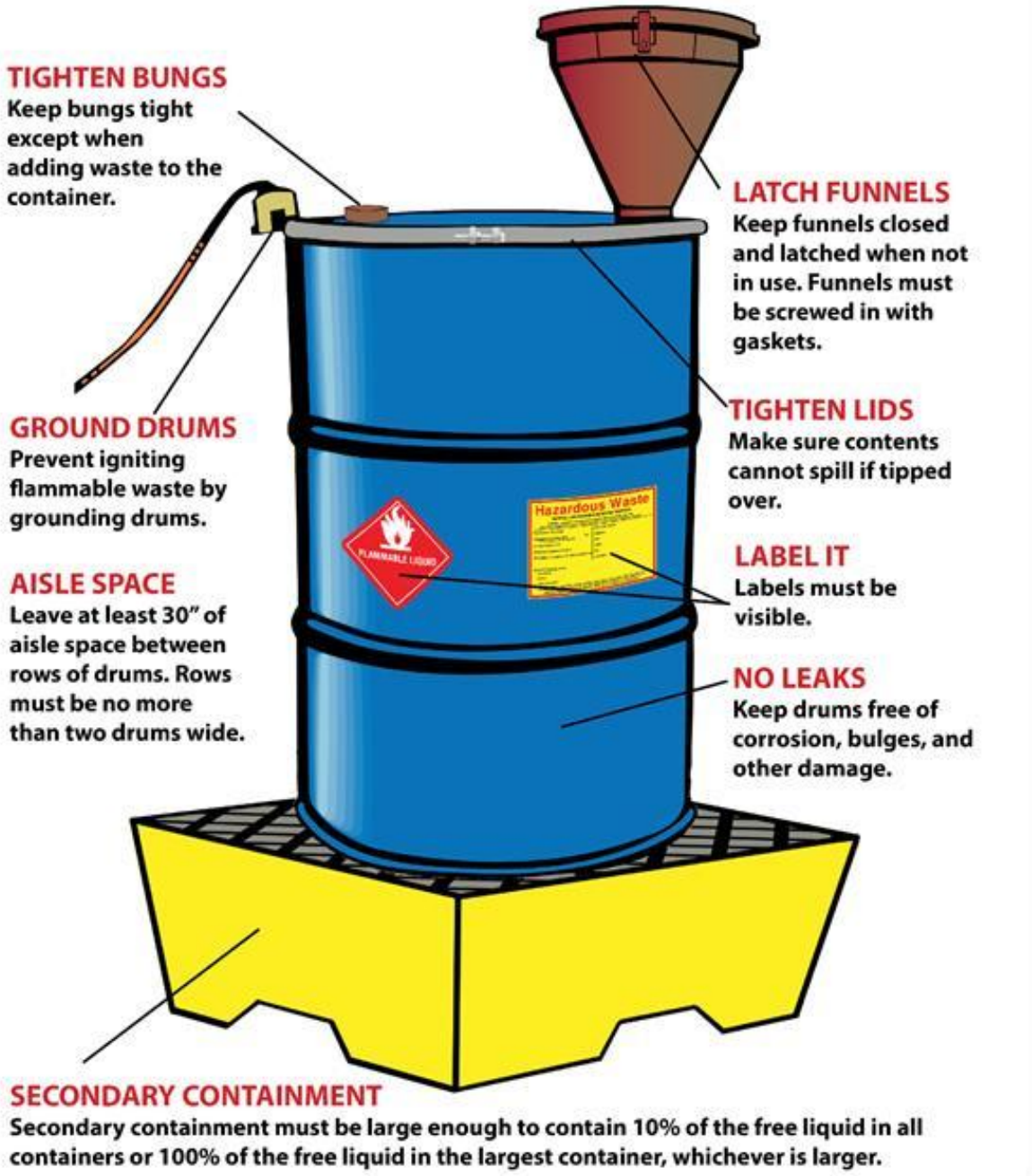
Table 5: Waste Carriers

TYPE OF WASTE	WASTE CODES	NAME AND ADDRESS OF WASTE CARRIER	WASTE CARRIER'S LICENCE NUMBER
All Waste Types		Riverridge Recycling Ltd 91 Moy Road, Portadown Co. Armagh BT62 1 QW ROCUT5417	
Hazardous waste streams		ENVA 11 Comber Road Carryduff Clontonakelly BT8 8AN ROCUT146	

Appendix A Hazardous Waste Storage



Appendix B Waste Oil Storage



Appendix 10 Water Quality Monitoring Plan (WQMP)

BANGOR MARINA WATER QUALITY MONITORING PLAN (WQMP)

1.0 Introduction

This document details the approach to be adopted by MSM Contracts for the water quality monitoring program, as part of the works taking place at Bangor Marina. This is a live document and will be updated as the works progress, a copy will be held on site along with the suite of environmental plans.

2.0 Background

The monitoring program has been designed to adhere to the requirements of any conditions or chemical limits detailed in the consent(s) to discharge. MSM Contracts shall complete water quality monitoring throughout the construction phase to ensure no pollution of controlled waters occurs.

3.0 Project Description

The site is currently a combination of brownfield and mixed-use development. It is proposed to develop the site into commercial, leisure, residential and office space. Open space and recreational areas to include soft and hard landscaping are included within the development. The existing site has an area of approximately 5.03ha. The first phase of the project will focus on Marine Gardens, and development of the public realm space along the marina at Queens parade.

4.0 Methodology

The methodologies adopted as part of this document reflect the nature of the factors which could potentially impact water quality at the site associated with the construction phase at Bangor Marina. The monitoring program shall entail a combination of visual inspections, in-situ field monitoring and as required, laboratory analysis.

4.1 Monitoring Locations

Monitoring locations will be agreed with the clients representative and shall be cognisant of the over-pumping and discharge activity being undertaken.

4.2 Visual Inspections

Visual inspections will be completed daily by MSM Contracts site management team at locations where works are underway and at sensitive locations across the site. Photographic records will be maintained by MSM Contracts engineers. Visual inspections will also be completed after major rainfall events, i.e. when rainfall exceeds 25mm in any 24-hour period.

5.3 In-Situ Monitoring

In-situ field measurements shall include a visual inspection (colour), pH, conductivity, temperature, and turbidity. In-situ field monitoring shall be completed by a MSM Contracts engineer who shall receive inhouse training regarding use of the handheld monitoring device. In-situ monitoring

will be completed on a weekly basis during discharge activity. Results of in-situ sampling will be recorded via water quality sampling equipment software and/or an Excel spreadsheet.

4.4 Laboratory Analysis

Laboratory analysis will be completed on a as needs basis for groundwater samples to determine chemical make up and ensure it is compliant with consented limits stipulated.

Samples will be stored in cool boxes while in transport to the laboratory, accompanied by the relevant chain of custody form.

Results of laboratory analysis shall be included in the Appendices of this document for comparison with the relevant Environmental Quality Standards.

5.0 Trade Effluent Conditions

An application for consent to discharge (trade effluent) will be made with Northern Ireland Water (NIW) in accordance with the Water and Sewerage Services (Northern Ireland) Order 2006. This will cover discharge of trade effluent (i.e. dewatering of groundwater during construction works).

NIW may consult the Department for Environment should the trade effluent.

- Contain any substance listed in Schedule 1 below in a concentration greater than the background concentration, or
- Is derived from a process n Schedule 2 below if either chloroform or asbestos is present in a concentration greater than the background concentration.

5.1 Schedule 1 Substances

Mercury and its compounds	Dichlorvos
Cadmium and it compounds	1, 2-Dichloroethane
Gamma-Hexachlorocyclohexane	Trichlorobenzene
DDT	Atrazine
Pentachlorophenol and its compounds	Simazine
Hexachlorobenzene	Tributyltin compounds
Hexachlorobutadiene	Triphenyltin compounds
Aldrin	Trifluralin
Dieldrin	Fenitrothion
Endrin	Azinphos-methyl
Carbon Tetrachloride	Malathion
Polychlorinated Biphenyls	Endosulfan

5.2 Schedule 2 Processes

- Any processes for the protection of chlorinated organic chemicals
- Any process for the manufacture of paper pulp
- Any process for the manufacture of asbestos cement
- Any process for the manufacture of asbestos paper or board

- Any industrial process involving the use in any 12-month period of than 100kg of the product resulting from the crushing of asbestos ore.

6.3 Conditions That Apply to All Trade Effluent Consents

As referenced in Appendix B2 of the NIW Trade Effluent questionnaire, the following conditions apply to the discharge of trade effluent to the public foul sewer under the Water and Sewerage Services (Northern Ireland) Order 2006. These conditions are absolute and not subject to variation.

1	The temperature of the trade effluent to be discharged shall not exceed 43 °C
2	The trade effluent shall not include any substance herein specified of a nature, composition or quantity likely, either alone or in combination with the contents of the sewer to: a) injure the public sewer(s) into which it is discharged or by which it is conveyed, or b) interfere with the free flow of the contents of the public sewers, or c) injure the sewage treatment works or any machinery or equipment installed thereat, or d) interfere with any processes of treatment of sewage or trade effluent, or e) cause a nuisance or give off a vapour or harmful substance, or f) adversely affect any person
3	The effluent shall not contain a greater concentration of any substance than is permitted in the Consent issued for a particular discharge
4	The effluent shall not at any tie include calcium carbide, or products that in their pure state produce under the conditions appertaining in the sewers a flammable gas or vapour. Petroleum spirit, all other volatile petroleum products and all other flammable solvents are to be excluded from the effluent under this condition,
5	The effluent shall not contain, when quiescent, any separable oils, greases or fats, either of mineral, animal or vegetable origin, save as otherwise permitted in the Consent.

Appendix 11 Environmental Emergency Response Plan (EERP)

QUEENS PARADE BANGOR EMERGENCY RESPONSE PLAN (EERP)

1.0 Introduction

MSM Contracts have produced this Environmental Emergency Response Plan (EERP) as part of the Environmental Management for the Queens Parade project. The EERP will:

- 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 an Environmental Emergency.
- Provide a list of pollution response contractors 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 (form F123).
- Require all personnel to undertake a site induction.
- Require all Subcontractors to have spill response kits in all of their excavators, at storage locations, and with mobile diesel bowsers.
- Ensure compliance with Environmental Regulations such as the Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010 and the Water (NI) Order 1999.

2.0 Roles and Responsibilities

Project Manager
The Project Manager is responsible for the overall Environmental Plan and its implementation. The Project Manager must provide enough resources to the SHE Advisor to establish the Incident Management and Emergency Response Plan.

The Project Manager will be responsible to advise relevant authorities, to communicate with the client and any other business partners.

SHEQ Advisor
Responsible to provide the site with the resources (equipment & amenities) required to respond to emergencies, and with enough procedures and site instruction to ensure that all relevant personnel are trained to respond to any Environmental Emergency. The SHE Advisor, as required, should:

- Evaluate the need for evacuation
- Initiate the evacuation
- Activate security alarm
- Contact with the Project Manager & Site Managers
- Contact with the outside Emergency Services numbers if needed
- Account all personnel in the affected area
- Evaluate and organise the response measures
- Coordinate with the Emergency Services if needed
- Ensure that injured personnel are removed to the safe area and treated as required
- Oversee all emergency response measures
- Verify emergency response measures are carried out effectively
- Ensure all workers evacuated from work area are on the assembly points
- Give the “all clear” message to all assembly points when the situation is brought under control and it is safe to enter

- Replace as soon as possible the emergency kit materials used
- Responsible to recover, manage & storage all hazardous waste generated, following the Site Waste Management Plan.
- Responsible for organizing a committee to analyse the Environmental Emergency and to prepare & distribute the factual report.
- Responsible to create a “lesson learned” report and to communicate its conclusions to the other staff to avoid recurrence in future. Awareness notices and campaign will be developed to ensure all personnel understand the root cause and consequences of the Environmental Emergency.

All Employees and Subcontractors
To report as soon as possible any Environmental Emergency situation detected to the Project Manager or delegated persons in the SHE Department. To contact with internal emergency numbers to announce the Environmental Emergency Incident to other staff.

To collaborate with the individual responsible to organise the Emergency Response and to bringing the situation to normal operations following the incident.

Muster Point Attendants
Take head count and find missing personnel.

Comprises:
- Trained personnel and security

Ensure that:
- Head count taken at assembly points
- Compare with personnel on duty
- Find out missing personnel
- Inform missing personnel to individual responsible (Emergency Controller), if any

Spill Control Team
Attend to contain spills and ensure proper disposal of used absorbent materials.

Comprises:
- SHEQ Advisor
- Trained Spill Controllers
- Area Supervisor
- Spill control coordinator

Ensure that:
- Severity and nature of spill assessed (accord with MSDS)
- Contain spillage with available spill control equipment
- External resources summoned in case of large spillages
- Collect and store the hazardous waste generated

3.0 Potential Environmental Incidents and Response

The table below sets out potential environmental incidents and the suggested response to prevent significant environmental impacts. For all environmental incidents MSM Contracts will immediately notify and work in conjunction with **the Northern Ireland Environment Agency** to contain any spills or rectify any incidents. (0800 80 70 60)

NIEA should be contacted by the Site Management Team immediately where an incident results in direct pollution of a watercourse. This should allow for inspecting the incident, taking immediate actions to control/mitigate impacts and enable NIEA to inform third parties and to take further mitigation steps if required.

MSM Contracts will ensure they have adequate spill response equipment on site to cover all aspects of site works, the environmental designee (TBC) on site will coordinate site staff to respond to the incident.

Table 1: Incident 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
Minor Spill is classed as a small amount of material on land which does not pose an immediate threat to a river, stream, ditch, pond or environmentally sensitive site or groundwater.	1. Stop or reduce flow 2. Contact ABP for spill response 3. Contain spillage (use spill kit) 4. Inform Member of MSM Contracts staff 5. MSM Contracts to assess seriousness of spill
2. Fuel, oil, or chemical spill (Major spill – High risk)	On discovering a spill, ensure no smoking, turn off sources of ignition, check COSHH assessments for advice, and wear appropriate PPE
Major Spill is classed as any volume of material which poses a threat to a river, stream, ditch, pond or environmentally sensitive site or groundwater.	1. Stop or reduce flow 2. Contact NIEA for spill response 3. Contain spillage (use spill kit) 4. Inform Member of MSM Contracts site staff 5. MSM Contracts to assess seriousness of spill

	Site Agent / Manager to telephone the relevant emergency number as below: • Pollution Hotline 0800 80 70 60 • ALSO telephone the Local Authority in your area, and inform MSM Contracts' Environmental Manager, and Insurance Department • Contact Spill Response Contractor if necessary • If in doubt, phone the SHE Department at Dunmurry and seek advice from an Environmental Manager or SHE Manager (D McLean)

	CLEAN UP OPERATION
Minor spill	1. Place contaminated spill kits, any oil/chemicals collected and any other contaminated materials into a covered and appropriately labelled container and when full, remove form site using a contractor with a current waste carrier licence 2. The waste must be accompanied by a hazardous / special waste consignment note, bearing in mind that the Environmental Regulator, must be given at least 72 hours notice prior to the first movement of hazardous / special waste 3. Environmental Designee to complete incident report form, F123, for each of the minor spills and send to the SHEQ Department at Dunmurry 4. Environmental Designee to enter details of the incident in the document management system, FoCaL, as a near miss
Major spill	**<u>If spill is to Site Drainage System</u>** 1. Secure all drains by blocking off entry point 2. Close off discharge point 3. Recover ponded product with absorbent mats or cushions. You may have to employ a specialist contractor to undertake this role. 4. Clean drains before being reopened 5. Environmental Designee to complete incident report form, F123, and send to the SHEQ Department 6. The Environmental Advisor will raise a non-conformance report through the FoCaL document management system, and analyse corrective and preventive action
	<u>If spill is to Groundwater</u> 1. Appoint hydrogeologist to co-ordinate clean up with Site Agent / Manager 2. Hydrogeologist to issue clean up certificate on completion of clean up 3. Liaise with the Environmental Advisor and / or Environmental Manager
3. Suspended solids (silt) entering a watercourse	1. Cease the activity immediately 2. Slow down the rate of discharge and filter using the likes of straw bales / sedimats 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. The Environmental Designee to inform the relevant environmental regulatory body on 0800 80 70 60 7. Environmental Designee to complete incident report form, F123, and send to the SHE Department 8. The Environmental Advisor will raise a non-conformance report through the FoCaL document management system, and analyse corrective and preventive action
4. Burst water main	If a water main is accidentally damaged, the following procedure should be adopted: 1. Stop work immediately 2. Contact the water service provider 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 4. Pump escaped water from water main to an area away from watercourse 5. Inform the Environmental Designee 7. The Environmental Designee to inform the relevant environmental regulatory body on 0800 80 70 60. The Flooding Incident Line is to be contacted too on 0300 2000 100. 6. Environmental Designee to complete incident report form, F123, and send to SHEQ Department 7. The Environmental Advisor will raise a non-conformance report through the FoCaL document management system, and analyse corrective and preventive action. 8. Take samples of any silt laden water that has entered the watercourse and send to laboratory for analysis 9. Compare results of tests with recommended criteria 10. Forward details of test results to the Environmental Advisor at Dunmurry

3.1 Flood Risk

MSM Contracts will monitor the Met Office's weather warning for heavy rain: upon receipt of a heavy rainfall event, MSM Contracts will ensure all plant will be moved to high grounds and ensure necessary precautions are taken to move any COSHH, fuels, oils etc will be elevated or removed from flood risk.

Should a flood take place, MSM Contracts shall immediately contact the Flooding Incident Line number on 0300 2000 100 to establish an action plan to mitigate any issues from flooding.

If the extent of the flooding becomes serious and an evacuation of the site is deemed necessary, a decision to evacuate will be made by a senior person on site – the appointed contractor's Project, Site or SHE Manager.

Upon completion of site setup, a plan will be briefed out to all site staff outlining the flood risks to the project and the necessary steps to follow including emergency contact numbers and evacuation routes in the unlikely event of a flood.

3.2 Other Environmental Incidents

If there is any other type of environmental incident, stop what you are doing and report it to your supervisor. These may include:

- Complaints from third parties e.g., noise, dust, light pollution.
- Discovery of suspected contaminated land.
- Discovery of protected animals, birds, or reptiles.
- Damage to trees and hedgerows.
- Discovery of archaeological or historic remains.
- Near misses – where events could have led to a minor or major incident.

The Site Management Team should be notified immediately.

3.3 Incident Response Training

All MSM Contracts 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 A.

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.

4.0 Emergency Contact Details

EMERGENCY CONTACT NOTICE		
IN THE EVENT OF A LOST TIME ACCIDENT, DANGEROUS OCCURRENCE, OR POLLUTION INCIDENT		
CONTRACT:	Queens Parade Bangor	
SITE TELEPHONE NUMBER:	TBC	
SITE ADDRESS:	40-22 Queen's Parade, Bangor BT20 3BJ	
LOCATION OF FIRST AID BOX:	Site Office / Site vehicles	
Emergency Services:	999	
Local Police:	Bangor Police Station 1 Castle Park Ave, Bangor BT20 4BS	
Doctor / Hospital (Name & Address):	Bangor Hospital 106 Castle St, Bangor BT20 4TA	
Environmental Hotline:	0800 80 70 60	
Environmental Regulator (Local Office):	NIEA, Sketrick House 16 Jubilee Road, Corporation South, Newtownards BT23 4YH	
	Office Hours	**Out of Hours**
Local Authority:		
Sewage Undertaker:		
Water Undertaker:		
Gas Supplier:		
Electricity Supplier:		
Waste Disposal Contractor:		
Telephone Company:		
Specialist Advice:		

Specialist Clean Up Contractors: Adler & Allan	0800 592 827	0800 592 827
COMPANY CONTACTS	**Office Hours**	**Out of Hours**
First Aider: TBC		
Director:		
Contract Manager: S Guy		
Site Agent / Manager: A Morgan		
Foreman: TBC		
SHEQ Manager: J Hamill		
Environmental Manager: J Hamill		
Environmental Advisor:		

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 Manager immediately. The details will be entered on the Environmental Incident Report Form on Onos, a copy of report which will be emailed to the SHEQ Director for review.

The SHEQ Advisor will enter details of all minor incidents as near misses in the Share Point document management system. These will be reviewed by the SHE Department along with all other health and safety related near misses on a monthly basis.

Environmental related issues that have not resulted in an incident but had the potential to result in a pollution incident should be noted in the Share Point document management system as a safety observation.

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, liaising with the Environmental Manager, 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
- Increase monitoring for similar activities

6.0 Incident Report Form example – Reports submitted via Ones app

ENVIRONMENTAL INCIDENT REPORT FORM		
CONTRACT:		
DATE OF INCIDENT:		
TIME:		
LOCATION:		
CHAINAGE:		
RAISED BY:		
ACKNOWDGED BY:		
NATURE OF THE INCIDENT: (e.g. pollution of controlled water, ground contamination, excessive nuisance from noise, vibration, dust, waste issues)		
MAGNITUDE OF INCIDENT (e.g. how long did it last? Where receptors impacted?)		
AUTHORITIES INFORMED (e.g. NIEA / SEPA / EA / EPA / HSE / HSA)		**TIME:**
CAUSES OF THE INCIDENT: (e.g. oil, fuel leak from a machine, refuelling, use of noisy equipment)		
IMMEDIATE ACTION TAKEN:		
ACTION TAKEN TO PREVENT A RECURRENCE		
REPORT RECEIVED BY SHEQ DIRECTOR		
SIGNATURE:		
DATE:		

7.0 Toolbox Talk

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.