

**OUTLINE CONSTRUCTION
ENVIRONMENTAL
MANAGEMENT PLAN FOR
A PROPOSED RESIDENTIAL
DEVELOPMENT**

**BALDOYLE-STAPOLIN,
DUBLIN 13.**

“GROWTH AREA 2”

The Tecpro Building,
Clonsaugh Business & Technology Park,
Dublin 17, Ireland.

T: + 353 1 847 4220
F: + 353 1 847 4257
E: info@awnconsulting.com
W: www.awnconsulting.com

Report Prepared For

Lismore Homes Ltd.

Report Prepared By

Chonail Bradley, Principal Environmental
Consultant

Our Reference

CB/21/12473WMR03

Date of Issue

23 March 2022

Cork Office

Unit 5, ATS Building,
Carrigaline Industrial Estate,
Carrigaline, Co. Cork.
T: +353 21 438 7400
F: +353 21 483 4606

AWN Consulting Limited
Registered in Ireland No. 319812
Directors: F Callaghan, C Dilworth,
T Donnelly, E Porter
Associate Director: D Kelly

Document History

Document Reference		Original Issue Date	
CB/21/12473WMR03		23 March 2022	
Revision Level	Revision Date	Description	Sections Affected

Record of Approval

Details	Written by	Approved by
Signature		
Name	Chonail Bradley	Fergal Callaghan
Title	Principal Environmental Consultant	Director
Date	23 March 2022	23 March 2022

CONTENTS	PAGE
1.0 INTRODUCTION	4
2.0 DESCRIPTION OF THE PROJECT	4
3.0 CONSTRUCTION PROGRAMME AND PHASING	5
4.0 EXCAVATIONS	7
4.1 Archaeological and Architectural Heritage	7
4.2 Ground Conditions	7
5.0 SITE LOGISTICS	9
5.1 Site Safety Compliance	9
5.2 Site Establishment and Security	9
5.3 Consents and Licenses	9
5.4 Services and Utilities	9
5.5 Material Handling and Storage	10
5.6 Visitor Management	11
5.7 Site Working Hours	11
5.8 Employment and Management Workforce	11
6.0 CONSTRUCTION TRAFFIC AND SITE ACCESS	11
6.1 Traffic Management	11
6.2 Site Access and Egress Arrangements	12
6.3 Heavy Goods Vehicle (HGV) Access Route and Traffic Queueing	13
6.4 Lane / Road Closures	14
7.0 SAFETY, HEALTH AND ENVIRONMENTAL CONSIDERATIONS DURING CONSTRUCTION WORKS	14
7.1 Construction Lighting	14
7.2 Air Quality	15
7.3 Ecology	18
7.4 Noise and Vibration	18
7.5 Waste Management	20
7.6 Prevention of Accidental Releases	22
7.7 Surface Water Management	23
8.0 SUMMARY	24
9.0 REFERENCES	25

1.0 INTRODUCTION

This Outline Construction Environmental Management Plan (CEMP) has been prepared by AWN Consulting (AWN) on behalf of Lismore Homes Ltd. for a proposed residential development. The proposed development consists of the construction of 1,007 residential apartments, communal residential community rooms, and a ground floor creche in 16 no. buildings with heights varying from 4 to 12 storeys, basement and surface level car parking, secure bicycle parking, landscaping, water supply connection at Red Arches Road, and all ancillary site development works on a site located in the townland of Stapolin, Coast Road, Baldoyle, Dublin

The outline CEMP provides a framework from which a more detailed CEMP will be developed to implement the mitigation measures described below which are designed to avoid, minimise or mitigate adverse construction effects on the environment prior to commencement on site.

This Outline CEMP has been prepared to account for activities at the site during the excavation and construction phase of the project.

The main issues that have been considered within this document are as follows;

- Description of works;
- Construction programme and phasing;
- Site logistics;
- Workforce;
- Public relations and community liaison;
- Construction traffic and access; and
- Safety, health and environmental management.

2.0 DESCRIPTION OF THE PROJECT

The site of the proposed development ('the site') is c. 5.9 hectares located at Baldoyle-Stapolin, Dublin 13. The site located 8km northeast of Dublin city centre, the site forms part of the overall Coast residential community that has been planned on c. 41 hectares of residential zoned land around Clongriffin DART station. The proposed development site and surrounding site context is shown on Figure 2.1 below.

The site is located on the southern boundary of the Fingal County Council (FCC) administrative area and is subject to the Fingal County Council Development Plan (CDP) 2017-2023 and Baldoyle-Stapolin Local Area Plan (LAP) 2013. The Dublin City Council administrative boundary is located just beyond the Dublin-Belfast / DART railway line and Clongriffin rail station. To the west of the railway lies the developing mixed use area of Clongriffin within Dublin City Council's wider North Fringe Area encompassing Northern Cross/Clare Hall/Belmayne to Clongriffin.

The wider area is characterised by a predominantly residential uses as the site surrounded by the residential centres of Donaghmede, Bayside and Clongriffin. The coastal towns of Portmarnock and Malahide are located further to the north. The Mayne Marsh Conservation Area and Baldoyle Estuary Nature Reserve is located beyond the future Racecourse Regional Park; these areas, including the bay itself), from part of the Baldoyle Bay Special Protection Area (SPA), Special Area of Conservation (SAC), proposed Natural Heritage Area (pNHA), and Ramsar Convention Wetland.



Figure 2.1 Proposed location of site

The proposed development consists of the construction of 1,007 residential apartments (consisting of 58 no. studio units, 247 no. 1 bedroom units, 94 no. 2 bedroom 3 person units, 563 no. 2 bedroom 4 person units, and 45 no. 3 bedroom units), communal residential community rooms, and a ground floor creche in 16 no. buildings with heights varying from 4 to 12 storeys, basement and surface level car parking, secure bicycle parking, landscaping, water supply connection at Red Arches Road, and all ancillary site development works.

The residential development will comprise a mix of 1,007 residential apartment types and sizes as follows apartments units. A ground floor creche facility is proposed to serve the proposed development. It is shown at ground level within Sector 8A, Block 1 and it includes a dedicated creche outdoor area and set down car parking.

3.0 CONSTRUCTION PROGRAMME AND PHASING

The construction works associated with the development will be undertaken in one phase. There will be no demolition required as part of this development, there will however be excavations required to accommodate site levelling, services and foundations.

Subject to detailed planning at the construction stage, it is currently envisaged that the construction compound, offices and storage areas will be located at one location and can be viewed in Figure 3.1.

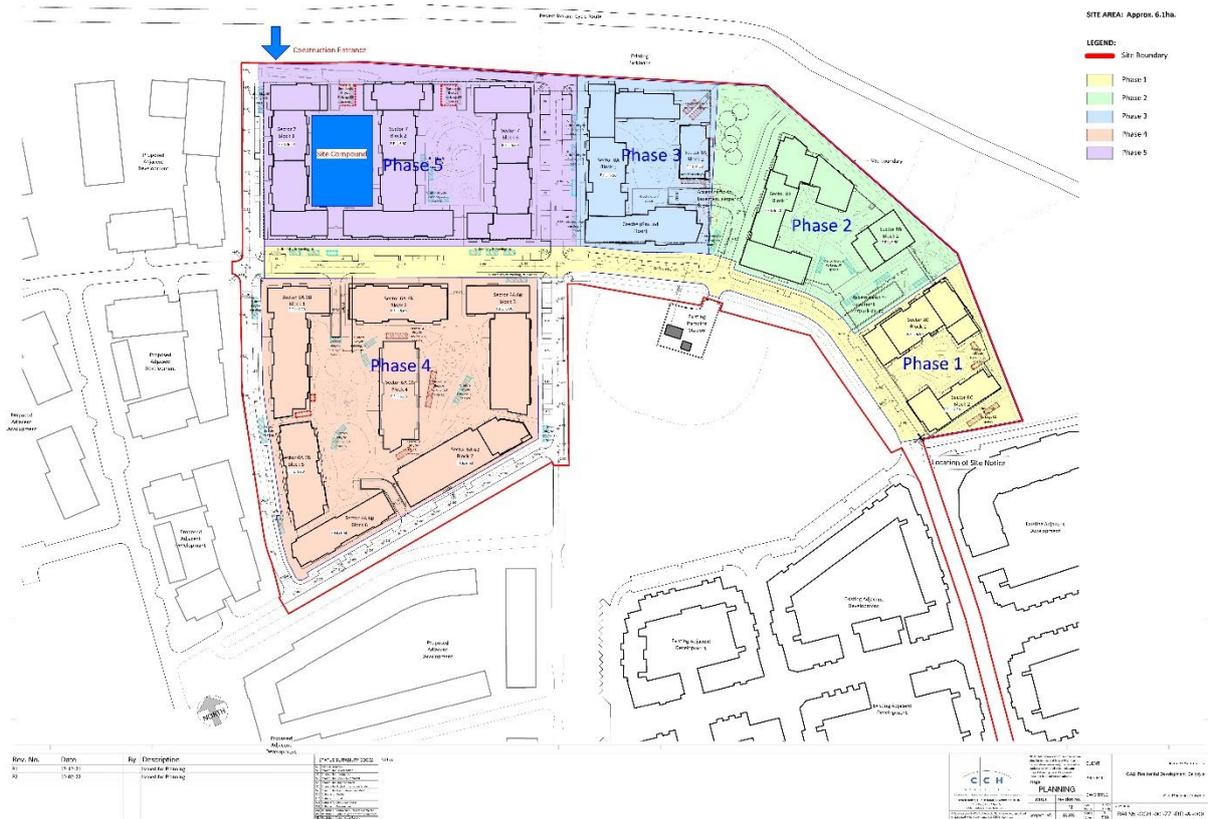


Figure 3.1 Proposed Site Phasing and Potential Compound & Staff Parking Location Options

3.1 DEMOLITION PHASE

There will be no demolition required as part of this development.

3.2 EXCAVATION & CONSTRUCTION PHASE

The project excavations will involve excavations for new foundations, site levelling and excavations for roads and services. The Construction and Demolition Waste Plan prepared by AWN Consulting (ref CB21_12473WMR01), for the development will be updated by the main contractor and will be in compliance with the requirements of the “Best Practice Guidelines for the Preparation of Waste Management Plans for the Construction and Demolition Projects” published by the Department of the Environment Heritage and Local Government and the ‘Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects’ will identify and categorise any waste arising from the development.

The plan will also contain the proposals for the minimisation, re-use and re-cycling of site generated waste. As part of this plan separate storage areas will be designated on the site for various types of material in order to maximise the re-use and re-cycling potential. Procedure will also be put in place to ensure that all sub-contractors fulfil the requirements of the Waste Management Plan.

Estimates for the duration of the construction works are included in the table below. The overall start-to-finish duration is estimated to be 48 months with some development and fit out aspects overlapping.

The scheme is split into 5 phases generally moving from East to West across the site. Following the numbering as shown in figure 4.1.

Table 3.1 *Estimated Construction Duration*

Development Element	Sector	Estimated Construction Duration
Phase 1	8B	12
Phase 2	8C	12
Phase 3	8A	12
Phase 4	6A, 6B	12
Phase 5	7	12

The works will include:

- Site set up, welfare facilities and compound establishment, decommissioning and movement of site compound and facilities as needed.
- Set up of hoarding around compound and the site boundary.
- Erection of safety signage to all areas and implementation of traffic/pedestrian management plan.

4.0 EXCAVATIONS

4.1 ARCHAEOLOGICAL AND ARCHITECTURAL HERITAGE

To set the proposed development within its wider archaeological, architectural and cultural heritage landscape, and to assess the potential of encountering such features on the site, a paper survey of archaeological, architectural heritage, historical and cartographic sources was undertaken.

As the proposed development lands were previously in agricultural use, there is the possibility of sub-surface archaeological features surviving within the site boundary. In order to mitigate against the potential impacts of the proposed development on such features, should they exist, the following mitigation measures will be undertaken.

Given the level of disturbance of the land, it is likely that a geophysical survey would be of value in identifying potential sub-surface features.

Therefore, a programme of archaeological testing will be undertaken across the greenfield areas of the proposed development lands prior to the commencement of construction works, under license to the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht.

Should any features of archaeological potential be identified, then they will be assessed, and following consultation with the National Monuments Service, should it not be possible to preserve these in-situ, then they will be excavated in full (preservation by record) under license to the National Monuments Service.

4.2 GROUND CONDITIONS

Ground Investigations Ireland (GII) carried out an environmental site investigation directly to the east of the proposed development site between October 2019 and February 2020 (BSM, 2021). The scope of works included trial pitting, borehole drilling, subsoil sampling, interpretation of chemical data and reporting. Site investigation works also entailed Geotechnical & Environmental Laboratory testing (12 No in total for environmental testing).

During the 2019 and 2020 site investigations, samples were recovered from the on-site trial pit and borehole locations and sent for analysis. In order to assess materials, which may be excavated and removed from Site, in terms of waste classification, a

selection of samples collected were analysed for a suite of parameters which allows for the assessment of the soils in terms of total pollutant content for classification of materials as hazardous or non-hazardous referred to as the 'RILTA Suite'. The parameter list for the RILTA suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen. The total pollutant content analysis also provides analytical data which can be used to assess the quality of the subsoils underlying the Site and allow an assessment of their suitability for a range of proposed uses against generic assessment criteria.

The RILTA Suite also includes those parameters specified in the EU Council Decision Establishing Criteria for the Acceptance of Waste at Landfills (Council Decision 2003/33/EC), referred to as Waste Acceptance Criteria (WAC), which for the solid samples are pH; total organic carbon (TOC); speciated aliphatic and aromatic petroleum hydrocarbons; benzene, toluene, ethylbenzene and xylene (BTEX); phenol; polychlorinated biphenyls (PCB); and polycyclic aromatic hydrocarbons (PAH).

In line with the requirement of Council Decision 2003/33/EC, leachate was generated from the solid samples, which was in turn analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS). The suite was selected due to the unknown origin of the material underlying the Site and no evidence of specific contaminants of concern highlighted in the Site history. The laboratory testing was completed by Element Materials Technology (EMT) in the UK; EMT is a UKAS accredited laboratory (BSM, 2021)

The laboratory analysis did not identify any asbestos containing materials (ACMs) in any of the samples tested.

All of the samples collected at the site were categorised as inert (as per Council Decision annex 2003/33/EC). There was no evidence of waste deposited on-site during Site investigation works (BSM, 2021).

If any potentially contaminated material is encountered, it will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled '*Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous*'¹² using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*¹³, which establishes the criteria for the acceptance of waste at landfills.

In the event that Asbestos Containing Materials (ACMs) are found, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*. All asbestos will be taken to a suitably licensed or permitted facility.

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the contractor will notify FCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s).

5.0 SITE LOGISTICS

5.1 SITE SAFETY COMPLIANCE

The Contractor shall be responsible for overall management of the site for the duration of the proposed works and must progress their works with reasonable skill, care, diligence and to proactively manage the works in a manner most likely to ensure the safety and welfare of those carrying out construction works.

The Contractor shall comply with all relevant Statutory requirements such as the 2005 Safety Health and Welfare at Work Act, The Construction Regulations (SI 291 of 2013), the General Application Regulations (SI 299 of 2007), etc. (and any amendments thereof).

In addition, the Contractor shall comply with all the reasonable safety requirements of the Client, the Project Supervisor for the Design Process and the Project Supervisor for the Construction Stage.

5.2 SITE ESTABLISHMENT AND SECURITY

The first activity to be carried out at the site will be the establishment of site facilities and security. It is anticipated that site establishment works will take approximately four weeks. The site office and welfare facilities will be confirmed in advance of the commencement of site works and agreed with Fingal County Council. Figure 3.1 point shows the proposed locations of the site compounds.

All of the sub-contractors as well as the main contractor and project managers will occupy offices within the construction compounds. The site parking for all staff, contractors and visitors will also be located in this area.

Site access will be restricted by dedicated security personnel who will check all incoming and outgoing vehicles and workers.

5.3 CONSENTS AND LICENSES

All statutory consents and licences required to commence on-site construction activities will be obtained ahead of works commencing, allowing for the appropriate notice period. These will include, but are not limited to:

- Site notices;
- Construction commencement notices; and
- Licence to connect to existing utilities and mains sewers, where required;

5.4 SERVICES AND UTILITIES

Welfare facilities (canteens, toilets etc.) will be available within the construction compound and this will remain in place for the construction of the proposed development. The offices and site amenities will initially need to have their own power supply (generator), water deliveries and foul water collection until connections are made to the mains networks.

Electrical connections will be made by suitably qualified personnel following consultation with the relevant authorities and will be cognisant of subsequent construction works. High voltage connections will be established for heavy duty equipment and site facilities, as required.

The current electricity facilities on the site of the proposed development are supplied by the ESB through a ring network. All electrical works, including connection to the ESB network will be carried out by a suitably qualified contractor.

Water will be required for welfare facilities, dust suppression and general construction activities. There will also be foul waste water requirements associated portable sanitary facilities within the construction compound.

The welfare facilities (canteens, toilets etc.) will be available within the construction compound on site. The site office and welfare facilities will be situated on site at an agreed location within the site boundary with one of the potential locations being in Phase 5 as shown in figure 3.1.

The Main Contractor will require a water source for the duration of the construction works. A temporary connection for water supply from Irish Water will not be requested. Instead a combination of tankered water and bottled water will be used. Water will be required for Contractor welfare facilities and construction activities. A combination of tankered water and bottled water will be used in the early phase of construction. Temporary connections to the existing estate services in the existing estate road will be utilised by the Main Contractor to provide service and utilities subject to relevant applications and approvals.

While there is existing surface and foul water infrastructure within the site this is to be grubbed up and removed during site preparation works. Wastewater generated at the welfare facilities in the construction compound will be managed in the early phase by means of a temporary sealed storage tank, with all wastewater being tankered off-site to an appropriately licensed facility for disposal. Temporary connections to the existing wastewater services in the existing estate road will be utilised to provide service and utilities subject to relevant applications and approvals.

5.5 MATERIAL HANDLING AND STORAGE

Key materials which will be ordered by specific order for the project, a 'Just in Time' delivery system will operate to minimise storage of materials, the quantities of which are unknown at this stage.

Where possible it is proposed to source general construction materials from the Dublin area to minimise transportation distances.

Aggregate materials such as sands and gravels will be stored in clearly marked receptacles in the compound area within the site. Liquid materials will be stored within temporary bunded areas, double skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006) to prevent spillage.

Construction materials will be brought to site by road. Construction materials will be transported in clean vehicles. Lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent the escape material along the public roadway.

The majority of construction waste materials generated will be soil from excavation works. Material will be removed from site regularly to ensure there is minimal need for stockpiling.

5.6 VISITOR MANAGEMENT

Visitors will only be allowed to enter the main site compound via the designated pedestrian access gate. A dedicated, secured footpath to the site office is established at the gate for registration and obtaining PPE prior to entering the site. A log will be maintained by security to control access to the site. Visitors will be required to attend a site-specific induction to allow access to the compound and/or construction site unless being accompanied by an inducted member of the site team.

Visitors will then be taken by an inducted member of the construction team to the required area of the site.

5.7 SITE WORKING HOURS

Site development and building works will only be carried out between the hours of 0800 to 1900 Mondays to Fridays inclusive and between 0800 and 1300 hours on Saturdays. There will be no construction works carried out on Sundays or public holidays. Deviation from these times will only take place when written approval is granted by FCC in exceptional circumstances.

5.8 EMPLOYMENT AND MANAGEMENT WORKFORCE

It is estimated that there will initially be 80-100 staff on site on a typical day, however during peak construction periods this is expected to fluctuate up to 200-250 staff and contractors on site per day.

It is anticipated that the key project managers and main contractor representatives will maintain a presence on site for the whole duration of the project and the labour workforce will be determined by the specialist contractors required on site.

All employees working on the site will be required to have a SafePass Card (or similar approved Construction Health & Safety card), manual handling training, CIF COVID 19 training and the necessary certificates to operate machinery as required. The details of training required, records maintained, and induction procedures will be outlined in the Main Contractor's Health and Safety Plan(s).

6.0 CONSTRUCTION TRAFFIC AND SITE ACCESS

6.1 TRAFFIC MANAGEMENT

Traffic will be managed in accordance with the principles outlined below and shall comply at all times with the requirements of:

- Department of Transport Traffic Signs Manual 2010 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks
- Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010)
- Any additional requirements detailed in Design Manual for Urban Roads & Streets (DMURS)

Construction traffic operation would be limited to 0800 to 1900 from Monday to Friday and 0800 to 1300 on Saturday for the off-road construction. These times may vary to facilitate specific site requirements and/or construction activities associated with the site.

A Construction Manager will be appointed to liaise directly with the various sections of Fingal County Council. The Construction Traffic Management Plan will take into account construction vehicle routing and timing to mitigate any issues with vehicles on the public road network.

Excavated material will be reused as part of the site development works where possible to minimise truck movements to and from the site (e.g. use as non-structural fill under green areas).

All parking areas for operatives and visitors will be clearly marked.

Internal routes for construction traffic will be clearly marked and temporary lighting provided as necessary.

Speed limits imposed will be strictly adhered to during the construction of the works.

Separated pedestrian traffic routes within the site will be clearly marked, have appropriate lighting and be guarded. All vehicle crossing points will have appropriate signage to alert pedestrians of possible interaction. All site operatives will be given a specific site induction, giving information on the pedestrian access routes.

Wheel wash facilities will be provided from the start of the project to the completion of the project. The wheel wash will be stationed before site egress. The cleaning of vehicles will be carried out by the gateman onsite. This will be used for all heavy goods vehicles leaving the site daily. A road sweeper will also be utilised as required on Moyne Road at the vehicular access / egress point.

This Construction Traffic Management Plan will be revised by the Construction contractor will include, inter alia, any conditions of planning, a detailed construction programme for the works, hours of operation, details of a truck wheel wash at the site entrance, and details of entrance signage, and construction lighting.

6.2 SITE ACCESS AND EGRESS ARRANGEMENTS

It is proposed that the accesses and haul roads for vehicles will utilise the existing north-south haul road from Moyne Road via a road bridge over the River Mayne (see Figure 7.1 below). The existing dedicated access road for all construction vehicles is present which links the proposed development site Growth Area 2 ('GA2') site (and the adjacent development sites GA1 and GA3) directly to Moyne Road. A junction is formed with Moyne Road which includes appropriate construction signage. The access road is for construction traffic only and has no traffic impact on the existing residences in the Baldoyle Stapolin LAP lands.

All construction traffic will use the haulage route to the north. Construction traffic will not be permitted to use Red Arches Road, Red Arches Park or Grange Road/Longfield Road unless permission is obtained from Fingal County Council.



Figure 6.1 Site Location and Context; indicative site boundary in red (Source: Google Maps)

During the execution of the construction works, only site operatives and authorised visitors will be permitted to enter the works areas with appropriate PPE safety gear via the existing Moyne Road access point. Only authorised vehicles will be permitted on site. The Main Contractor Site Manager is responsible for managing access for site operatives, authorised visitors and vehicles.

The Main Contractor Site Manager will be responsible for managing the delivery of materials and equipment to minimise disruptions to other road users and residents. Deliveries of materials and equipment will be limited to off peak times.

Vehicles will be directed to the delivery points for holding/off-loading/storage. These deliveries will be controlled by a dedicated person on site allocated to overseeing all deliveries and controlling the entrance.

Certain trades will require parking on site for vehicles due to transportation of specialist equipment/plant requirements. A specially designated parking area located beside the site compound and storage area will be allocated for this. Parking of Heavy Goods Vehicles, if required, will be within the site and in designated areas which will be clearly marked out. Heavy Goods Vehicles will generally only be carrying out deliveries to site.

6.3 HEAVY GOODS VEHICLE (HGV) ACCESS ROUTE AND TRAFFIC QUEUEING

Material deliveries and collections from site will be planned, scheduled and staggered to avoid any unnecessary build-up of construction works related traffic.

Heavy Goods Vehicle (HGV) access routes on the wider road network will be restricted to specified routes and incorporated into training and induction for drivers. The access

7.2 AIR QUALITY

This section describes the site policy with regard to dust management and the specific mitigation measures which will be put in place during construction works. The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the measures set out below have been formulated by drawing on best practice guidance from Ireland, the UK and the US, such as:

- Department of Environment, Heritage and Local Government (DOEHLG), *Quarries and Ancillary Activities, Guidelines for Planning Authorities* (2004) ¹;
- US Environment Protection Agency (USEPA), *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition* (periodically updated) (1986) ²;
- The Scottish Office – Development Department, *Planning Advice Note PAN50 Controlling the Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (1996) ³; and
- Institute of Air Quality Management (IAQM), *Guidance on the Assessment of Dust from Demolition and Construction* (2014) ⁴.

7.2.1 Site Management

The site activities will be undertaken with due consideration of the surrounding environment and the close proximity of sensitive receptors such as residents and pedestrians. Dust management during the construction phase will be the most important aspect in terms of minimising the impacts of the project on the surrounding air quality. The following measures will also be implemented to ensure impacts are minimised:

- Complaint registers will be kept detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out;
- Equipment and vehicles used on site will be in good condition such that emissions from diesel engines etc. are not excessive; and
- Pre-start checks will be carried out on equipment to ensure they are operating efficiently and that emission controls installed as part of the equipment are functional.

Dust deposition levels will be monitored on a regular basis in order to assess the impact that site activities may have on the local ambient air quality. The following procedure will be implemented:

- The dust deposition rate will be measured by positioning Bergerhoff Dust Deposit Gauges at strategic locations near the boundaries of the site for a period of 30 (+/- 2) days if required. Monitoring should be conducted as required during periods when the highest levels of dust are expected to be generated i.e., during site preparation works and soil stripping activities.
- The exact locations will be determined after consideration of the requirements of Method VDI 2119 with respect to the location of the samplers relative to obstructions, height above ground and sample collection and analysis procedures.
- After each 30 (+/- 2 days) exposure period, the gauges will be removed from the sampling location, sealed and the dust deposits in each gauge will be determined gravimetrically by an accredited laboratory and expressed as a dust deposition rate in mg/m²/day in accordance with the relevant standards.

- Technical monitoring reports detailing all measurement results, methodologies and assessment of results shall be subsequently prepared and maintained by the Site Manager.

A limit value of 350 mg/m²/day will be used in comparison with recorded values.

7.2.2 Dust Control Measures

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design, planning and effective control strategies. The siting of construction activities and the limiting of stockpiling will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. In addition, good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or using effective control measures quickly before the potential for nuisance occurs.

- During working hours, technical staff will be available to monitor dust levels as appropriate; and
- At all times, the dust management procedures put in place will be strictly monitored and assessed.

The dust minimisation measures should be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust generation. In the event of dust nuisance occurring outside the site boundary, site activities should be reviewed, and procedures implemented to rectify the problem. Specific dust control measures to be employed are presented below.

Site Routes

Site access routes (particularly unpaved areas) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25% to 80% ⁵.

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles or delivery vehicles within the vicinity of the site;
- Access gates to the site shall be located at least 10m from sensitive receptors where possible;
- Bowsers will be available during periods of dry weather throughout the construction period. Research shown found that the effect of surface watering is to reduce dust emissions by 50% ⁶. The bower will operate during dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use; and
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced areas shall be restricted to essential site traffic only.

Excavation

Excavation works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;
- During periods of very high winds (gales), activities likely to generate significant dust emissions should be postponed until the gale has subsided.

The movement of truck containing materials with a potential for dust generation to an off-site location will be enclosed or covered.

Stockpiling

The location and moisture content of rubble stockpiles are important factors which determine their potential for dust emissions. The following measures will be put in place:

- Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible;
- Regular watering will take place during dry/windy periods to ensure the moisture content is high enough to increase the stability of the soil and suppress dust;
- Where feasible, hoarding will be erected around site boundaries to reduce visual impact. This will also have an added benefit of preventing larger particles from impacting on nearby sensitive receptors.

Site Traffic on Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures:

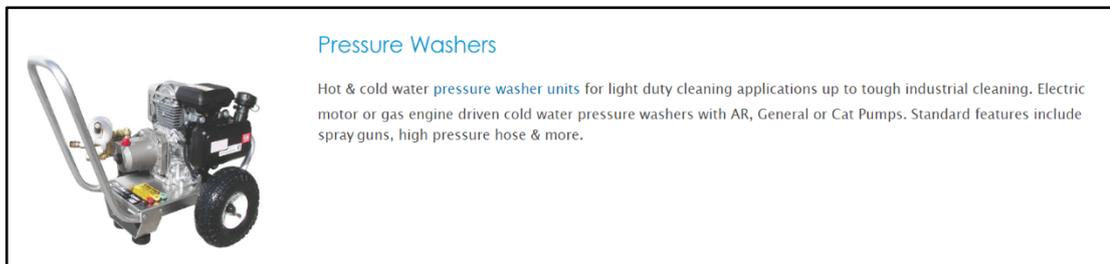


Figure 7.1 Example of Proposed wheel cleaning equipment example

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered at all times to restrict the escape of dust;
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate, and an example of the washing equipment can be seen in Figure 7.1;
- The site entrance will be located so that vehicles cannot bypass these devices. Perimeter silt fences or bunds may assist in achieving this requirement; and
- Road sweepers will be employed to clean the site access route as required.

General

- The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory management of dust by the construction contractor.

7.3 ECOLOGY

The key strategies to be undertaken to minimise impact on the local flora and fauna during site clearing and construction are as follows.

- The noise management mitigation measures contained in Section 8.4 will ensure that construction noise wont impact on ecology.
- The surface water management and mitigation measures contained in Section 8.6 including the provision of the surface water management plan will ensure that silt run-off and potential flooding risks are minimised which will protect any ecological receptors associated with the site.
- Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will need be followed (i.e. do not remove trees or shrubs during the nesting season (1 March to 31 August, inclusive)). Snipe will be protected on site with the presence on ecologist during initial site clearance.
- Pre-construction inspections will be carried out for bats and terrestrial mammals of conservation importance. Appropriate derogation licences will be acquired and conditions implemented if roosting bats or resting/breeding places of terrestrial mammals are noted on site or impacted by the proposed development.
- Boundary vegetation, treelines and hedgerows may serve as commuting corridors for bats (and other wildlife) and will remain unlit during the construction phase.
- The use of appropriate water-based dust suppression systems will greatly reduce the amount of dust and windborne particulates as a result of the construction process. The main Contractor will be responsible for the coordination, implementation and ongoing monitoring of the Dust Management Plan mitigation measures outlined in Section 8.2 and in the Dust Management Plan (Appendix 2 to this CEMP, Appendix 9.3 to the EIAR) shall be implemented.
- Construction lighting will be designed so as to be sensitive to the potential presence of nocturnal wildlife within and external to the site. Construction lighting will adhere to the following guidance:
 - Bats & Lighting: Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Trust, 2010);
 - Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011);
 - Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).

7.4 NOISE AND VIBRATION

Noise impacts arising from earthworks and construction activities have the potential to cause annoyance or nuisance to local residents and businesses in the area.

The earthworks will generate typical construction activity related noise and vibration sources from use of a variety of plant and machinery such as rock breakers (if required), excavators, lifting equipment, dumper trucks, compressors and generators.

The noise limits to be applied for the duration of the infrastructure works are those specified in the B Category of BS 5228. These limits are summarised below and will be applied at the nearest sensitive receptors to the works.

- Night (23:00-07:00) = 55dB $L_{Aeq,1hr}$
- Evening (19:00-23:00) = 65dB $L_{Aeq,1hr}$

- Day (07:00-19:00) = 70dB $L_{Aeq,1hr}$

The total construction noise ($L_{Aeq,1hr}$) which should not be exceeded during daytime is therefore 70dB.

General Noise Mitigation

The earthworks will generate typical construction activity related noise and vibration sources from use of a variety of plant and machinery such as rock breakers (if required), excavators, lifting equipment, dumper trucks, compressors and generators.

The noise limits to be applied for the duration of the infrastructure works are those specified in the B Category of BS 5228. These limits are summarised below and will be applied at the nearest sensitive receptors to the works.

- Night (23:00-07:00) = 55dB $L_{Aeq,1hr}$
- Evening (19:00-23:00) = 65dB $L_{Aeq,1hr}$
- Day (07:00-19:00) = 70dB $L_{Aeq,1hr}$

The total construction noise ($L_{Aeq,1hr}$) which should not be exceeded during daytime is therefore 70dB.

Following the same approach, BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Vibration recommends that, for soundly constructed residential property and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above.

The standard also notes that below 12.5 mm/s PPV the risk of damage tends to zero. The recommended construction vibration criteria;

- Less than 15Hz - 15mm/s
- 15 to 40 Hz - 20mm/s
- 40 Hz and above - 50mm/s

Any noise complaints related to activities at the site will be logged and investigated and, where required, measures taken to ameliorate the source of the noise complaint.

A designated noise liaison should be appointed to site during construction works. Any complaints should be logged and followed up in a prompt fashion. In addition, prior to particularly noisy construction activity, e.g. excavation close to a property, etc., the site contact should inform the nearest noise sensitive locations of the time and expected duration of the works.

All works on site shall comply with BS 5228 2009+ A1 2014 (Parts 1 & 2) which gives detailed guidance on the control of noise and vibration from construction activities. In general, the contractor shall implement the following mitigation measures during the proposed infrastructure works:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Keep internal haul roads well maintained and avoid steep gradients.
- Minimise drop height of materials.
- Start-up plant sequentially rather than all together

More specifically the Contractor shall ensure that:

- In accordance with “Best Practicable Means”, plant and activities to be employed on site are reviewed to ensure that they are the quietest available for the required purpose.
- Where required, improved sound reduction methods are used e.g. enclosures.
- Site equipment is located away from noise sensitive areas, as much as physically possible.
- Regular and effective maintenance by trained personnel is carried out to reduce noise and / or vibration from plant and machinery.
- Hours are limited during which site activities likely to create high levels of noise and vibration are carried out.
- A site representative responsible for matters relating to noise and vibration will be appointed prior to construction on site.

External noise and vibration monitoring will be undertaken at locations on the site boundary closest to sensitive locations. It is considered that it will be appropriate to amend the monitoring program as the works progress. Accordingly, monitors may be added, removed or relocated as necessary.

The noise monitoring terminals should provide the following at minimum:

- Logging at hourly intervals; and
- Daily CIC automated calibrations.

Vibration monitoring terminals should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with BS ISO 4866: 2010: *Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures*.

The mounting of the transducer to the vibrating structure, by way of resin fixings only, will need to comply with BS EN ISO 5348: 1998: *Mechanical vibration and shock – Mechanical mounting of accelerometers*. In summary, the following ideal mounting conditions apply:

- The transducer and its mountings should be as rigid as possible;
- The mounting surfaces should be as clean and flat as possible;
- Simple symmetric mountings are best, and;
- The mass of the mounting should be small in comparison to that of the structure under test.

7.5 WASTE MANAGEMENT

This section outlines the measures that will be undertaken to minimise the quantity of waste produced at the site and the measures to handle the waste in such a manner as to minimise the effects on the environment. A site-specific Construction and Demolition Waste Management Plan has been prepared by AWN Consulting. and will be employed to ensure sustainable and effective waste management throughout the construction and excavation phases of the project.

Adherence to the C&D WMP prepared for the construction works will ensure that the management of waste arising is dealt with in compliance with the provisions of the *Waste Management Acts 1996 – 2011* as amended ⁷, associated Regulations ⁷, the *Litter Pollution Act of 1997-2009* as amended ⁸ and the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* ⁹, and that it will achieve optimum levels of waste reduction, re-use and recycling.

Typical waste materials that will be generated from the construction works will include:

- Soil and stones;
- Concrete, bricks, tiles and ceramics;
- Wood, glass and plastics;
- Metals;
- Gypsum-based construction material;
- Paper and cardboard;
- Mixed C&D waste;
- Chemicals (solvents, paints, adhesives, detergents etc.) ; and

The management of all hazardous waste arisings, if they occur, shall be coordinated in liaison with Health and Safety Management.

1.1.1 Waste Minimisation

Waste minimisation measures proposed are summarised as follows (and are described in more detail in the C&D WMP):

- Materials will be ordered on an 'as needed' basis to prevent over supply;
- Materials will be correctly stored and handled to minimise the generation of damaged materials;
- Materials will be ordered in appropriate sequence to minimise materials stored on site;
- A waste tracking log will be established;
- Sub-contractors will be responsible for similarly managing their wastes; and
- All wood waste generated by site works will be inspected and examined and will be segregated as re-useable wood and scrap wood waste.

1.1.2 Waste Storage

The main waste storage area will be located in the site compound. A dedicated and secure area containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the development see figure 3.1.

Waste materials generated will be segregated on at the site compound, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Dublin Region that provide this service.

The site construction manager will ensure that all staff are informed of the requirements for segregation of waste materials by means of clear signage and verbal instruction. Appointed employees will be made responsible for ensuring good site housekeeping.

1.1.3 Pest Management

A pest control operator will be appointed as required to manage pest onsite during the construction phase of the project.

Organic and food wastes generated by staff will not be stored in open skips, but in closed waste receptacles. Any waste receptacles will be carefully managed to prevent leaks, odours and pest problems.

7.5.1.1 Responsibility

It will be the responsibility of the construction manager to ensure that a written record of all quantities and natures of wastes removed from the site are maintained on-site in a waste file (in hardcopy or electronically).

It is the responsibility of the project manager or his/her delegate that all contracted waste haulage drivers hold an appropriate waste collection permit for the transport of waste loads and that all waste materials are delivered to an appropriately licensed or permitted waste facility in compliance with the relevant Regulations as outlined in the C&D WMP.

The contractor, as part of regular site inspection audits, will determine the effectiveness of the waste management strategy and will assist the project manager in implementing the measures under the C&D WMP and in determining the best methods for waste minimisation, reduction, re-use, recycling and disposal as the construction phase progresses and waste materials are generated.

Prior to commencement of the excavation and construction activity and removal of any waste off-site, details of the proposed destination of each waste stream will be provided to FCC, along with waste collection permit numbers.

7.6 PREVENTION OF ACCIDENTAL RELEASES

7.6.1 Prevention of Concrete Run-off

Concreting operations carried out near surface water drainage points during construction activities could lead to discharges to a watercourse.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Wash-outs will only be allowed to take place in designated areas with an impervious surface.

A suitable risk assessment for wet concreting will be completed prior to works being carried out, which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at an appropriate facility off-site.

7.6.2 Fuel and Chemical Handling

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and prevent any resulting to surface water systems:

- Designation of bunded refuelling areas on the Site;
- Provision of spill kit facilities across the Site;
- Where mobile fuel bowsers are used, the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowsers to carry a spill kit and operatives must have spill response training;
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

7.6.3 Other Chemical Storage

No bulk chemicals will be stored within the active construction areas. Temporary oil and fuel storage tanks will be kept in the material storage area in suitable containers and will be appropriately bunded as required. Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in designated areas of the site, where possible, which will be kept away from any surface water drains (minimum 20 m buffer zone).

Spill protection equipment such as absorbent mats, socks and sand will be available to be used in the event of an accidental release during refuelling. Training will be given to appropriate site workers in how to manage a spill event.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

7.7 SURFACE WATER MANAGEMENT

During construction the contamination of surface waters, and run-off from excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions.

The Construction Surface Water Management Plan prepared by AWN (Appendix 1 to this CEMP, Appendix 7.4 to the EIAR) aims to set out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The mitigation and control measures outlined in the SWMP will be employed on site during the construction phase. All mitigation measures outlined within the SWMP will be implemented during the construction phase, as well as any additional measures required pursuant to planning conditions which may be imposed.

The main areas of water related concerns covered by the SWMP document are:

- Pre-Construction, Construction Phase drainage controls;
- Management of Earthworks and Materials Storage;
- Surface water runoff protection (sit fences, silt traps, diversion channels);
- Prevention of Accidental Releases (concrete, fuel, and chemical handling); and
- Surface Water Treatment and Discharge, and
- Foul Water And Onsite Sanitation.

The SWMP is live document and will be modified over time as detailed contractor methods of work are developed. If the development is permitted an updated version of

this document will be issued to all parties involved in the construction process when appropriate changes are deemed necessary.

There shall not be discharge of **untreated**, silty, or contaminated water from the works to any watercourse or stormwater network. Should any discharge of **untreated** construction water be required during the construction phase, the discharge will be to foul sewer following agreement with Fingal County Council / Irish Water.

There is no significant dewatering will be required during the construction phase which would result in the localised lowering of the water table. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavation is kept relatively dry.

The discharge of **treated** construction water from rainfall into excavated areas, or from any localised dewatering may be required during construction. This **treated** construction water will be discharged to the existing 1500 diameter concrete stormwater main, that traverses underneath the north fringe sewer and discharges to the Mayne River.

8.0 SUMMARY

This Outline CEMP sets out the overall management strategy for excavation and construction works for the proposed development. The Outline CEMP aims to ensure the management of excavation and construction activity is carried out in a planned, structured and considerate manner which minimises the impacts of the works on the local environment, residents and commercial activities in the vicinity of the site. Due to the nature of construction works, there may be unforeseen events which occur at the site and the project team will actively manage any changes and discuss with the relevant authorities, where required.

The project team are committed to ensuring that the construction activities to be carried out are pro-actively managed so as to minimise potential impacts.

9.0 REFERENCES

1. Department of Environment, Heritage and Local Government (DOEHLG), *Quarries and Ancillary Activities, Guidelines for Planning Authorities* (2004).
2. Department of Transport Traffic Signs Manual 2010 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks (2010)
3. Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010)
4. Design Manual for Roads and Bridges & Design Manual for Urban Roads & Streets (2019)
5. US Environment Protection Agency (USEPA), *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition (periodically updated)* (1986).
6. The Scottish Office – Development Department, *Planning Advice Note PAN50 Controlling the Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (1996).
7. Institute of Air Quality Management (IAQM), *Guidance on the Assessment of Dust from Demolition and Construction* (2014).
8. UK Office of Deputy Prime Minister, *Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance* (2002).
9. USEPA, *Fugitive Dust Technical Information Document for the Best Available Control Measures* (1997).
10. *Waste Management Acts 1996 – 2011 Litter Pollution Act 1997* (No. 12 of 1997) as amended
11. *Eastern-Midlands Region Waste Management Plan 2015 – 2021* (2015)
12. Construction Industry Research and Information Association (CIRIA) *Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532)*.
13. CIRIA, *Environmental Good Practice on Site* (3rd edition) (C692).

APPENDIX 1 FOR CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Construction Surface Water Management Plan prepared by AWN Consulting

(Appendix 7.4 to the EIAR)

CONSTRUCTION SURFACE WATER MANAGEMENT PLAN FOR PROPOSED DEVELOPMENT AT BALDOYLE-STAPOLIN, DUBLIN 13

Technical Report Prepared For
Lismore Homes Ltd.

Prepared By
Marcelo Allende
Environmental Consultant

Our Reference
MA/21/12473SR01

Date of Issue
23 March 2022

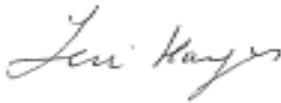
Dublin Office
The Tecpro Building,
Clonshaugh Business & Technology Park,
Dublin 17, Ireland.
T: + 353 1 847 4220
F: + 353 1 847 4257

AWN Consulting Limited
Registered in Ireland No. 319812
Directors: F Callaghan, C Dilworth,
T Donnelly, T Hayes, D Kelly, E Porter

Document History

Document Reference		Original Issue Date	
MA/21/12473SR01		23 March 2022	
Revision Level	Revision Date	Description	Sections Affected

Record of Approval

Details	Written by	Approved by
Signature		
Name	Marcelo Allende	Teri Hayes
Title	Environmental Consultant	Director
Date	23 March 2022	23 March 2022

CONTENTS

1.0	INTRODUCTION.....	5
2.0	SCOPE OF THE SURFACE WATER MANAGEMENT PLAN.....	5
2.1	Relevant Legislation.....	6
3.0	EXISTING ENVIRONMENT	7
4.0	CHARACTERISTICS OF THE Proposed DEVELOPMENT	10
4.1	Site preparation, excavation, levelling and infilling activities.....	10
4.2	Storage of hazardous construction materials	10
4.3	Foul Drainage During Construction	10
4.4	Foul Water and Surface Water Discharge During Construction.....	11
5.0	SURFACE Water management Measures.....	11
5.1	Pre-Construction.....	11
5.2	Establishment of Stabilised Entrance Way and Wheel Wash	11
5.3	Management of Earthworks and Materials Storage.....	12
5.4	Surface water Drainage and runoff Protection.....	14
5.5	Prevention of Accidental Releases.....	16
5.6	SURFACE WATER Treatment and Discharge.....	18
6.0	MONITORING and MAINTENANCE	19
7.0	REVIEW.....	19
8.0	TRAINING	19
9.0	KEY CONTACTS	20

1.0 INTRODUCTION

This Construction Surface Water Management Plan ('SWMP') has been prepared by AWN Consulting ('AWN') on behalf of Lismore Homes Ltd. for a proposed residential development. The proposed development consists of the construction of 1,007 residential apartments, communal residential community rooms, and a ground floor creche in 16 no. buildings with heights varying from 4 to 12 storeys, basement and surface level car parking, secure bicycle parking, landscaping, water supply connection at Red Arches Road, and all ancillary site development works on a site located in the townland of Stapolin, Coast Road, Baldoyle, Dublin.

During construction run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. The purpose of the plan is to set out clear guidelines on the management of surface water during construction works to prevent impact on receiving drainage and waterbodies.

2.0 SCOPE OF THE SURFACE WATER MANAGEMENT PLAN

The following Surface Water Management Plan (here after referred to as 'SWMP') provides the water management measures to be implemented by the construction Contractor(s) to ensure that work is carried out with to protect water quality. The mitigation and control measures outlined in the SWMP will be employed on site during the construction phase.

This report describes briefly the existing hydrological and hydrogeological setting of the site, and then sets out the proposed measures required for surface water management during the construction phase of the proposed development. All mitigation measures outlined within this SWMP will be implemented during the construction phase, as well as any additional measures required pursuant to planning conditions which may be imposed.

Contamination of the receiving surface water environment during the construction phase has the potential to cause environmental damage mainly through the movement of silt either directly or indirectly into receiving waters. Non-sediment contaminants consist of general site and materials management measures that directly or indirectly discharge into receiving environments from site activities. Other possible construction impacts include accidental release of oils and diesel, or discharge of alkaline water during cementing works. The main aim of the surface water management plan is to ensure protection of the local receiving water and compliance with current guidance documents. This is to be achieved through the following measures:

- Understanding of the local receiving water environment, pollutant linkage pathways and the legislative requirements;
- Implementation of measures to protect the receiving water environment;
- Set out a monitoring schedule, check list and training programme.

The main areas of water related concerns covered by this document are:

- Pre-Construction, Construction Phase drainage controls;
- Management of Earthworks and Materials Storage;
- Surface water runoff protection (sit fences, silt traps, diversion channels);
- Prevention of Accidental Releases (concrete, fuel, and chemical handling); and
- Surface Water Treatment and Discharge, and

- Foul Water And Onsite Sanitation.

The SWMP a live document and will be modified over time as detailed contractor methods of work are developed. If the development is permitted an updated version of this document will be issued to all parties involved in the construction process when appropriate changes are deemed necessary.

2.1 RELEVANT LEGISLATION

It is proposed that all surface water control measures relating to the proposed development will be constructed using best practice and in conformance with the requirements of the relevant regulatory authorities.

The key legislation which will be adhered to are defined as follows:

- Water Framework Directive (2000/60/EC);
- Local Government (Water Pollution) Act, 1977–1990;
- Water Quality (Dangerous Substances) Regulations, 2000;
- Arterial Drainage Act, 1945;
- S.I. No. 41 of 1999 Protection of Groundwater Regulations, resulting from EU
- Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances (the Groundwater Directive);
- S.I. No. 272 of 2009 and amendments European Communities Environmental
- Objectives (Surface Waters) Regulations; and,
- S.I. No. 9 of 2010 and amendments European Communities Environmental Objectives (Groundwater) Regulations.

The key drainage and water quality guidance documentation relevant to this site are defined set out as follows:

- Guidelines on protection of fisheries during construction works in and adjacent to waters Inland Fisheries Ireland (2016).
- Dublin City Council (2005) Greater Dublin Strategic Drainage Study (GDSDS):
- Technical Documents of Regional Drainage Policies. Dublin: Dublin City Council;
- Construction Industry Research and Information Association (CIRIA):
 - CIRIA Report C502 Environmental Good Practice on Site;
 - CIRIA Report C532 Control of Water Pollution from Construction Sites;
 - CIRIA Report C648 Control of Pollution from Linear Construction Project; Technical Guidance;
 - CIRIA Handbook C650 Environmental good practice on site;
 - CIRIA Handbook C651 Environmental good practice on site checklist;
 - CIRIA Report C609 - SUDS – hydraulic, structural & water quality advice; and,
 - CIRIA Report C697 – The SUDS Manual

As Baldoyle Bay (the final receptor of the Mayne River and site catchment waters) is designated an SAC, it comes under the protection of the Habitats Directive 92/43/EEC which are implemented in Irish legislation as S.I. No 233/1998 – European Communities (Birds & Natural Habitats) Regulations 2011.

3.0 EXISTING ENVIRONMENT

The proposed development is located within the previously defined Eastern River Basin District (ERBD), now the Ireland River Basin District, in Hydrometric Area No. 09 of the Irish River Network. It is within the River Liffey catchment and mayne Sub-catchment (Mayne_SC_010). The River Liffey catchment encompasses an area of approximately 1,369 km². The River Liffey extends from the mountains of Kippure and Tonduff in County Wicklow to the sea at Dublin Bay. The main channel covers a distance of c. 120 km west to east. The Snugborough Stream lies 650 m to the east and the Mayne River lies 550 m to the north (EPA designations). The Snugborough rises to the south and is culverted between Seagrange Park and the Red Arches Road (refer to Figure 3.1 below).

According to the NPWS (2021) online database, the following area of conservations are located closest to the Site:

- Baldoyle Bay Special Area of Conservation (SAC) (Site Code 000199) – c. 350 m east of the site. (Both the bay itself and saltwater marshland which is part of the old Baldoyle Racecourse).
- Baldoyle Bay Special Protection Area (SPA) (Site Code 004016) – c. 700 m east of the site.
- Baldoyle Bay proposed Natural Heritage Area (pNHA) – c. 400 m east of the site.

The North Dublin Bay SAC is c. 1.8 km south of the site.

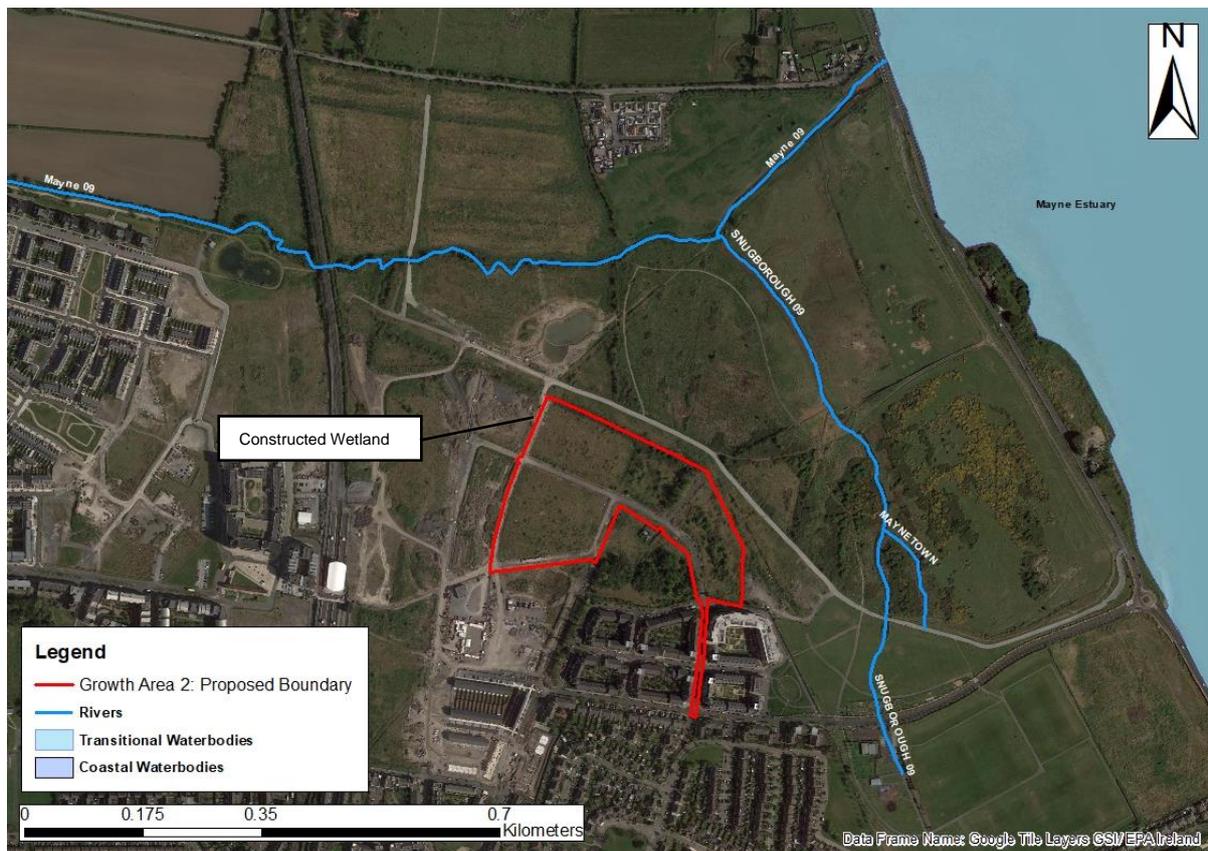


Figure 7.3.1 Local Hydrological Environment

Currently, storm water run-off discharges through an existing 1500 mm stormwater culvert passing underneath the north Fringe Sewer, flowing south to north, which discharges into the Mayne River.

There is an indirect hydraulic connection via the stormwater system which is discharged to the Mayne River. The Mayne River ultimately discharges to the Baldoyle Estuary.

In accordance with the WFD, each river catchment within the former Eastern River Basin District (ERBD) was assessed by the EPA and a Water Management Plan detailing the programme of measures was put in place for each. Currently, the EPA classifies the WFD River Waterbody risk score of 1a, 'At risk of not achieving good status'. The WFD Status for the Mayne River waterbody was previously denoted as 'Poor' (2nd Cycle Status 2013-2018). The transitional waterbodies of the Mayne Estuary and North Bull Island WFD status is currently 'under review' and these were not assigned a status in the previous cycle (2013 – 2015). The Irish Sea Dublin (HA 09) and the Dublin Bay Coastal Waterbodies to the east and south-east of the Site have a 'Good Status' and are listed as 'Not at Risk' by the EPA.

The EPA assesses the water quality of rivers and streams across Ireland using a biological assessment method (Q-Value), which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 – Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality.

The surface water quality data for the nearest monitoring station (Hole in the Wall Bridge) to the Site of the proposed development (upstream) for the Mayne River (including the Snugborough Stream) shows a Q rating of Q2-3 denoting a poor (moderately polluted) status (refer to Chapter 7 of the EIAR for further details).

The proposed project development was subject to Site Specific Flood Risk Assessment (SSFRA) undertaken by JBA Consulting Ltd in accordance with OPW Flood Risk Management Guidelines and is included as in the present EIAR Appendix 7.2.

This Flood Risk Assessment, contains a hydraulic study of the Mayne River, has been carried out (as required by Objective FRM3 of the Baldoyle-Stapolin LAP). Reference to the basements is contained in Section 5.3 of the Flood Risk Assessment as required by Objective FRM4 of the Baldoyle-Stapolin LAP.

A review of the historic flood information does not provide any evidence of flooding at the site. The nearest flood event is situated along Coast Road, 600 m east of the site, Review of the FEM FRAM (Fingal East Meath Flood Risk Assessment and Management Study) predictive flood maps confirms that the majority of the site is not at risk of flooding. In summary, the SSFRA states that all residential properties are located in Flood Zone C and are protected from inundation up to the 0.1% AEP Mid-Range Future Scenario (MRFS) flooding event. The Flood Risk Assessment was undertaken in accordance with OPW's 'The Planning System and Flood Risk Management' guidelines. The FRA is in agreement with the core principles contained within the Planning Guidelines.

Reference to the GSI Bedrock Geology Map indicates that the site is underlain by Lower Carboniferous (Courceyan Stage) Limestones which is referred to as Malahide Formation (Rock Unit code: CDMALH). This geological formation comprises argillaceous bioclastic limestone and shale.

In addition, the GSI National Draft Bedrock Aquifer Map indicates that the site is underlain by a Locally Important Bedrock Aquifer (LI), which is described by the GSI as bedrock as being "moderately productive only in local zones".

Aquifer vulnerability is a term used to represent the intrinsic geological and hydrological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. The GSI presently classifies the aquifer vulnerability in the region of the site as 'Low' (L) which indicates that an overburden depth of >10 m of low permeability soil is present. This was confirmed in 2019 and 2020 investigations undertaken by GII (refer to Chapter 6 of the EIAR for further details). The aquifer vulnerability class in the region of the site is presented below as Figure 3.2.



Figure 7.3.2 Aquifer Vulnerability Map with the proposed site layout (Source: GSI, 2022)

4.0 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The development will consist of the construction of 1,007 apartments (consisting of 58 no. studio units (38.1 – 52.3 sq.m.), 247 no. 1 bedroom units (48.9 – 79.7 sq.m.), 94 no. 2 bedroom 3 person units (67.3 – 80.42 sq.m.), 563 no. 2 bedroom 4 person units (77.7 – 106.1 sq.m.), and 45 no. 3 bedroom units (93.5 – 130.66 sq.m.), 6 no. communal residential community rooms, and a ground floor creche in 16 no. buildings with heights varying from 4 to 12 storeys, basement and surface level car parking, secure bicycle parking, landscaping, water supply connection at Red Arches Road, and all ancillary site development works on a c. 6.1 hectare site.

A full description of the proposed development can be found in the EIAR, Chapter 2 - Description of the Proposed Development. Construction activities associated with the proposed development which are relevant to the surface water environment are presented below. These activities primarily pertain to the site preparation, excavation, levelling and infilling activities required to facilitate construction of the proposed development, and ancillary services.

4.1 SITE PREPARATION, EXCAVATION, LEVELLING AND INFILLING ACTIVITIES

Land clearing, earthworks and excavations will be required for construction phase operations to facilitate site clearance, construction of new building, basements, foundations and installation of services. This will include site levelling, construction, and building foundation excavation, this will necessitate the removal of vegetation cover and the excavation of soil and subsoils.

The volume of material to be excavated has been estimated by the project engineers at c. 135,000 m³. It is envisaged that 129,000 m³ of the excavated material will be required to be removed from site as either a waste or by-product.

No significant dewatering will be required during the construction phase which would result in the localised lowering of the water table. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavation is kept relatively dry.

4.2 STORAGE OF HAZARDOUS CONSTRUCTION MATERIALS

Construction activities will include the storage of fuel and use of machinery, and temporary storage of fuel required for on site for construction traffic. Liquid materials i.e., fuel storage will be located within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications - BS8007-1987) to prevent spillage. These will be stored within the contractor yard.

4.3 FOUL DRAINAGE DURING CONSTRUCTION

Welfare facilities will be provided for the contractors via portable sanitary facilities within the construction compound site during the construction works. It is anticipated that initially, waste collected by tanker and disposed of appropriately, and that temporary connections to the existing services will be established to provide service and utilities subject to relevant applications and approvals.

There shall not be discharge of **untreated**, silty, or contaminated water from the works to any watercourse or stormwater network. Should any discharge of **untreated** construction water be required during the construction phase, the discharge will be to foul sewer following agreement with Fingal County Council / Irish Water.

4.4 SURFACE WATER DISCHARGE DURING CONSTRUCTION

There shall not be discharge of ***untreated***, silty, or contaminated water from the works to any watercourse or stormwater network. Should any discharge of ***untreated*** construction water be required during the construction phase, the discharge will be to foul sewer following agreement with Fingal County Council / Irish Water.

There is no significant dewatering will be required during the construction phase which would result in the localised lowering of the water table. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavation is kept relatively dry.

The discharge of ***treated*** construction water from rainfall into excavated areas, or from any localised dewatering may be required during construction. This ***treated*** construction water will be discharged to the existing 1500 diameter concrete stormwater main, that traverses underneath the north fringe sewer and discharges to the Mayne River.

5.0 SURFACE WATER MANAGEMENT MEASURES

5.1 PRE-CONSTRUCTION

Prior to the commencement of construction works and site mobilisation the Main Contractor shall undertake an assessment of the site identifying areas of concern at the earliest possible stage to anticipate and plan for how to address those concerns.

A preconstruction meeting is a key point of communication between the Main Contractor, Project Ecologist (Ecological Clerk of Works), Project Arborist and Landscape Architect, Environmental Health and Safety Staff and Subcontractors. This where potential problem areas can be discussed. The meeting provides an opportunity to interact face-to-face with key representatives where project expectations can be established along with a good working relationship.

This is preconstruction meeting will:

- Clarify the objectives of surface water management plan where specific project requirements can be discussed.
- Designate a contact person for surface water management plan
- Be sure that all parties go over the surface water management plan so they know what is expected. Discuss any needed field changes to the plan. Always ensure that the approved plan is available on site.
- Discuss time frames for initiation of mitigation measures for sediment controls, site clearing, grading and stabilisation.
- The sediment control measures will be implemented prior to the commencement of earthworks.
- Discuss the maintenance and monitoring requirement set out in this plan requirements so it is clearly understood that practice maintenance is an ongoing obligation.

5.2 ESTABLISHMENT OF STABILISED ENTRANCE WAY AND WHEEL WASH

In order to prevent site access points becoming sources of sediment and then tracking sediments offsite the following measures will be employed:

- A stabilised entranceway consisting of an aggregate on a filter cloth base that is located at any entry or exit point of the construction site.
- Place aggregate from the construction site boundary extending for at least 10m according to the specifications and contour the aggregate to suit the entrance point.
- All points of construction site entry and exit with a view to limit traffic to these entrances only.
- The site entrance will be located so that vehicles cannot bypass these devices. Perimeter silt fences or bunds may assist in achieving this requirement.
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate,
- In the case of a wet wheel wash it is recommended that a designated bunded and impermeable wheel wash area is provided and that the resultant waste water is diverted to a settlement pond for settling out of suspended solids.
- This also assist in minimising dust generation and disturbance of areas adjacent to the road frontage by providing a defined entry and exit point.



Figure 5.1 Example of Wheel Washing System

5.3 MANAGEMENT OF EXCAVATIONS, EARTHWORKS AND MATERIALS STORAGE

The volume of material to be excavated has been estimated by the project engineers at c. 135,000 m³. It is envisaged that 129,000 m³ of the excavated material will be required to be removed from site.

The construction contractor will be required to reused on-site excavated material where possible, this can be used for site levelling, roads, car parking areas and other landscaping purposes.

The amount of exposed ground will be kept to a minimum by maintaining existing vegetation that would otherwise be prone to erosion. Rather than stripping the entire site months in advance, topsoil extraction will be deferred until just before work begins. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.

Earthwork operations will be carried out such that surfaces, as they are being raised, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing. Correct management will ensure that there will be minimal inflow of shallow / perched groundwater into any excavation. Due to the very low permeability of the overburden and the relative shallow nature for foundation excavations, infiltration to the underlying aquifer is not anticipated.

Movement of material will be minimised to reduce the degradation of soil structure and generation of dust. Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations. Soil from works will be stored away from existing drainage features to avoid any potential impact.

Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

Any temporary storage of soil, hardcore or similar material on the site will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment.

The material will be stored away from any surface water drains (minimum 20 m buffer zones) and also stored in receptacles where possible. The movement of material will be minimised to reduce degradation of soil structure and generation of dust (See the CEMP for further details). Stockpiles will be tightly compacted to reduce run-off and graded to aid in run-off collection, and materials will be stored away from any surface water drains.

While it is acknowledged that there will be waste materials generated from the excavation of soil and stones to facilitate site clearance, construction of new building, basements, foundations and installation of services. Any waste soils will be managed in accordance with the site specific Construction and Demolitions Waste Management Plan (See the CEMP for further details).

In order to minimise the risk of contamination, any stockpiled material designated for removal will be removed off-site as soon as possible. Surface water drain gratings in areas near or close to where stockpiles are located will be covered by appropriate durable polyurethane covers or similar.

5.3.1 Material Handling and Storage

Key materials which will be ordered by specific order for the project, a 'Just in Time' delivery system will operate to minimise storage of materials, the quantities of which are unknown at this stage.

Where possible it is proposed to source general construction materials from the Dublin area to minimise transportation distances.

Aggregate materials such as sands and gravels will be stored in clearly marked receptacles in the compound area within the site. Liquid materials will be stored within temporary bunded areas, double skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006) to prevent spillage.

Construction materials will be brought to site by road. Construction materials will be transported in clean vehicles. Lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent the escape material along the public roadway.

The majority of construction waste materials generated will be soil from excavation works. Material will be removed from site regularly to ensure there is minimal need for stockpiling.

5.4 SURFACE WATER DRAINAGE AND RUNOFF PROTECTION

On the site, a site drainage and protection system will be built to reduce run-off from the site, prevent soil erosion, and protect water quality in the area of conservations closest to the Site.

5.4.1 Establishment of Silt Fences

A silt fence is a woven geotextile fabric barrier that is used as a temporary barrier to trap mostly coarse sediments carried in surface water sheet flow. Silt fences temporarily impound sediment-laden runoff, slowing it down and allowing it to settle out of the water.

Silt fences will be installed around the perimeter of the site where construction is proposed to detain flows from runoff so that deposition of transported sediment can occur through settlement.

Inspection and maintenance of the silt fences during construction phase is crucial to ensuring that they work as intended. They will remain in place throughout the entire construction phase.

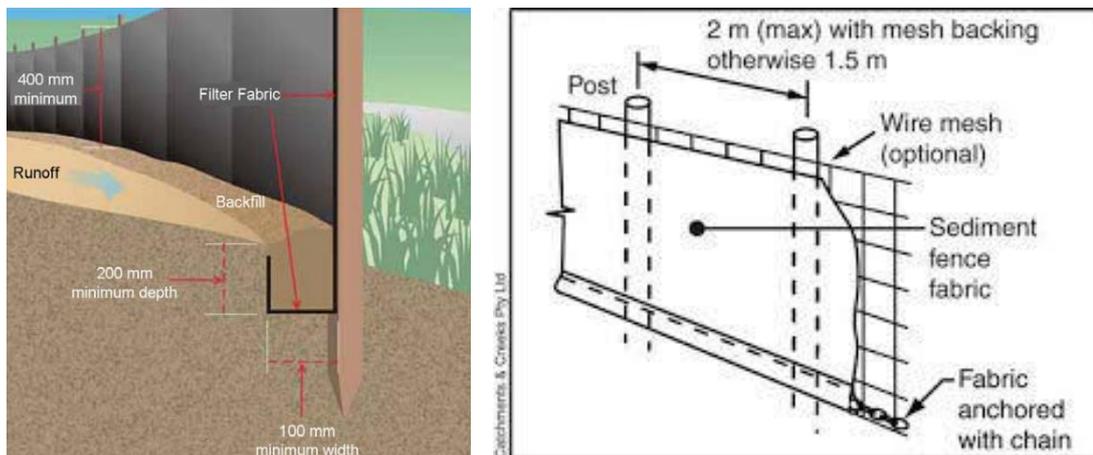


Figure 5.2 Still Fence Installation



Figure 5.3 Example of Silt Fencing

5.4.2 Use of perimeter drains, diversion channels/bunds

Temporary excavated channels, bunds or ridges or a combination of the three, may be constructed to divert sediment-laden water to an appropriate sediment retention structure.

These may be installed to provide permanent diversion of clean stormwater away from erosion exposed soil areas, or to provide a barrier between exposed areas and unexposed areas of the construction site.

Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life.

5.4.3 Silt Dewatering Bags / Dewatering Socks

Where small to medium volumes of water need to be pumped from temporary excavations, silt dewatering bags or socks will be employed. Silt Dewatering bags are designed to trap sediment and silt while allowing clean water to flow freely back into the environment. When water is pumped into the bag, the geotextile fabric traps most of the silt when water is pumped to the bag, allowing the treated water to pass through.



Figure 5.4 Example of Silt Dewatering Bag

5.4.4 Settlement Systems/ Settlement Tanks / Ponds

The main aim of settling tanks is to hold water for an extended period of time, allowing suspended solids to settle to the tank's bottom and leave treated water. Engineered concrete structures or simple clay-lined ponds can be used.

Settlement systems promote sediment deposition and reduce hydraulic loading by slowing flow velocities allowing sediment to settle.

Early in the site establishment capture and settlement systems should be constructed to store construction water for reuse or to allow for additional treatment procedures prior to discharge.

Earthwork operations will be carried out such that surfaces, as they are being raised, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing.

Sediment entrapment facilities will be installed to reduce overland sediment discharges to downgradient properties and receiving waters. All run-off leaving a disturbed area should pass through a sediment entrapment facility before it exits the site and flows downgradient such as straw bales, silt fencing, silt barriers and diversion dams.

It is envisaged that a number of geotextile lined settling basins and temporary mounding's and/or silt fences will be installed to ensure silts do not flow off site during the construction stage. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed. All inlets to the settling basins will be 'riprapped' to prevent scour and erosion in the vicinity of the inlet.

5.5 PREVENTION OF ACCIDENTAL RELEASES

5.5.1 Prevention of Concrete Run-off

Concreting operations carried out near surface water drainage points during construction activities could lead to discharges to a watercourse.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Wash-outs will only be allowed to take place in designated areas with an impervious surface.

A suitable risk assessment for wet concreting will be completed prior to works being carried out, which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at an appropriate facility off-site.

5.5.2 Fuel and Chemical Handling

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and prevent any resulting to surface water systems:

- Designation of bunded refuelling areas on the Site;
- Provision of spill kit facilities across the Site;
- Where mobile fuel bowsers are used, the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowsers to carry a spill kit and operatives must have spill response training;
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

5.5.3 Other Chemical Storage

No bulk chemicals will be stored within the active construction areas. Temporary oil and fuel storage tanks will be kept in the material storage area in suitable containers and will be appropriately bunded as required. Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in designated areas of the site, where possible, which will be kept away from any surface water drains (minimum 20 m buffer zone).

Spill protection equipment such as absorbent mats, socks and sand will be available to be used in the event of an accidental release during refuelling. Training will be given to appropriate site workers in how to manage a spill event.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

5.6 SURFACE WATER TREATMENT AND DISCHARGE

There shall not be discharge of **untreated**, silty, or contaminated water from the works to any watercourse or stormwater network. Should any discharge of **untreated** construction water be required during the construction phase, the discharge will be to foul sewer following agreement with Fingal County Council / Irish Water.

The discharge of **treated** construction water from rainfall into excavated areas, or from any localised dewatering may be required during construction. This **treated** construction water will be discharged to the existing 1,500 diameter concrete stormwater main, that traverses underneath the north fringe sewer and discharges to the Mayne River.

Surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary drainage system shall be established prior to the commencement of the construction works to collect, and discharge any treated construction water during construction.

The pre-treatment and silt reduction measures on-Site will include a combination of the measures proposed in Section 5.5 above.

Run-off water containing silt will be contained on-site via settlement tanks and treated to ensure adequate silt removal. Silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, silt sacks and settlement tanks / ponds).

Any contaminated construction water that requires removal from site will be contained on-site and treated to ensure adequate silt and contaminant removal prior to discharge.

The implementation of an multistage-active treatment system such as a siltbuster or similar will be adopted to treat construction waters to ensure it will be safely discharged to the existing surface water network. The multistage treatment system will be designed to remove silt, and hydrocarbons.

Measures to control surface water will be in compliance with the relevant CIRIA guidance documents referenced above.

5.7 FOUL WATER AND ONSITE SANITATION

Welfare facilities will be provided for the contractors via portable sanitary facilities within the construction compound site during the construction works. It is anticipated that initially, waste collected by tanker and disposed of appropriately, and that temporary connections to the existing services will be established to provide service and utilities subject to relevant applications and approvals.

6.0 MONITORING AND MAINTENANCE

Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 20 m from surface water receptors.

Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) will be carried out during the construction phase especially rainfall or storms

- a. Regular maintenance will occur to repair or reinstate if destroyed or damaged by machinery movement or from rainfall.

Regular auditing of construction / mitigation measures will be undertaken, e.g. concrete pouring, refuelling in designated areas, etc.

A log the regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

An example inspection log form is included as Appendix A to this SWMP.

7.0 REVIEW

The Main Contractor appointed representative will review the inspection forms on a weekly basis to confirm that the checks, and subsequent required maintenance works are being carried out. Additional inspections will be required after significant changes in site changes, or system maintenance as construction progresses.

Regular meetings will be held on site by key personnel to discuss the results of the daily, weekly and monthly site monitoring.

Should inspections indicate that any environmental protection and controls measures are not functioning as intended, the Contractor will instigate a review of the CEMP or relevant sub-plan, as required.

8.0 TRAINING

Site training should include at minimum:

- Induction training including environmental requirements for all operatives and subcontractors;
- More detailed training for staff or subcontractors with specific responsibilities e.g. Waste Rep;
- Toolbox talks, depending on the type of works being undertaken and the environmental impacts that may result from these activities e.g. training on water pollution prevention before works near watercourses. Training to be given will include:
 - Protected species/habitats
 - Environmental incidents
 - Invasive plants
 - Water pollution prevention
 - Waste management
 - Spill control & spill kits
 - Dust and Air Quality
 - Storage and use of petrol diesel and oils

Contact specific information should be displayed on notice boards and briefed to all staff.

9.0 KEY CONTACTS

A list of personnel that should be contacted in the requirement for further information or to be notified of a breakdown in the mitigation measures should be prepared and communicated within this SWMP prior to the commencement of construction

Main Contractor Contacts

Position Title:	Name:	Phone:
Main Contractor		
Project Manager		
Construction Manager		
Design Engineer		
Environmental Manager		
Safety Officers		
Site Emergency Number		
Project Ecologist		
Project Archaeologist		
Project Arborist		
Waste Management Coordinator		

Emergency Services and Third Party Contacts

Organisation:	Position:	Phone:
Inland Fisheries Ireland	Eastern River Basin District	(01) 2787022
National Parks and Wildlife Service	North Eastern Region	(076) 1002594
Environmental Protection Agency (EPA)	EPA	(053) 9160600
Department of Culture, Heritage and the Gaeltacht	National Monuments Service	(01) 8882000
Health and Safety Authority	Health and Safety Authority	(01) 6147000
Emergency Services	Ambulance and Fire Service	999 or 112

Appendix A

Inspection Checklist				
Name of Inspector:				
Construction Project:		Contractor:		
Location:				
Date of Inspection:		Time	Start:	
			Finish:	
Weather Conditions :				
Description of current phase of construction:				
Construction Element	Maintenance Required		Comments on the effectiveness of sediment control measure	
	Yes	No	N/A	
French drain clear?				
Swale – level of water?				
Silt pond/ silt fences required?				
Integrity of spoil heaps				
Gully protection in place				
Mobile Treatment Tanks:				
De-sludging required?				
Other:				
Additional Comments:				
Inspector			Supervisor	
Signed			Signed	
Date			Date	

APPENDIX 2 FOR CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Dust Management Plan prepared by AWN Consulting

(Appendix 9.3 to the EIAR)

Dust Management Plan

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK (IAQM (2014), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997).

Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 9.2 for the windrose for Dublin Airport). As the prevailing wind is predominantly westerly to south-westerly, locating construction compounds and storage piles downwind of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (IAQM, 2014; UK ODPM, 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods where care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details;
- It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

Site Roads / Haulage Routes

Movement of construction trucks along site roads (particularly unpaved roads) can be a significant source of fugitive dust if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK ODPM, 2002).

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads;
- Access gates to the site shall be located at least 10m from sensitive receptors where possible;
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering shall be conducted during sustained dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

Land Clearing / Earth Moving

Land clearing / earth-moving works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;
- During periods of very high winds (gales), activities likely to generate significant dust emissions should be postponed until the gale has subsided.

Storage Piles

The location and moisture content of storage piles are important factors which determine their potential for dust emissions.

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site. Where possible storage piles should be located downwind of sensitive receptors;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency (UK ODPM, 2002).

- Where feasible, hoarding will be erected around site boundaries to reduce visual impact. This will also have an added benefit of preventing larger particles from impacting on nearby sensitive receptors.

Site Traffic on Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads should be reduced to a minimum by employing the following measures:

- Vehicles delivering or collecting material with potential for dust emissions shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust;
- At the main site traffic exits, a wheel wash facility shall be installed if feasible. All trucks leaving the site must pass through the wheel wash. In addition, public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary.

Summary of Dust Mitigation Measures

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
- The development of a documented system for managing site practices with regard to dust control;
- The development of a means by which the performance of the dust minimisation plan can be regularly monitored and assessed; and
- The specification of effective measures to deal with any complaints received.