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Construction Environmental Management Plan (CEMP)

PRESENTED TO

Liscove Limited
Large-Scale Residential Development on Lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18 (Kilternan Village LRD)

DATE

July 24

Environmental Consultancy Services

DOCUMENT CONTROL SHEET

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1 INTRODUCTION

Enviroguide Consulting (hereafter referred to as EGC) was retained by Liscove Limited (hereafter referred to as the Client) to prepare a Construction Environmental Management Plan (hereinafter CEMP) for the proposed large-scale residential development (LRD) on lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18 (hereafter referred to as the site).

This CEMP describes the proposed works and defines the measures that shall be implemented during the Construction Phase of the Proposed Development to manage, minimise, or mitigate potential environmental impacts that may arise from the Construction Phase of the Proposed Development at the site.

A detailed description of the Proposed Development is provided in Section 2.

This CEMP is produced in support of a planning application.

The CEMP is an integral part of the Project's Health, Safety, Environmental and Quality Management System (HSEQMS). The CEMP is subject to the requirements of the site Quality Management System (QMS) with respect to documentation control, records control, and other relevant measures.

The CEMP defines the measures that shall be implemented during the works to manage, minimise, or mitigate potential environmental impacts that may arise from the construction phase of the Proposed Guesthouse Accommodation at the site.

The primary distribution list for this document includes the following personnel.

- Construction Director;
- Construction Manager;
- Construction Management Team (CMT).
- Environmental Officer;
- Site Supervisors; and

- Other Relevant Personnel including authors of reports submitted with the planning application.

1.1 Objective and Purpose

The purpose of this CEMP is to provide effective, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the Construction Phase of the project and ensure that construction activities do not adversely impact the environment.

The objective of this document is to set out and communicate the procedures, standards, management responsibilities and key environmental obligations that apply to the Main Contractor and sub-contractors to address and prevent environmental effects that may arise from the Construction Phase of the Proposed Development.

1.2 Scope of CEMP

This CEMP defines the approach to environmental management during implementation and roll-out of the Construction Phase of the project.

Compliance with the CEMP, procedures, work practices and controls is mandatory and must be adhered to by all personnel and contractors employed on the Construction Phase of the Proposed Development. This CEMP seeks to promote best environmental practices on-site for the duration of the Construction Phase.

This CEMP will provide a framework to:

- Comply with current environmental and waste legislation, codes of best practice and guidelines;
- Provide a plan for achieving and implementing construction related measures identified in design drawings and documents
- Ensure that environmental risks are identified and will be appropriately mitigated to ensure any adverse effects are minimised during construction and
- Outline the procedures for reporting and communicating on environmental aspects of the Project.

1.3 Live Document

This is a 'live' document which will be continually reviewed and updated throughout the Construction Phase by the Construction Management Team (CMT). Updates to this CEMP may be necessary due to any changes in environmental management practices and/or contractors. Any further mitigation measures that may be identified as part of detailed design will be included. Any conditions of planning permission will be included in this CEMP, once granted.

As detailed in the later sections, the procedures agreed in this CEMP will be audited throughout the project roll-out phase to ensure compliance.

2 PROJECT DESCRIPTION

2.1 Site Location and Description

Liscove Limited intend to apply for permission for a Large-Scale Residential Development on 2 No. sites, measuring c. 14.2 Ha., which will be separated by the future Glenamuck Link Distributer Road (GLDR). The western site principally comprises lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18, which include a derelict dwelling known as 'Rockville' and associated derelict outbuildings, Enniskerry Road, Kilternan, Dublin 18, D18 Y199 and the former Kilternan Country Market, Enniskerry Road, Kilternan, Dublin 18, D18 PK09. The western site is generally bounded by the Glenamuck Road to the north; the Sancta Maria property to the north, west and south; a recently constructed residential development named "Rockville" to the north-east; the Enniskerry Road to the south-west; dwellings to the south; and the future GLDR to the east. The eastern site is generally bound by dwellings to the south; the future GLDR to the west; and greenfield land to the north and east.

Road works are proposed to facilitate access to the development from the Enniskerry Road; to the approved Part 8 Enniskerry Road/Glenamuck Road Junction Upgrade Scheme on Glenamuck Road (DLRCC Part 8 Ref. PC/IC/01/17); and to the approved Glenamuck District Roads Scheme (GDRS) (ABP Ref. HA06D.303945) on the Glenamuck Link Distributor Road (GLDR). Drainage and potable water infrastructure is proposed to connect to services on the Glenamuck Road, Enniskerry Road and the GLDR.

At the 'Rockville access point', works are proposed to provide a multi-modal access, including a vehicular connection between the proposed development and the Rockville development (permitted under DLR Reg. Ref. D18A/0566). Surface water and foul drainage infrastructure is proposed to connect into and through the existing/permitted Rockville developments (DLR Reg. Refs. D17A/0793, D18A/0566, D20A/0015 and D23A/0580).

The site location is presented in Figure 2-1 below.

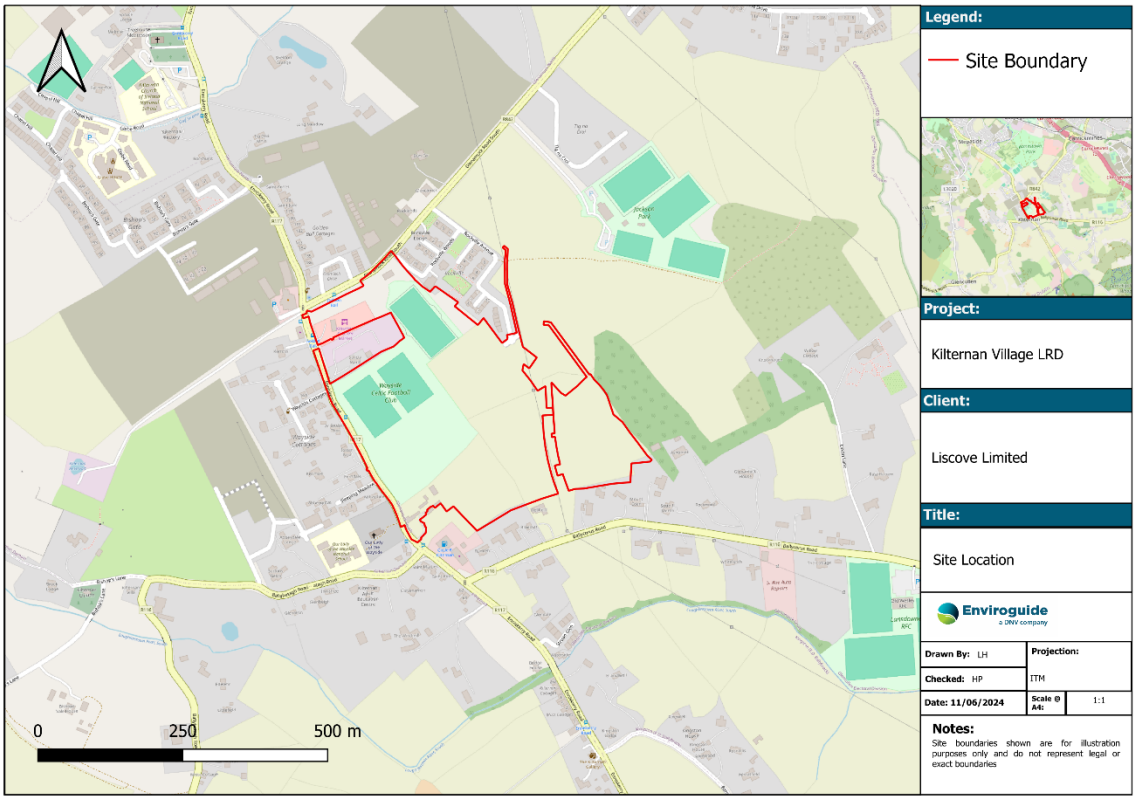

Figure 2-1: Site Location

2.2 Proposed Development

The Proposed Development will principally consist of: the demolition of c. 740 sq m of existing structures on site comprising a derelict dwelling known as 'Rockville' and associated derelict outbuildings (c. 573 sq m) and the former Kilternan Country Market (wooden structure) (c. 167 sq m); and the provision of a mixed-use development principally consisting of 487 No. residential units (196 No. houses, 201 No. duplex units and 90 No. apartments) and a Neighborhood Centre. The western site will comprise 362 No. residential units and the Neighborhood Centre, which will provide an anchor retail store (c. 1,310 sq m), retail/commercial (c. 3,284 sq m), a restaurant (c. 182 sq m), a creche (c. 691 sq m), café (c. 326 sq m), and a community facility (c. 332 sq m), and the eastern site will comprise 125 No. residential units. The 487 No. residential units will consist of 53 No. 1 bedroom units (35 No. apartments and 18 No. duplexes), 150 No. 2 bedroom units (38 No. houses, 16 No. apartments and 96 No. duplexes), 236 No. 3 bedroom units (110 No. houses, 39 No. apartments and 87 No. duplexes) and 48 No. 4 bedroom units (48 No. houses). The proposed development will range in height from 2 No. to 4 No. storeys (partially over podium/undercroft level in Apartment Blocks 1, 2 and 3 and Duplex Block T and U on the eastern site).

The development also provides: a pedestrian/cycle route through the Dingle Way from Enniskerry Road to the future Glenamuck Link Distributor Road; 854 No. car parking spaces (125 No. in the undercroft of Apartment Blocks 1, 2 and 3 and Duplex Blocks T and U and 729 No. at surface level) including 28 No. mobility impaired spaces, 100 No. electric vehicle spaces, 2 No. car share spaces, and 4 No. drop-off spaces/loading bays; motorcycle parking; bicycle parking; bin storage; provision of new telecommunications infrastructure at roof level

of the Neighborhood Centre including shrouds, antennas and microwave link dishes (18 No. antennas, all enclosed in 9 No. shrouds and 6 No. transmission dishes, together with all associated equipment); private balconies, terraces and gardens; hard and soft landscaping; sedum roofs; solar panels; boundary treatments; lighting; substations; plant; and all other associated site works above and below ground. The proposed development has a gross floor area of c. 60,504 sq m above ground, in addition to an undercroft/basement (c. 4,485 sq m) containing car parking, bike storage, bin storage and plant under Apartment Blocks 1, 2 and 3 and Duplex Blocks T and U on the eastern site.

Figure 2-2: Proposed Development Site Layout Plan (McCrossan O'Rourke Manning Architects, 2024

3 CONSTRUCTION SCHEDULE AND WORKS MANAGEMENT

3.1 Programme

The programme for the construction phase of the development is approximately 5 years from 2025 up to 2030.

The construction of this development is intended to take place in the following phases (Phase 1, 2, 2A, 3, 4 and 5). Table 3-1 below provides summary of the construction programme.

Table 3-1: - LRD Outline Construction Programme

LRD Construction	Units	Commercial	Months	Years	Start	End
Phase 1	83	2225	18	1.5	Feb 25	Jul 26
Phase 2	121	3900	23	1.92	Mar 26	Jan 28
Phase 3	104		19	1.58	Jun 27	Dec 28
Phase 4	54		11	0.92	Apr 28	Feb 29
Phase 5	125		20	1.67	Jun 28	Jan 30
Total Quantum & Project Time	487	6125	60	5		

Each of the phases can be summarised as follows:

- Phase 1 – The demolition of c. 573.2 sq m of existing structures on site comprising a derelict dwelling known as 'Rockville' and associated derelict outbuildings. Central Western portion of the site consisting of 83 residential units (made up of houses, duplexes), and all associated landscaping works and drainage for Phase 1. Construction of 2,225 sqm of commercial space. Main Public Open Space, Central Green Way Link, Dingle Way and off-site drainage through southern lands. Three accesses to the Enniskerry road are to be included as well as access to Glenamuck Link Distributor Road (GLDR) (if the GLDR is in place) and a link to Rockville. This Phase is estimated to last from February 2025 up to July 2026.
- Phase 2– Central Eastern portion of the site consisting of 121no. residential units made up of (houses, duplexes, and apartments) and Neighbourhood Centre along with 3900 sqm of commercial space. All associated landscaping works and drainage for Phase 2, 2A and the Neighbourhood Centre. Access to GLDR will be constructed if not completed in Phase 1. This Phase is expected to last from March 2026 to January 2028.
- Phase 3 – Central Southern portion of the site consisting of 104no. residential units, with all associated landscaping works and drainage for Phase 3. This Phase is expected to be underway from June 2027 to December 2028.
- Phase 4 – Northwestern portion of the site consisting of 54no. residential units (made up of houses and duplexes), along with all associated landscaping works and drainage for Phase 4 and the creation of a new access to Glenamuck Road. This phase is expected to begin in April 2028 and end in February 2029.
- Phase 5 – Southwestern portion of the site on the opposite side of the GDLR consisting of 125no. residential units with all associated landscaping works, and drainage for

Phase 5 and the creation of a new access onto the GLDR. This Phase is expected to last from June 2028 to January 2030.

The Construction Phasing Plan is illustrated in Figure 3-1 below.

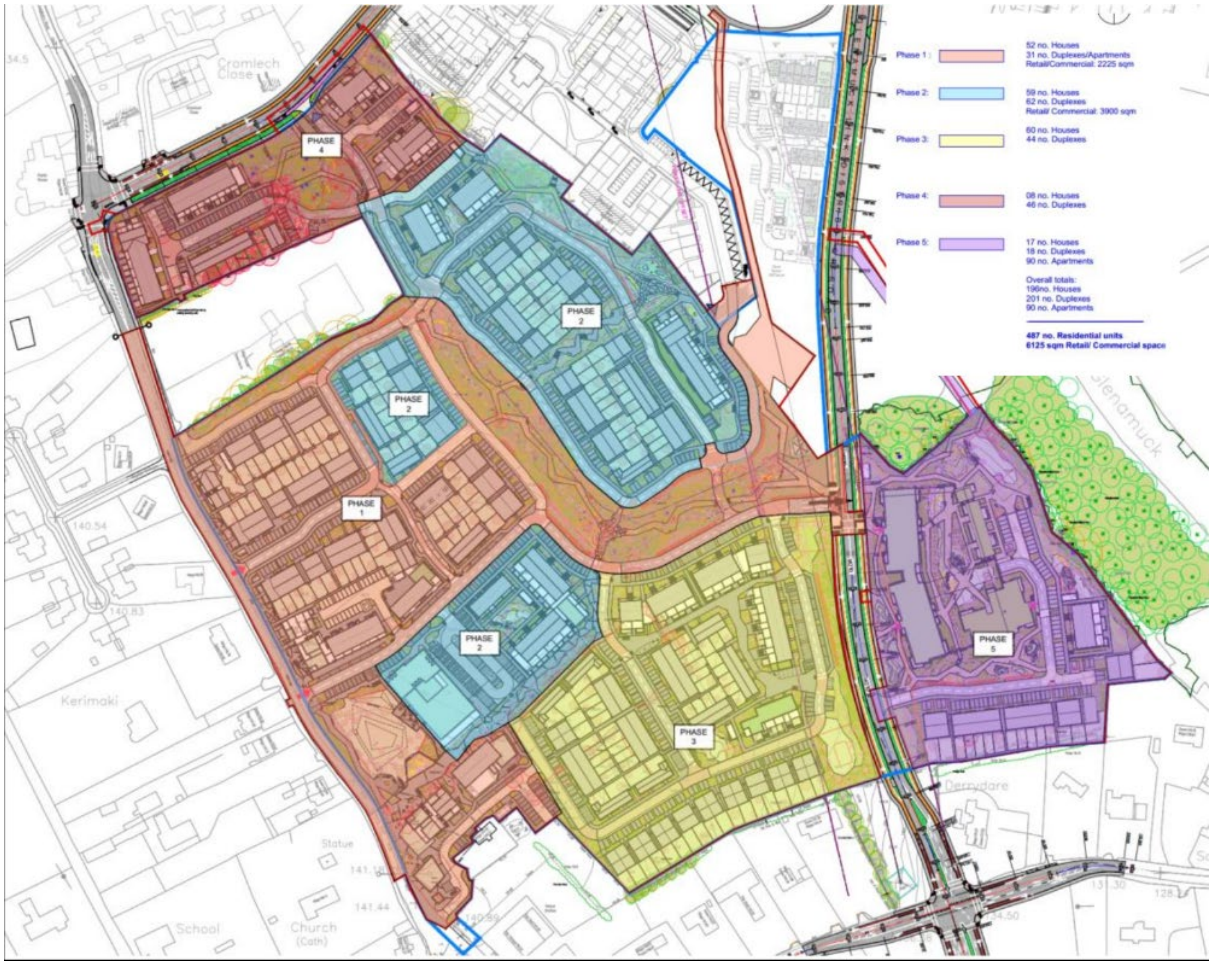

Figure 3-1: - Proposed Kilternan Construction Phasing Plan

Prior to any site works commencing, the Main Contractor will investigate/ identify the exact location of and tag all existing services and utilities around and through the site with the assistance of the relevant technical divisions of Dun Laoghaire Rathdown County Council (DLRCC) and utility companies.

The Health and Safety Authority's (HSA) Code of Practice for Avoiding Danger from Underground Services will be adhered to during excavation work, and when any other work involving underground services, is carried out. The Code of Practice aims to reduce the incidence of damage to underground services. Electricity cables, gas pipes, water pipes and sewers, if damaged, may pose a direct danger to personnel who are working on the site, and may also pose a pollution risk to the surrounding environment. If an electricity cable, telecommunications cable, gas pipeline or water main suffers any impact or any damage, however slight, the incident must be reported to the network operator without any undue delay (HSA, 2016).

3.2 Working Hours

Normal site working hours for the construction phase of the Proposed Development will be 07:00 and 19:00, Monday to Friday, and 07:00 to 14:00 on Saturdays.

No works are envisaged to be carried out on Sundays or Bank Holidays.

Should there be a requirement, in exceptional circumstances, for works outside of the normal site working hours a written submission seeking authorization will be made to DLRCC.

Works will take account of any restrictions identified in the grant of planning.

3.3 Site Construction Compound

All construction support related activities will be contained within the site compound. The site compound will consist of:

- Offices
- Meeting Rooms
- Staff Welfare Facilities
- Toilet / Shower Rooms
- Drying Rooms
- Canteens
- Storage Containers

All cabins will be brought to site in good condition and will be maintained in good order throughout the project. Double stacking of cabins may be required, with safe stairs and walkways provided to the upper levels of offices.

A power supply from ESB Networks to power both the compound and the construction site will be applied for by the Main Contractor. The size of supply will be calculated to ensure it is sufficient to power both the site compound and construction site activities. In the event of any delays securing the required power supply to power offices and cranes, generators may be required. Diesel generators will have sound enclosures and will be regularly serviced to prevent noise and odour pollution, and setup in a spill tray to prevent any spillage contaminating the ground. Temporary site lighting will be installed to provide safe and well-lighted walkways around the site compounds, and task lighting to the construction sites.

Water and drainage will be required to service the site toilets and canteen facilities. The Main Contractor will carry out a site survey to identify the locations of the water and foul drainage connections to the site. It will be the Main Contractor's responsibility to apply to Irish Water for connections to the water main and foul drain, ideally utilizing existing connections.

Materials handling and storage areas, including waste segregation and storage areas, will be contained within the boundary of the site. The required size for the site compound and waste storage areas will be specified by the Main Contractor. All waste storage areas will be identified by clear legible signage and recorded on a site layout drawing which will be maintained on-site.

Information notices located at the site entry, site compound and appropriate locations throughout the site will identify the site-specific PPE requirements and the potential risks associated with entering a live construction environment.

A site compound and waste segregation areas will be required for each phase of the proposed development. Indicative compound locations and waste segregation areas for each phase are shown in Figure 3-2 below. As shown, it is anticipated that a single compound will services the phase 1 to 4 lands to the west of the GLDR, while a separate compound for Phase 5 to east of the GLDR will be developed. These layouts are preliminary and will need to be confirmed by the contractor once appointed.

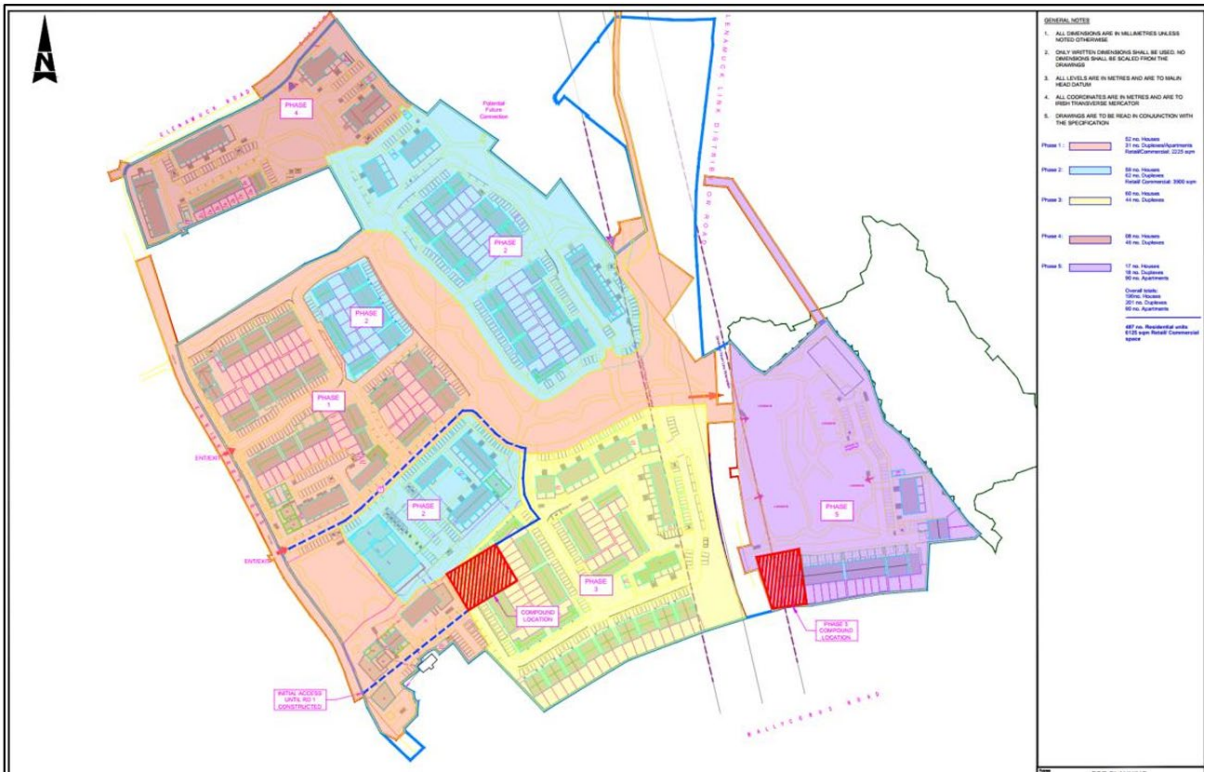

Figure 3-2: Site Compound Map

3.4 Traffic

During the Construction Phase for the Proposed Development, there will be a number of high activity periods where construction related traffic will be significant. The most intensive of these periods are likely to be:

- Demolition Phase
- Excavation Phase
- Construction Phase.

The nature of the construction process is such that the traffic generated will comprise of short periods of intense activity interspersed with longer periods with relatively low level of truck movements into and out of the site over the Construction Phase.

The Outline Construction Management Plan (AtkinsRéalis), which accompanies this application has calculated the daily HGV movements that will take place during the Construction Phase in order to remove the excavated material from the site of the Proposed Development. Material delivered by HGV in significant quantities throughout a project would include stone fill, steel reinforcement, blocks and bricks, mortar, precast concrete floors and balconies, timber and roof trusses, windows and cladding, roof tiles/slates, paving and drainage materials. A total of 67,729 cubic meters of material will be required to exported off site and 77,720 cubic meters required to construct building up to finished floor level (grey slab).

Anticipated HGV movements associated with this volume have been estimated. Average truck capacity is 25 tons with soil density of 1.9kg/m3 provide a cubic capacity of 13 cubic meters per truck. The HGV movements per phase are set out in Table 3-2.

Table 3-2: HGV daily two-way movements associated with exported and import of material.

Phase	In	Out	Total
1	12	12	24
2	4	6	10
3	4	6	10
4	6	6	12
5	10	6	16
Total	36	36	72

For phase 1 it has been assumed that the Glenamuck District Roads Scheme (GDRS) is not available. It is proposed that the construction traffic will access the Proposed Development site from M50 J15 – Glenamuck Road (R842)– Enniskerry Road (R117) for Phase 1 and M50 J50 – Glenamuck District Distributor Road (GDDR) – Glenamuck Link Distributor Road (GLDR) from Phase 2 onwards (See Figure 3-3). The detailed design and layout of the site access will be agreed between DLRCC and the appointed contractor prior to any construction works commencing on site. Advance warning signage for the site entrance will be provided at 75m and 50m from the entrance on both sides.

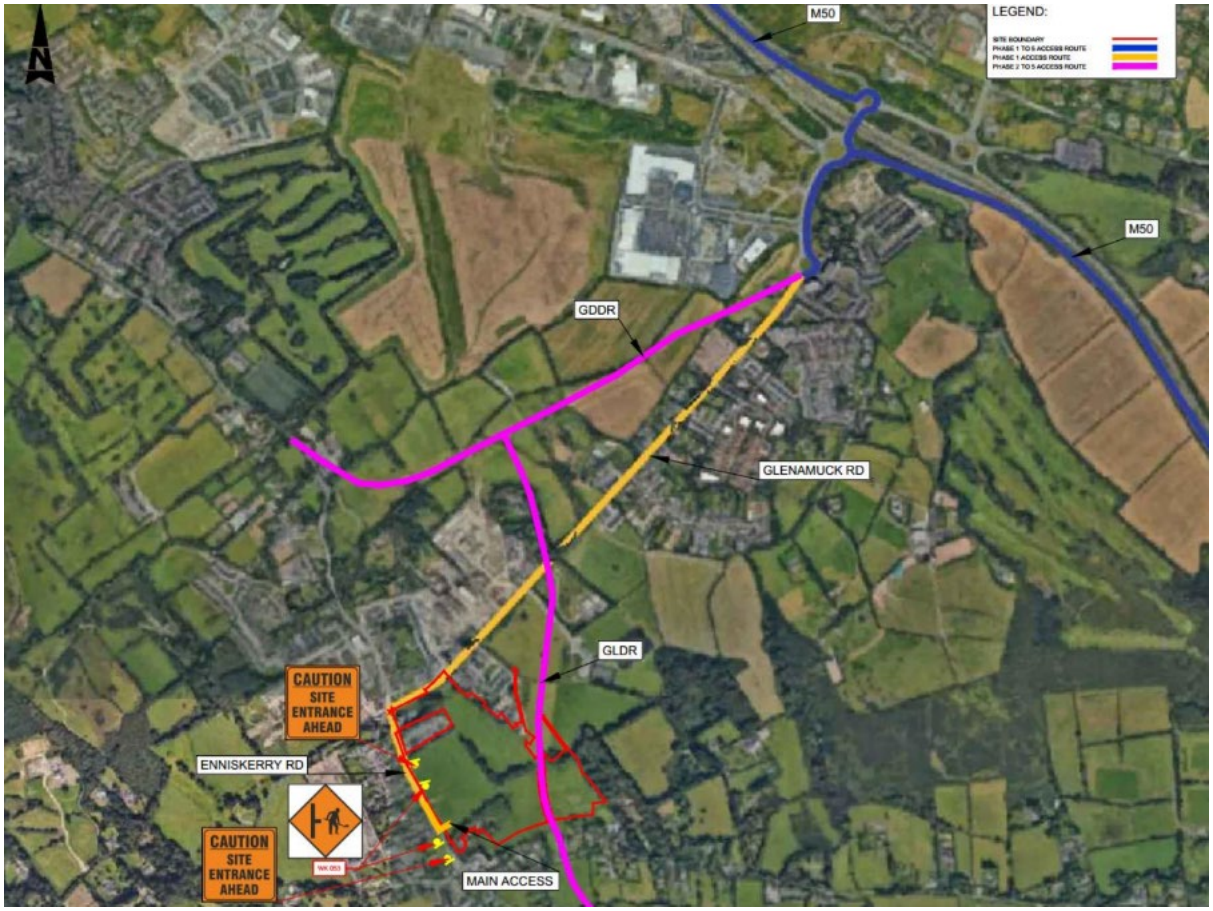

Figure 3-3:Outline Construction Traffic Routing Plan

All traffic management measures will be implemented, maintained, and removed by competent personnel holding CSCS (Construction Skills Certification Scheme) Signing, Lighting and Guarding certification.

A gate attendant with appropriate training and qualifications will be appointed to control maneuvers and traffic flows at the site gates.

It is not envisaged that road closures will be required during the construction phase however, if required, applications to DLRCC for permits and approval for road restrictions will be made.

Materials will be ordered and delivered to site on an “as needed” basis in order to prevent over supply to site. Deliveries will be managed upon arrival to the site and systems will be put in place in order to avoid any queuing of delivery vehicles. Measures will be adopted to avoid damage to the infrastructural services of the adjoining roads over which vehicles servicing the Proposed Development will traverse. All delivery vehicles will be coordinated by the flagman on duty at the main entrance, as required.

The Main Contractor will ensure that no parking of construction related vehicles will be permitted on the adjoining road network and if required to hold on site for a period of time, they can be accommodated within the site boundary. It will be the responsibility of the Main Contractor to assign an area within the confines of the site dedicated to operative car parking. There will be no parking permitted on the surrounding road network by the CMT or Site

Operatives.

3.5 Site Security, Public Health and Safety and Site Access and Egress

Access to the site will be from M50 J15 – Glenamuck Road (R842)– Enniskerry Road (R117) for Phase 1 and M50 J50 – Glenamuck District Distributor Road (GDDR) – Glenamuck Link Distributor Road (GLDR) from Phase 2 onwards. Warning signs will illustrate the required PPE and risks associated when entering the construction site.

Hoarding will be required to secure the entire site boundary. The hoarding will reach a height of approximately 2.4m and will be secure and non-climbable. No stored material will be stacked against hoarding and no storage will be allowed adjacent to public trafficked areas.

Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate.

It is envisioned that vehicle gates with barriers will be accommodated at a security hut to control pedestrian and vehicle access.

Security of the site is an important issue with respect to restricting site entry to personnel solely involved in the construction process during working hours and preventing unauthorized access out of hours. Site access for all personnel and visitors will be strictly controlled and all visitors will report to the site offices prior to entering the construction area.

Safety and ease of access to the site are to be provided for by the Main Contractor when planning the works. Separation of vehicular and heavy plant traffic from pedestrians and operatives will be implemented as far as is practical when considering the layout of the site infrastructure and access points.

Regular inspections of the hoarding will be undertaken to ensure that the safety of any vehicles or pedestrians is not compromised.

Where a site access crossing is required on a pavement, this will require a dedicated pedestrian management setup to ensure there are no incidents of crossovers between pedestrians and site vehicles. This may require a turtle-gate barrier in addition to semi-permanent barriers along the kerb edge, flagmen to control barriers and flagmen to watch truck movement and pedestrians.

In addition to the perimeter hoarding at the site, the following security measures will be adopted by the Main Contractor:

- A dedicated site security team with 24hr access to the site and direct contact with the local An Garda Siochana station in Stepaside.
- The contractor will have responsibility for all personnel engaged on site and maintain records and login procedures.
- Site security lighting will be located and designed so as not to result in glare on the public road or to impact negatively on any nearby dwellings and will be cognisant of ecology requirements. Additionally, all lighting installed at the site will comply with the controls listed in Section 6.4. of this CEMP.

3.6 Communication & Consultation

The Main Contractor will appoint a Project Communications Officer who will undertake any required third-party communication and liaise directly with landowners/ local authorities/ members of the public, and all other stakeholders as required by the project.

3.6.1 Managing Enquiries and Complaints

All complaints and requests for information from members of the public will be handled appropriately, efficiently in compliance with the complaints and corrective action procedures to be developed by the Main Contractor. All follow up actions on the construction site will be managed by the CMT.

A record will be maintained on site of all complaints detailing the following as a minimum:

- Name and address of complainant (if provided).
- Time and date the complaint was made.
- Date, time, and duration of incident.
- Nature of the complaint (e.g., noise nuisance, dust nuisance etc.).
- Characteristics, such as noise, dust etc.
- Likely cause or source of incident.
- Weather conditions, such as wind speed and direction.
- Investigative and follow-up actions; and
- Root cause analysis and preventive actions.

All personnel working on the Proposed Development site will be inducted into the complaints handling procedure and will be aware that complaints are to be directed immediately to the CMT.

All enquiries and complaints received will be investigated by the CMT. Where appropriate corrective and preventative actions will be implemented as required to ensure that the complaint is effectively dealt with and to prevent a recurrence of the incident which led to the complaint being received. Staff will be informed by toolbox talk of corrective and preventative actions implemented as relevant to their role or overall operations.

3.6.2 Advance Works Notice

The CMT will be responsible for regular consultation and public communications activities required during the construction works and will include all contact details for relevant project personnel, public bodies and emergency services.

3.7 Maintenance of Roads

The Main Contractor will ensure that on-site control measures will be established and maintained at the site to prevent any nuisance and debris associated with the construction works on public roads adjoining the site. The main consideration will be to combat mud and dust at source so as not to let it adversely affect the surrounding areas. The objective will be to contain any mud or dust within the site, which is large enough for comprehensive control measures. This issue will be controlled by the following designated and operational

measures:

- Designated hard routes through the site to work front.
- Each departing vehicle will be checked by the banksman.
- Wheel wash facility at egress point and the channeling of departing vehicles through the wheel wash.
- Sweeping of public streets adjacent to egress from site, as necessary.
- Provision and facilities to cover lorry contents, as necessary.
- Where applicable, controlled loading of excavated material to minimize risk of spillage of contents.
- Facility to clean local roads if mud or spillage occurs.
- Ongoing monitoring during working hours.

Site access will be controlled, and the surrounding road network monitored to ensure that the roads and footpaths affected by the construction works are maintained in a safe and tidy condition. Road sweepers will be utilised as required.

4 PROJECT ROLES AND RESPONSIBILITIES

The Main Contractor appointed to the project will have overall responsibility for the implementation of the CEMP and appointing the following roles and responsibilities within the Construction Management Team (CMT).

Role	Responsibilities
Construction Director	• Overall responsibility for the implementation of the CEMP • Ensuring adequate resources are available to ensure the implementation of the CEMP • Management review of the CEMP for suitability, adequateness, and effectiveness • Setting out the focus of environmental policy, objectives, and targets for the Main Contractor
Construction Manager	• Reporting to the Construction Director on the on-going performance of the CEMP • Discharging his/her responsibilities as outlined in the CEMP • Supporting the CMT and the Environmental Officer through the provision of adequate resources and facilities to ensure the implementation of the CEMP • Providing Contractors with precise instructions as to their responsibility to ensure correct working methods where risk of environmental damage exists • Where appropriate, ensuring Contractor's method statements include correct waste disposal methods • Co-ordinating of environmental planning of CMT activities to comply with environmental authorities' requirements and with minimum risk to the environment
Environmental Officer	• Ensuring that the requirements of the CEMP are developed and environmental system elements (including procedures, method statements and work instructions) are implemented and adhered to with respect to environmental requirements • Reviewing the Environmental responsibilities of all sub-contractors in scoping their work and during their contract tenure • Ensuring that advice, guidance, and instruction on all CEMP matters is provided to all managers, employees, construction contractors and visitors on site • Reporting to the Construction Manager on the environmental performance of Line Management, Supervisory Staff, Employees and Contractors • Advising site management on environmental matters and delegating responsibility to sub-contractors, where necessary • Being aware of any potential environmental risks relating to the Contractors and bring these to the notice of the appropriate management; • Ensuring that all waste is managed accordingly, is recorded, and the materials/waste register is completed • Maintenance of records of all necessary documentation including contractor waste collection permits, waste destination consents, waste transfer documents and waste management facility gate receipts in the waste management file and any environmental related documentation
Project Communications Officer	• Conducting all public liaison associated with the Construction Phase of the project • Responding to any concerns or complaints raised by the public in relation to the Construction Phase of the project • Liaising with the Environmental Officer on community concerns relating to the environment • Ensuring the Environmental Officer is informed of any complaints relating to the environment • Keeping the public informed of project progress and any construction activities that may cause inconvenience to the local community
Site Supervisors	• Implementation of the CEMP • Being knowledgeable of the requirements of the relevant law in environmental matters and take whatever action is necessary to achieve compliance

Role	Responsibilities
	• Ensuring that environmental matters are considered at all times • Being aware of any potential environmental risks relating to the site, plant, or materials to be used on the premises and bring these to the notice of the appropriate management • Ensuring that any plant is environmentally suited to the task in hand
Site Personnel	• Co-operation with the CMT and the Environmental Officer in the implementation of the CEMP at the site • To conduct all their activities in a manner consistent with regulatory and best environmental practice • To participate fully in the environmental training programme and provide management with any necessary feedback to ensure effective environmental management at the site • Adhere fully to the requirements of the site environmental rules
Project Environmental Consultant (as required)	An Environmental Consultant may be engaged on an ad-hoc basis if required. The appointed Environmental Consultant will be competent, qualified, and experienced in the field of environmental management; with expertise in the areas of contaminated land, water and waste management and will be responsible for producing all environmental reporting procedures. • Preparation of any environmental control plans and supporting procedures • Advising the site management on environmental matters as appropriate • Carrying out environmental surveys (data logging (noise, water, dust, etc.)) as required • Generating reports when required to show environmental data trends and incidents • Advising on the production of written method statements and site environmental rules and on the arrangements to bring these to the attention of the workforce as required • Investigating incidents of significant, potential, or actual environmental damage, ensure corrective actions are carried out and recommend means to prevent recurrence
Project Archaeologist Clerk of Works (as required)	A Project Archaeologist Clerk of Works may be engaged on an ad-hoc basis if required. The appointed Project Archaeologist Clerk of Works will be competent, qualified, and experienced. • Advising on all archaeological monitoring activities, conducting watching briefs and distributing information relevant to monitoring. • Monitoring of all ground disturbance works associated with the construction of the development • Ensuring the appropriate course of action is taken in the event that archaeological material is discovered during the works • Liaison with the CMT throughout the Construction Phase of the project • Liaison with the Department Applications Unit, National Monuments Service, Department of Arts, Heritage and Gaeltacht and the Local Authority archaeologist as required.
Project Ecological Clerk of Works (EcCOW) (as required)	A Project Ecologist Clerk of Works may be engaged on an ad-hoc basis if required. The appointed Project Archaeologist Clerk of Works will be competent, qualified, and experienced. • Act as the contact for the Planning Authority and agree the frequency and number of site inspections and monitoring programme for the implementation of the biodiversity related mitigation of the planning documents including the CEMP • Act as the primary on-site ecological contact for the Primary Contractor (PC) and

Role	Responsibilities
	Site Manager (SM) regarding implementation of the Biodiversity related mitigation and enhancements • Ensure compliance with all Biodiversity related mitigation and enhancements • Request relevant records and documentation from the SM where necessary • Attend routine meetings with the SM • Keep detailed records of any ecological incidents and the remedies required and implemented. Report these to the PC and Planning Authority • The EcCoW shall produce the staged monitoring reports in agreement with the Planning Authority on the implementation of Biodiversity related mitigation and enhancements. The EcCoW shall submit these directly to the Planning Authority and to the PC. • The EcCoW shall also act as overall technical advisor to the PC and SM regarding the implementation of all Biodiversity related mitigation and enhancements.

5 PROJECT ENVIRONMENTAL POLICY

Liscove Limited recognizes and seeks to minimize the impacts of its business on the environment. The appointed contractor will be obliged to:

- Carry out the Project in full compliance with all applicable environmental regulations and to other requirements to which we subscribe;
- Implement good environmental practice as part of designs, e.g., carry out design reviews, risk assessments, etc. on all relevant projects;
- Prevent pollution from activities through a system of operational controls that include written instructions and staff training appropriate to the environmental requirements of their work;
- Continually improve Project environmental performance by setting objectives and targets and implementing them through an environmental programme;
- Informing all project employees about Environmental Policy and explaining what they are required to do to protect the environment; and
- Implement this Policy through the successful operation of the CEMP.

This policy will be reviewed periodically, considering current and potential future business issues.

5.1 Site Environmental Awareness

The following Site Environmental Rules will apply. These general rules will be communicated to all site personnel via the site induction training, and they will be posted across the site at strategic locations, such as the site entrance, canteen and near the entrances to buildings.

5.1.1 General Site Environmental Rules

- Report any signs of pollution or environmental damage, no matter how small, to the construction manager, environmental officer, or site supervisor.
- Report any spills, incidents or near misses that occur on site immediately to the site supervisor.
- Refuel using bunded mobile bowsers or static bunded tanks in designated, impermeable areas equipped with spill kits.
- Oil or lubricant changes and maintenance work will be carried out offsite.
- All waste must be sent to the designated site waste management areas for interim storage pending compliant removal from site. Do not dispose of anything into a drain, watercourse or onto land.
- Do not throw litter, all waste must be sent to site waste management contractor.
- As best-practice, all construction-related waste on site e.g., plastic sheeting, netting etc. must be kept in a designated area on site and kept off ground level to protect fauna from entrapment and death.
- Do not drive plant or machinery outside the authorized working boundaries of the site; and
- IF IN DOUBT, ASK THE CONTRACTED SITE SUPERVISOR AND/ OR ENVIRONMENTAL OFFICER FOR FURTHER INFORMATION.

The CMT will develop environmental procedures to control the potential impacts from the construction phase of the development. These procedures together with the site Environmental Policy will be made available in the main offices and in the main EHS information points at the site.

The training of site construction staff is the responsibility of the CMT. All personnel working on site will be trained in pollution incident control response. An environmental training programme will be organized for onsite personal to outline the CEMP and to detail the site environmental policy.

A summary of the main points of this CEMP will be incorporated into the site induction course.

Contractors shall verify the competency of all plant and equipment operators including those employed by sub-contractors.

An environmental audit and inspection programme will be developed by the Main Contractor to ensure compliance with the compliance measures identified in the CEMP.

5.2 Managing Environmental Incidents

All environmental incidents and complaints from members of the public / third parties will be handled appropriately, efficiently in compliance with the incidents and corrective action procedures to be developed by the Main Contractor. All follow up actions on the construction site will be managed by the CMT.

An environmental incident may include but is not limited to the following:

- Spillage of chemical, fuel or oil
- Fire
- Release of any contaminant to surface water, groundwater, air or soil
- Exceedance of noise limits
- Exceedance of dust limits

A record will be maintained on site of all incidents detailing the following as a minimum:

- Date, time, and duration of incident.
- Nature of the complaint/ incident (e.g., noise nuisance, dust nuisance etc.).
- Characteristics.
- Likely cause or source of incident.
- Weather conditions, such as wind speed and direction.
- Investigative and follow-up actions; and
- Root cause analysis and preventive actions.

All incidents will be investigated by the Environmental Officer and reported to the Construction Manager. Corrective and preventative actions will be implemented as required to ensure that the incident is effectively dealt with and to prevent a recurrence of the incident. Staff will be informed by toolbox talk of corrective and preventative actions implemented as relevant to their role or overall operations.

6 ENVIRONMENTAL IMPACTS AND CONTROLS

The environmental control measures that will be implemented during the Construction Phase are detailed in the following sections.

6.1 Potential Impacts of the Development

The CEMP is designed to implement mitigation measures to control impacts relating to:

- Biodiversity
- Land, Soil and Geology
- Hydrology and Hydrogeology
- Air Quality and Climate
- Noise and Vibration
- Landscape and Visual
- Archaeology and Cultural heritage
- Material Assets: Waste, Utilities and Traffic

This CEMP is to be read in conjunction with the relevant design drawings and reports relating to the Proposed Development.

The CEMP outlines the measures that will be implemented to prevent and mitigate any potential environmental issues that may arise during the Construction Phase.

6.2 Legal and Other Requirements

Where relevant obligations are identified, these will be adopted into the procedures, forms, plans etc. of the CEMP prepared by the Main Contractor.

For construction sites, any additional requirements of planning consents, statutory authorities and the client are identified and documented in the CEMP.

Where compliance obligations have been assessed and recorded, they will be re-reviewed when personnel become aware of relevant changes that impact directly on operations, or as a minimum quarterly where obligations have changed or where there have been significant changes in work type.

The CEMP prepared by the Main Contractor is regulated by a number of documents:

- Planning Conditions
- Environmental screening reports and mitigation measures.
- Environmental Impact Assessment Report (EIAR)

As with the CEMP, these documents specify the particular requirements that will be fulfilled during the construction of the project. All contractors involved in the project must comply with these documents.

6.2.1 Conditions of Planning Permission

This CEMP will be updated with any conditions of planning once granted.

6.3 Implementation of Control Measures

The CMT will be responsible for the implementation of control measures as identified in Section 6.4. The Main Contractor and all sub-contractors will comply with the requirements of the CEMP to document and seek approval for Method Statements, Permits and other site-generated documentation as requested.

This CEMP will form part of tender and contract documentation for each works contract. Requirements and responsibilities will be reviewed with each Contractor at inception meetings and at progress update meetings.

Any Contractor submitting a tender for the project must declare any legal proceedings with a regulatory authority, including the Environmental Protection Agency (EPA) or environmental agencies or competent authorities from other jurisdictions.

The Main Contractor shall ensure that all sub-contractors are supplied with a copy of the CEMP, receive sufficient environmental training and are aware of the environmental obligations of the project.

Environmental requirements will be controlled as follows:

- Procedures and control measures as set out in this CEMP.
- Approved Method Statements and Risk Assessments from Contractors which shall address all potential environmental impacts for the specific task.
- Detailed contractor plans for specific environmental aspects.
- Emergency response plans; and
- Specific induction training before commencing work.

In summary, it is expected that all contractors will follow good environmental practice throughout all activities.

6.3.1 Communication and Training - Construction Personnel

In addition to Contractor provided site induction, CMT are obliged to conduct safety meetings / toolbox talks on relevant Environmental Health and Safety EHS topics for all employees in their care on a weekly basis. Details of all safety meetings / toolbox talks, including topics and attendees must be submitted to the CMT.

6.3.2 Keeping of Records

Records pertaining to all aspects of the construction environmental management procedures outlined in this document will be maintained in the onsite Environmental Management File. Information stored in the Environmental Management File will include:

- Records of induction training for operatives, drivers, workers, and visitors.

- Attendance by site personnel and visitor logs
- The location of waste storage areas on site.
- The details of environmental incidents and near misses including incident investigation and corrective and preventative measures implemented.
- Records of environmental inspections completed during the Construction Phase to ensure compliance with the CEMP control measures.
- Copies of Safety Data Sheets (SDS)
- Complaints register.
- Records of the movement and recovery/disposal of all waste generated during the Construction Phase of the project to include date removed from site, waste type, quantities, waste carrier and off-site destination.

All records will be made available to Client and if requested, DLRCC and the EPA.

6.3.3 Monitoring, Audits, and Inspections

The Main Contractor will undertake regular inspection and monitoring of construction activities to ensure that the recommended mitigation measures are being correctly implemented and will support environmental protection by identifying potential environmental issues at an early stage to reduce the likelihood of significant effects on human health or the environment.

The Main Contractor will undertake inspections to address environmental issues including groundwater, surface water, dust, litter, noise, traffic, waste management and general housekeeping. These will be carried out on both scheduled and random intervals as agreed with the Client.

Monitoring required as a condition of any consent for discharges or water supply will be the responsibility of the appointed Contractor. The appointed Contractor will also be responsible for any additional monitoring that may be required by the Client.

The Client and/or an independent auditing consultants may undertake environmental audits at random intervals to ensure that all procedures, monitoring and recording/ reporting are being undertaken by the appointed Contractor as outlined in the CEMP. The findings of these audits, inspections and monitoring results will also be recorded in the CEMP.

6.3.4 Non-Conformance and Corrective and Preventative Action

Corrective Action Requests (CARs) will be issued by the CMT to those responsible for the implementation of corrective and preventative actions to ensure effective resolution of deviations from the CEMP requirements or to address environmental issues identified.

CARs may be raised as a result of:

- An internal or external communication such as a complaint.
- Internal audit.
- A regulatory audit or inspection.
- A suggestion for improvement; and
- An incident or near miss.

All corrective action requests will be numbered and logged and tracked to ensure completion.

6.4 Operation Controls

6.4.1 Biodiversity

All works will be undertaken in accordance with the procedures outlined in this CEMP, the EIAR and planning conditions to ensure the protection of local ecology or on any designated nature conservation sites associated with the Construction Phase of the Proposed Development.

The following construction mitigation measures will be implemented in relation to the protection of biodiversity (habitats and sensitive species and other key ecological receptors)

6.4.1.1 Protection of Badger and Other Protected Mammals

As the usage of the Proposed Development site by badgers and other protected mammals can change over time, a confirmatory pre-construction check of the Proposed Development site for new burrow entrances, resting places and signs will be carried out within 10-12 months before commencement of construction immediately prior to construction works commencing to confirm their usage by badger or other potential protected mammals. Any new badger setts (or resting places) identified will be afforded protection in line with the requirements set out in the National Roads Authority (2005) guidance document as follows:

- Badger setts if encountered will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage.
- In the season June to November, no heavy machinery will be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance will not take place within 10m of sett entrances.
- During the breeding season (December to June inclusive), none of the above works will be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts.
- Where works need to be undertaken within these zones, or where works directly affect newly identified badger setts, consultation with an ecologist with relevant badger management experience is required, and could include advanced badger mitigation measures such camera trapping to confirm sett status and sett closure / destruction, which must be undertaken outside the breeding season as per specialist advice, and will all be conducted under the supervision of an ecologist with experience in badger mitigation.
- Any potential new constraints (other protected mammals) identified will also be afforded protection in line with the requirements set out in the TII guidance documents and mitigated in line with the advice and supervision of an experienced ecologist as needed.

6.4.1.2 Protection of Bats

The proposed demolition works will be completed within one month (subject to planning consent). The demolition of the building confirmed as a bat roost will occur during the spring

or autumn periods, as the risk of accidental death or injury is lower at this time, as it is outside the main maternity season and hibernation season. Bats may use roosts in smaller numbers in winter for hibernation but may nevertheless be present.

There is confirmation of bat roost in building 4 for demolition. The following measures are proposed for demolition of the confirmed roost building (Building 4):

- Presence/absence of bats in the building will be determined by suitably qualified, experienced, and licensed ecologist(s) in advance of building demolition. Presence/absence will be determined by roost inspection checks (e.g. using an endoscope device) and a combination of dusk emergence and/or dawn re-entry surveys (if weather conditions are suitable).
- Immediately following completion of the above (the next day after dawn/dusk emergence surveys), the roofing will be removed under the supervision of the licenced bat ecologist during daylight hours. The bat worker will inspect the roof materials in advance of removal with a suitable device such as an endoscope.
- The contractor undertaking demolition works will facilitate safe access for the bat worker to the roof area of the building to allow inspection for roosting bats. Safe access may be facilitated via a scaffold, or via a Mobile Elevated Working Platform (MEWP) or similar.
- The demolition works will be conducted under the supervision of the licenced bat ecologist. In the event that bats are encountered during the works, they will be removed by hand, and transferred to a bat box, which will be installed on site in advance of works.

Regarding the retention and protection of vegetation, in the event where any of the trees showcasing PRFs require removal, pruning, or cutting, these will need to be checked in advance of pruning to confirm absence of roosting bats. Given the potential for PRFs to host roosting bats, the completion of tree works will be conducted under a derogation licence from the NPWS to disturb a bat or its roost and/or to remove/destroy a bat roost. In general, the checks of PRFs will proceed as follows:

1. PRFs will be inspected at height by an appropriately trained and qualified professional[1] with the use of an endoscope device or similar.
2. Where a PRF can be fully inspected and no evidence of bats is detected, the tree may be felled/pruned/cut immediately or on the same working day during daylight hours. As bats are mobile species and are known to ‘roost switch’ between different tree PRFs (Andrews, 2018), it is not appropriate to allow a larger passage of time between inspection of a feature and its removal due to the increased risk of occupancy by a bat.
3. Where a PRF can be fully inspected and a bat is identified roosting within the PRF[2], works on that particular tree will be suspended. The licensed ecologist will be engaged

[1] In general, an appropriately trained and qualified professional will either be i) a tree surgeon who has undergone tree roost inspection training and has a certificate issued by the trainer, or ii) a qualified and experienced bat ecologist who holds a Regulation 54(2)(d) derogation licence for roost disturbance and Wildlife Acts Section 9 & 23(6)(b) and Section 23&34 licences for disturbance of bats in their roosts.
[2] Where a bat is encountered by a tree surgeon, they should withdraw from inspecting said tree immediately in order to avoid triggering disturbance of a bat or its roost.

to complete a roost emergence and dawn re-entry survey of the PRF. The survey will be completed with equipment including recording bat detectors and night vision aids [e.g. infrared camera(s) or thermal imaging camera(s) of an appropriate specification to detect emerging/returning bats]. Where bats are confirmed to be absent, recommendation 2 (above) will apply. Where a bat roost is confirmed, the bat(s) will be allowed to leave the PRF or will be excluded from the PRF before the feature is removed. This may require multiple roost emergence, dawn re-entry, and roost inspection surveys.

4. Where a PRF cannot be fully inspected or where there is doubt as to whether bats are likely to be present, works will be suspended on that particular tree. A qualified ecologist will be engaged to complete a roost emergence and dawn re-entry survey of the PRF. The survey should be completed with equipment including recording bat detectors and night vision aids [e.g. infrared camera(s) or thermal imaging camera(s) of an appropriate specification to detect emerging/returning bats]. Where bats are confirmed to be absent, recommendation 2 (above) will apply. Where a bat roost is confirmed, the bat(s) will be allowed to leave the PRF or will be excluded from the PRF before the feature is removed. This may require multiple roost emergence, dawn re-entry, and roost inspection surveys

Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the proposed development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (National Roads Authority, 2006a).

Lighting proposals for the construction phase will adhere to the advice provided in Bats and Lighting – Guidance for Planners, Engineers, Architects and Developers (Bat Conservation Ireland 2010), Guidance Note GN08/23 Bats and Artificial Lighting at Night (Institution of Lighting Professionals & Bat Conservation Trust, 2023) and Guidance Note GN01/21 The Reduction of Obtrusive Light (Institute of Lighting Professionals, 2021). Construction stage lighting details will be reviewed by a qualified bat ecologist. If necessary, the bat ecologist will recommend adjustments to directional lighting (e.g. through cowls, shields or louvres) to restrict light spill in sensitive areas.

To protect bats from lighting associated with the Construction Phase of the Proposed Development, the following have been considered when choosing luminaires and are incorporated into the lighting design where appropriate. This is taken from the most recent BCT Lighting Guidelines (BCT, 2018):

- All luminaires used will lack UV/IR elements to reduce impact.
- LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).
- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.

- Luminaires will be mounted on the horizontal, i.e., no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- Accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.
- All luminaires shall have a Luminous Intensity Classification of between G4 and G6 to IS EN 13201- 2:2003(E)/BS 5489-1:2013 and recommendations of Institution of Lighting Professionals and Bat Conservation Trust 'Bats and Lighting in the UK' documentation and Bat Conservation Ireland Guidance Notes for Planners, Engineers, Architects and Developers December 2010.

Any Construction Phase external lighting should strictly follow the above guidelines.

The proposed external lighting scheme will be designed using LED fittings with high performance optics to provide visual comfort. The external lighting scheme will specifically respond to the landscape treatment and be sensitively designed to ensure minimum light pollution. Luminaires will be selected to ensure that when installed there shall be zero direct upward light emitted to the sky (all output shall be at or below 90° to the horizontal) to help prevent sky glow from light pollution in the night sky. The light emitted from these fittings shall have no photo biological risk and shall be categorised as 'Exempt Group' in relation to emissions of Blue light, Infrared and Ultra Violet Radiation in accordance with EN 62741:2008.

Provision of Alternative Roost Facilities On-site During and Post Development Works

As part of the mitigation measures, alternative roosts appropriate to the bat species recorded will be provided nearby within the proposed development site. For soprano pipistrelles these are tree crevice-type boxes, with 25-35mm crevices. Therefore, a combination of two Schwegler type 2F bat boxes and four Schwegler type 1FF flat bat boxes (or similar models) will be installed at a suitable location to be determined by the bat worker/ecologist within the site boundary.

The tree-mounted bat boxes will be installed either by the ecologist or by the contractor under the supervision of the ecologist. It is preferable that each box faces a slightly different aspect from southeast to southwest facing, to provide a range of slightly differing temperature regimes (Bat Conservation Ireland, 2015). All bat boxes will be installed at least 3m above ground level to minimise the risk of interference by humans. The bat boxes will be located away from areas that are subject to artificial light spill. All boxes will be installed prior to the commencement of demolition and construction works.

Measures for the Unforeseen Discovery of Roosts during Works

In the event of the unforeseen discovery of roosts during the construction of the proposed development all construction activities will cease in proximity to the discovered roost, and the bat specialist/ecologist contacted for advice. The local NPWS ranger will be contacted by the bat specialist/ecologist for an agreed approach.

Reporting to the NPWS

A report documenting adherence to measures within Section 5.6.1.4 of this report will be produced by the licensed ecologist and forwarded to the NPWS within three months of

completion of demolition works. The success of the proposed strategy will be measured by the mortality of any bats during construction, and the provision of alternative roosting sites in the lands during and after construction.

6.4.1.3 Protection of Breeding Birds

Any clearance of vegetation will be carried out outside the main breeding season, i.e. 1st March to 31st August, in compliance with the Wildlife Act 2000. Should any vegetation removal be required during this period, the NPWS will be consulted, and instruction taken from them.

If the buildings on site are to be demolished during the breeding bird season, the buildings will be inspected for breeding birds (e.g. Herring Gull, Swallows) prior to demolition. Should nesting birds be discovered, the nest will be protected until any nesting birds have fledged and departed the site.

6.4.1.4 Landscape Management Plan

The landscape design incorporates and supports a wide array of habitats and will include the planting of 1250 new native trees. The landscape design includes a multitude of habitat boxes to cater for birds, insects, and bats, as well as a series of raingardens and swales which will provide habitat for a variety of animals while also serving as water retention features. Also included in the design plan are wildflower meadows and woodland planting.

6.4.1.5 Protection of Retained Trees

Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the Proposed Development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (TII, 2006b), as follows:

- All trees along the Proposed Development boundary that are to be retained, both within and adjacent to the Proposed Development boundary (where the root protection area of the tree extends into the Proposed Development boundary), will be fenced off at the outset of works and for the duration of construction to avoid structural damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree. The RPA will be defined based upon the recommendation of a qualified arborist.
- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it.
- The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas will not be undertaken within 10m of any retained trees, hedgerows and treelines.
- A qualified arborist shall assess the condition of, and advise on any repair works necessary to, any trees which are to be retained or that lie outside of the Proposed Development boundary but whose RPA is impacted by the works. Any remedial works

required will be carried out by a qualified arborist.

- A buffer zone of at least 5m will be maintained between construction works and retained hedgerows to ensure that the root protection areas are not damaged.

Should the removal of any trees be required, this must take place in accordance with BS 5837:2012.

6.4.1.6 Timing of Vegetation Clearance

Table 6-1 provides guidance for when vegetation clearance and instream works are permissible. Information sources include the British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*.

Table 6-1 Seasonal restrictions on vegetation removal. Red boxes indicate periods when clearance/works are not permissible.

<table>
<tr><th>Ecological Feature</th><th>January</th><th>February</th><th>March</th><th>April</th><th>May</th><th>June</th><th>July</th><th>August</th><th>September</th><th>October</th><th>November</th><th>December</th></tr>
<tr><td>Breeding Birds</td><td colspan="2">Vegetation clearance permissible</td><td colspan="6"><u>Nesting bird season</u>
No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of nesting birds by an ecologist.</td><td colspan="4">Vegetation clearance permissible</td></tr>
<tr><td>Hibernating mammals (namely Hedgehog, excluding bats)</td><td colspan="3"><u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures per- mitted unless confirmed to be devoid of hibernating mammals by an ecologist.</td><td colspan="6">Vegetation clearance permissible</td><td colspan="3"><u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures permitted un- less confirmed to be devoid of hibernating mammals by an ecologist.</td></tr>
<tr><td>Bats</td><td colspan="8">Tree felling to be avoided</td><td colspan="2">Preferred period for tree- felling</td><td colspan="2">Tree felling to be avoided</td></tr>
</table>

The preferred period for vegetation clearance is within the month of October. Vegetation should be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., Hedgehog). Vegetation clearance should take place under the supervision of an ecologist to avoid any potential impact on bats, breeding birds, common lizards or mammals.

A suitably qualified ecological clerk of works (EcCoW) will be retained to ensure that the necessary measures of the CEMP and biodiversity related measures and/or enhancements

are implemented.

6.4.1.7 Preventing Spread of Non-Native Invasive Plant Species

While there were no non-native invasive species recorded in the Proposed Development site, there is potential for species to spread to the site during the interim between the original surveys and commencement of construction following grant of planning permission (if received). A confirmatory pre-construction invasive species survey will be undertaken by a suitably qualified specialist to confirm the absence, presence and/or extent of any Third Schedule non-native invasive species within the Proposed Development site. If the presence of any of these species is confirmed within the Proposed Development site, the implementation of an Invasive Species Management Plan prepared by a suitably qualified professional in line with TII guidelines (2020b) will be required.

If any invasive species are identified in the recommended pre-construction invasive species survey then the CEMP will be updated accordingly.

6.4.1.8 Biosecurity

In order to avoid the introduction of invasive species to the Proposed Development site during both the Construction and Operational Phases, the following measures will be adhered to:

- The contractor will be aware of any biosecurity issues and will inform sub-contractors through the induction process.
- Any vehicles which have been used in the management of invasive species are required to be cleaned before leaving the site of contamination, thereby not introducing the risk of cross contamination to other sites.
- Any material required on the site will be sourced from a stock that has been screened for the presence of any invasive species by a suitably qualified ecologist and where it is confirmed that none are present.
- Personnel working on contaminated sites will be made aware of their responsibilities in cleaning equipment and PPE before visiting site.

6.4.2 Land, Soil and Geology

6.4.2.1 Control of Excavated Soil and Contaminated Soil

Where possible, stockpiling of soils and subsoils onsite will be avoided. However, in the event that stockpiling is required, stockpiled materials, pending reuse onsite, will be located away from the location of any sensitive receptors (watercourses and drains). In accordance with Inland Fisheries Ireland guidelines, stockpiles will not be allowed within 30m of the open water where sufficient working areas are available within the site boundary.

The re-use of suitable cut material onsite for the Proposed Development (i.e., landscaping, raising levels or engineering fill) will be undertaken in accordance with the engineered design of the Proposed Development. Surplus or unsuitable soils will be removed offsite.

Surplus material, not suitable for reuse onsite, will be segregated, and stockpiled appropriately for removal offsite. For any excavated material identified for removal offsite, while assessment

and approval of acceptance at a destination re-use, recovery site or waste facility is pending, excavated soil for recovery/disposal shall be stockpiled as follows:

- A suitable temporary storage area shall be identified and designated.
- All stockpiles shall be assigned a stockpile number.
- Material identified for reuse onsite, offsite and waste materials will be individually segregated, and all segregation, storage and stockpiling locations will be clearly delineated on the site drawings.
- Soil stockpiles will be covered to prevent run-off from the stockpiled material generation and/or the generation of dust.
- Material identified for reuse on site, off site and waste materials will be individually segregated.
- Any waste that will be temporarily stored / stockpiled will be stored on impermeable surface high-grade polythene sheeting, hardstand areas or skips to prevent cross-contamination of the soil below or cross contamination with soil.
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust.
- Stockpiles will be a minimum of 30m from drains.

It is proposed that prior to any bulk excavation that samples will be taken of the subject area for the excavation to test for contamination and a suitable strategy will be drawn up and submitted to detailing the method of dealing with any contaminated material found.

Any contaminated soils that are encountered during the works will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1996- 2021, and associated regulations and guidance provided in Guidelines for the Management of Waste from National Road Construction Projects published by the National Roads Authority in 2008.

The provision of wheel wash facilities at the construction entrance to the development will minimise the amount of soil deposited on the surrounding road network.

Measures laid out in Section 6.4.3.1 (6.4.3.1Control of Fuel and Chemical Storage) will serve to prevent contamination of the soil from any potential oil and petrol leakages.

6.4.3 Hydrology and Hydrogeology

6.4.3.1 Control of Fuel and Chemical Storage

The storage and use of fuel and oils will be kept to a minimum at the site.

If small quantities of oils and chemicals oils are required at the site, the use of these will be strictly controlled in accordance with procedures outlined in this CEMP and storage will be avoided where possible. All tank, container and drum storage areas shall be rendered impervious to the materials stored therein. Bunds and storage areas shall be designed having regard to Environmental Protection Agency guidelines ‘Storage and Transfer of Materials for Scheduled Activities’ (EPA, 2004) and Enterprise Ireland Best Practice Guidelines (BPGCS005). All tank and drum storage areas shall, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

Any fuels retained on drip trays, mobile bunds, etc., will be emptied into a secure bunded waste oil drum to await appropriate disposal offsite.

Refueling of plant during the Construction Phase will be carried out in accordance with standard best practice. Refueling will only be carried out at the designated, impermeable refueling station location onsite with appropriate containment in place. This station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response Team will be appointed before the commencement of works at the Proposed Development site.

Where possible any oil and lubricant changes and maintenance will take place offsite. Only emergency breakdown maintenance will be carried out on site. Drip trays and spill kits will be available on site to ensure that any spills from vehicles are contained and removed offsite.

All personnel working onsite will be trained in pollution incident control response. Emergency silt control and spillage response procedures contained within the CEMP will ensure that appropriate information will be available on site outlining the spillage response procedures and a contingency plan to contain silt during an incident.

Provided that these requirements are adhered to, and site crew are trained in the appropriate refueling techniques, it is not expected that there will be any fuel/oil wastage at the site.

6.4.3.2 Control of Emissions to Surface Water and Drainage

Works carried out as part of the Proposed Development will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990.

Personnel working on the site will be trained in the implementation of environmental control and emergency procedures. The CEMP and the relevant documents produced will be formulated in consideration of standard best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;
- BPGCS005, Oil Storage Guidelines;
- CIRIA 697, The SUDS Manual, 2007;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004;
- Construction Industry Research and Information Association CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);
- CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

Silt traps, and silt fences will be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the Construction Phase. Surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing foul drainage network.

In addition, the following general measures will be undertaken:

- Where required, designated impermeable cement washout areas will be provided.
- Run-off from the working site or any areas of exposed soil will be channeled and intercepted at regular intervals for discharge to silt-traps or lagoons with over-flows directed to land rather than to a drain.
- Silty water generated on site will be treated using silt traps/settlement ponds and temporary interceptors and traps will be installed until such time as permanent facilities are constructed.
- Storm drain inlets which could receive stormwater from the project will be protected throughout the Construction Phase.
- A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.
- Any imported materials will, as much as possible, be placed on site in their proposed location and double handling will be avoided. Where this is not possible designated temporary material storage areas will be used.
- These temporary storage areas will be surrounded with silt fencing to filter out any suspended solids from surface water arising from these materials.
- Temporary hydrocarbon interceptor facilities will be installed and maintained where site Works involve the discharge of drainage waters to nearby drains.
- All containment and treatment facilities will be regularly inspected and maintained.
- All personnel working on site will be trained in pollution incident control response.
- If portaloos and/ or containerised toilets and welfare units will be used to provide facilities for site personnel, all associated waste will be removed from site by a licensed waste disposal contractor.

Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released into nearby drains.

6.4.3.3 Control of Emissions to Soil and Groundwater

Measures set out in Section 6.4.2 will also serve to protect soil and groundwater. In addition,

- No direct untreated point discharge of construction runoff to groundwater will be permitted.
- Where a pollution incident is detected, construction works will be stopped until the source of the construction pollution has been identified and remedied.
- Groundwater may be encountered during the construction works. Where water must be pumped from the excavations, water will be managed in accordance with best practice standards (i.e., CIRIA – C750) and regulatory consents.

- Any excavated and potentially contaminated stockpiled soils will be constructed/ located/ sheeted in a manner that ensures water is contained within the site boundary.

6.4.3.4 Foul Water Drainage

In order to reduce the risk of defective or leaking foul sewers, the following remedial measures will be implemented:

- All new foul sewers will be tested by means of an approved air test during the Construction Phase in accordance with Irish Waters Code of Practice and Standard Details.
- All private drainage will be inspected and signed off by the design Engineer in accordance with the Building Regulations Part H and BCAR requirements.
- Foul sewers will be surveyed by CCTV to identify possible physical defects.
- The connection of the new foul sewers to the public sewer will be carried out under the supervision of Irish Water and will be checked prior to commissioning.
- Prior to commencement of excavations in public areas, all utilities and public services will be identified and checked, to ensure that adequate protection measures are implemented during the Construction Phase.

6.4.4 Dust

The objective of dust control at the site is to ensure that no significant nuisance occurs from the Proposed Development. The following Dust Management Plan (DMP) has been formulated by drawing on best practice guidance from Ireland, the UK (BRE 2003), (The Scottish Office 1996) (UK Office of Deputy Prime Minister 2002) and the USA (USEPA 1997), (USEPA 1986).

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. The dust minimisation measures shall 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 through the use of best practise 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.

6.4.4.1 Site Management

- Regular inspections of the site and boundary will be carried out to monitor dust. Records and notes on these inspections should be logged.

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.

- Make the complaints log available to the local authority when asked.

- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.

- Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

6.4.4.2 Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep Site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover stockpiles to prevent wind whipping.

6.4.4.3 Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/ particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

6.4.4.4 Measures Specific to Demolition

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).

- Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.

- Avoid explosive blasting, using appropriate manual or mechanical alternatives.

- Bag and remove any biological debris or damp down such material before demolition.

6.4.4.5 Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.

- Use Hessian or mulches where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.

- Only remove the cover in small areas during work and not all at once.

- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

6.4.4.6 Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

6.4.4.7 Measures Specific to Trackout

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place.

- A speed restriction of 15 km/ hr will be applied as an effective control measure for dust for on-site vehicles.

- Avoid dry sweeping of large areas.

- Ensure vehicles entering and leaving sites are covered to prevent escape of materials

during transport.

- Record all inspections of haul routes and any subsequent action in a site logbook.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

6.4.5 Noise and Vibration

In order to control likely noise impacts caused by the Proposed Development, best available technology will be employed by the appointed Main Contractor to minimise noise from the construction operations and all comply with Safety, Health and Welfare at work (construction) Regulations 2006 to 2013, Safety Health and Welfare at Work Act 2005, BS 6187:2011 - Code of Practice for full and partial demolition, BS 5228:2009: A1:2014 *Parts 1 & 2 - Code of Practice for noise and vibration control on construction and open sites*, Environmental Protection Agency Act 1992 Sections 106-108, and all Local Authority specific requirements for this specific site.

6.4.5.1 Noise

BS 5228-1: A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, suggests an absolute construction noise limit depending on the receiving environment. The document states:

> "*Noise from construction and demolition sites should not exceed the level at which conversations in the nearest building would be difficult with windows shut…. Noise levels between 07:00 and 19:00 hrs, outside the nearest window of the occupied room closest to the site boundary should not exceed:*
>
> - *70dB in rural, suburban and urban areas away from main road traffic and industrial noise;*
> - *75dB in urban areas near main roads in heavy industrial areas*."

The 2004 TII document "Guidelines for the Treatment of Noise and Vibration in National Road Schemes" outlines the construction noise limit values, as listed in Table 6-1 Construction Noise Limits.

Table 6-1 Construction Noise Limits (Source: TII, 2004)

Days and Times	LAeq	LAsmax
Monday to Friday (07:00 to 19:00 hours)	70 dB	80 dB

Monday to Friday (07:00 to 20:00 hours)	60* dB	75* dB
Saturdays (08:00 to 16:30 hours)	65 dB	75 dB
Sundays & Bank Holidays (08:00 to 16:30 hours)	60* dB	65* dB

Note * Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the local authority.

A programme of monitoring will be put in place to monitor site activity and noise levels generated to ensure impacts to nearby residential noise sensitive locations are not significant.

6.4.5.1.1 Best Practice Guidelines for the Control of Construction Noise

BS 5228 (2009 +A1 2014) *Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*, provides guidance on the various aspects of construction site noise mitigation, including, but not limited to:

Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether or not said item can be replaced with a quieter alternative.

Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

The following work methods will be implemented to ensure minimal noise and vibration are generated at sources during the construction phases:

- All plant and equipment liable to create noise whilst in operation will, as far as reasonably practicable, be located away from sensitive receptors and neighbouring occupied buildings.

- For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.

- For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system.

- For percussive tools such as concrete breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker 'tool' and ensure any leaks in the air lines are sealed. Erect localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.

- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.

- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.

- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.

- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

- Any plant, equipment or items fitted with noise control equipment found to be defective will not be operated until repaired.

- Site deliveries will be confined to working hours and allocated offloading location will be utilized for all deliveries.

- Working hours will be confined to those stipulated in the grant of planning permission.

Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding with a mass per unit of surface area greater than 7 kg/m^2 can provide adequate sound insulation.

Liaison with the Public

A designated noise liaison officer (who may be the Environmental Officer referred to above) will be appointed to oversee the site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the liaison officer. In addition, prior to particularly noisy construction activity, e.g., demolition, breaking, piling, etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

Project Programme

The construction programme will be arranged to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling or breaking works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working

programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities.

6.4.5.2 Vibration

Ground vibration may also potentially occur during the construction phase. Vibration can be measured in terms of Peak Particle Velocity (PPV), this is expressed in millimetres per second (mm/s). Vibration standards can be considered in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. For example, vibration is perceptible at around 0.5mm/s in the case of road traffic, however at higher magnitudes, this vibration may become an annoyance.

Rock breaking and piling are considered the primary sources of vibration during the construction phase of a project. These would occur at higher levels of vibrations (up to 12mm/s and 6mm/s respectively), and this can be tolerated for events of a short duration.

Guidance relevant to the protection of building structures is contained in the following documents:

- British Standard BS 7385: 1993*: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration,* and;
- British Standard BS 5228: 2009+A1 2014: *Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.*

6.4.5.2.1 Vibration Mitigation Measures

The below measures will be taken to ensure that no significant vibration levels occur, and that all appropriate steps are taken to assist in effective vibration level management:

- Vehicle engines shall be switched off when not in use;
- Machines will be fitted with suitable silencers;
- Offsite fabrication;
- In method statement/risk assessment the contractor will highlight any activity that may cause significant vibration levels, and include measures in helping to mitigate these emission levels;
- Equipment is to be task-specific; and
- Best practice noise and vibration control measures will be employed by the contractor and screening provided to adjoining properties.

6.4.5.3 Monitoring of Noise and Vibration

The Main Contractor will monitor the likelihood of prolonged exposure to excessive noise and commission a noise surveying/monitoring programme where necessary.

In the first instance, it is envisaged that such audits will take place on a monthly basis. This will be subject to review and the frequency of audits may be revised if deemed appropriate.

The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration will be given to issues such as the following:

- Hours of operation being correctly observed;
- Opportunities for noise control 'at source';
- Optimum siting of plant items;
- Plant items being left to run unnecessarily;
- Correct use of proprietary noise control measures;
- Materials handling;
- Poor maintenance; and
- Correct use of screening provided and opportunities for provision of additional screening.

Noise and vibration monitoring reports will be maintained and made available to the Local Authority and members of the public on request.

6.4.6 Archaeology and Cultural heritage

It is possible that excavation works associated with the Proposed Development may have an adverse impact on small or isolated previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level. If any archaeological remains are discovered during this project, all works will cease, and an expert archaeologist will be brought to site and all future works will be carried out under the supervision of the archaeologist.

6.4.6.1 Monitoring

No specific monitoring measures are required in relation to archaeology and cultural heritage given the fact that it is not predicted that the Proposed Development will have any adverse impacts on any archaeological features or deposits.

6.4.7 Pest Control

During the Operational Phase of the Proposed Development, pest control measures will be put in place as required to ensure that pests such as flies, rodents or other vermin will not cause negative impacts at the facility or any facility surrounds. A professional pest control company will be employed by the Applicant if required. Pest control inspections will be carried out in compliance with the frequency detailed in any grant of planning conditions. Pest control inspections will also be carried out in compliance with the environmental management system

(EMS) / environmental management plan (EMP) specified as part of their license from the Environmental Protection Agency (EPA).

6.4.8 Material Assets: Waste, Utilities and Traffic

6.4.8.1 Control of Traffic

A Construction Traffic Management Plan (CTMP) will be prepared by the Main Contractor, which will outline proposals in relation to construction traffic and associated construction activities that impact the surrounding roads network. The document will be prepared in coordination and agreed with the local authority.

An Outline Traffic Management Plan details has been added into the Construction Management Plan by Atkins.

Below is a list of measures which may potentially be adopted during the construction works which are typically included in a detailed Construction Traffic Management Plan:

- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access;
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access and movement of construction vehicles will be restricted to these designated routes;
- Restriction of HGV movements during drop off and pick up times associated with the adjacent schools;
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on trucks carrying dust producing material;
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds within the site;
- Parking of site vehicles will be managed, and will not be permitted on public roads, unless proposed within that designated area that is subject to traffic management measures;
- A road sweeper will be employed to clean the public roads adjacent to the site of any residual debris that may be deposited on the public road leading away from the construction site;
- On site wheel washing will be undertaken for construction trucks and vehicles to remove any debris prior to leaving the site, to avoid any potential for debris on the local roads;
- All vehicles will be suitably serviced and maintained to avoid leaks or spillage of oil, petrol or diesel. Spill kits will be available on site. All scheduled maintenance carried out off site will not be carried out on the public highway; and,
- Safe and secure pedestrian facilities are to be provided where construction works obscure any existing pedestrian footway. Alternative pedestrian facilities will be provided in these instances, supported by physical barriers to segregate traffic and pedestrian movements, and to be identified by appropriate signage. Pedestrian facilities will cater for vulnerable users and mobility impaired persons.

Care will be taken to ensure existing pedestrian and cycling routes are suitably maintained or appropriately diverted as necessary during the construction period, and temporary car parking is provided for contractor's vehicles. It is likely that construction will have an imperceptible impact on pedestrian and cycle infrastructure.

Through the implementation of the CEMP and CTMP, it is anticipated that the effect of traffic during the Construction Phase will have a slight effect on the surrounding road network for short-term period.

6.4.8.1.1 Monitoring

During the Construction Phase the following monitoring is advised:

- Construction vehicles routes and parking
- Internal and external road conditions
- Construction activities hours of work

The specific compliance exercises to be undertaken in relation to the range of measures detailed in the final construction management plan will be agreed with the planning authority.

6.4.8.2 Control of Waste and Waste Management

A member of the construction team will be appointed as Construction Waste Manager to ensure commitment, operational efficiency, and accountability during the construction and demolition phases of the project. The Construction Waste Manager will be trained in how to set up and maintain a record keeping system, how to perform an audit, and how to establish targets for the waste management on site. They will be also trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site, and know how to implement the waste section of the CEMP.

Training of the site crew in effective waste management is the responsibility of the Construction Waste Manager. A waste training program will be organised at the commencement of the project. A basic awareness course will be held for all site crew to outline the CEMP and to detail the segregation of waste materials at source. This may be incorporated into the induction course or the safety-training course. This basic course will describe the materials to be segregated, the storage methods and the location of the waste storage areas. Asubsection on hazardous wastes will be incorporated and the particular dangers of each hazardous waste will be explained.

6.4.8.2.1 Construction Waste Manager Training and Responsibilities.

The nominated Construction Waste Manager will be assigned responsibility and authority to select a waste team if required, i.e., members of the site crew that will aid them in the organisation, operation, and recording of the waste management system implemented on site.

The Construction Waste Manager will have overall responsibility to oversee, record, and provide feedback to the client on everyday waste management at the site. Authority will be given to the Construction Waste Manager to delegate responsibility to sub-contractors, where

necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and salvage.

The Construction Waste Manager will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site.

6.4.8.2.2 Proposed Waste Management Options

Waste materials generated will be segregated on site where it is practical. Where the on-site segregation of certain waste types is not practical, off-site segregation will be carried out by the appointed waste management contractor. Skips and other receptacles will be provided to facilitate segregation at source.

The appointed waste contractor will collect the wastes as receptacles are filled. All waste contractors will be licensed under the *Waste Management Acts 1996 - 2008,* the *Waste Management (Collection Permit) Regulations 2007*(*as amended*). All waste arisings requiring disposal off-site will be transferred to waste facilities which are licensed under the *Waste Management (Facility Permit & Registration) Regulations 2007 (as amended)*.

It will be the responsibility of the Waste Manager to ensure that every Waste Contractor maintains a valid Waste Collection Permit for the duration of the contract and that the waste types being collected from the site are permitted by the permit and all destination sites are also permitted by the permit.

Typical non-hazardous and hazardous waste streams generated by construction and demolition at typical sites are shown below (Table 6-2) along with their accompanying European Waste Code (EWC) Classification.

Table 6-2 C&D Waste Materials Categorisation

Category	Description	Code
Non-Hazardous	Metals	17 04
	Wood, glass, plastic	17 02
	Soil, stones, dredged soils	17 05
	Gypsum based materials	17 08
	Cardboard	15 01 01
	Glass	17 02 02
	Bituminous mixtures, coal tar, tar products	17 03
	Concrete, bricks, tiles, ceramics	17 01
Hazardous	Electrical and Electronic Components	16 02
	Liquid Fuels	13 07
	Wood Preservatives	03 02
	Batteries	16 06
	Soil and stones containing dangerous substances	17 05 03
	Waste construction material containing asbestos	17 06 05

Category	Description	Code
	Other construction and demolition wastes containing dangerous substances	17 09 03

The classification of materials as non-hazardous and/or hazardous will be based on the www.hazwasteonine.com web based system as well as classification using Waste Acceptance Criteria in accordance with the European Communities (EC) Council Decision 2003/33/EC, which establishes criteria for the acceptance of waste at landfills.

The management of the main waste streams are detailed as follows:

6.4.8.2.2.1 Soil/Subsoil

Soil will be excavated to facilitate construction of foundations, access roads, the installation of site services and general landscaping. Where possible, excavated topsoil will be reused on site for landscaping. It is anticipated that any additional soil will be removed from the site for reuse, recovery and/or disposal as there are limited suitable onsite re-use options. Records of topsoil and soil storage, movements and transfer from site will be kept by the Waste Manager.

The Waste Management Hierarchy states that the most preferred option for waste management is prevention and minimisation of waste, followed by reuse and recycling/recovery, energy recovery (i.e., incineration) and, least favoured of all, disposal. The excavations are required to facilitate construction so the preferred option (prevention and minimisation) cannot be accommodated for the bulk excavation phase.

The next option (beneficial reuse) may be possible for some and potentially all of the inert natural material (Category A1). This material could be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end-use (e.g., in respect of sulphate content, pyrites etc.).

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*. Article 27 requires that certain conditions are met and that by-product decisions are made to the EPA, via their online notification form.

If the material is deemed to be a waste, removal and reuse/recycling/ recovery/disposal of the material will be carried out in accordance with the *Waste Management Acts 1996 - 2008*, the *Waste Management (Collection Permit) Regulations 2007* (*as amended)* the *Waste Management (Facility Permit & Registration) Regulations 2007 (as amended)*. The volume of waste removed will dictate whether a Certificate of Registration (COR), Waste Facility Permit or Waste Licence is required by the receiving facility.

Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27.

Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered. The option of disposal of inert natural material to landfill will only be considered once all available reuse options have been explored and where void capacity cannot be secured at appropriately permitted/licensed facilities for recycling or recovery purposes.

Any soil/subsoil that is deemed to be contaminated will be stored separately to the clean and inert soil/subsoil. The material will be appropriately tested and classified as either non-hazardous or hazardous in accordance with the EPA publication '*Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' 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.*

6.4.8.2.2.2 Concrete, Bricks, Tiles & Ceramics

Any concrete, bricks, tiles and ceramics waste generated as part of the construction works is expected to be clean, inert material and will be recycled, where possible.

6.4.8.2.2.3 Hard Plastic

Hard plastic is a highly recyclable material and the majority of the plastic generated will be from new material off-cuts. All recyclable plastic will be segregated, where suitable, to improve its recovery quality.

6.4.8.2.2.4 Timber

Timber that is uncontaminated, i.e., free from paints, preservatives, glues etc., will be segregated and stored in skips for timber recycling.

6.4.8.2.2.5 Metal

Metals will be segregated into mixed ferrous, cladding, aluminium, high grade stainless steel, low grade stainless steel etc., where practical. Metal is highly recyclable and there are numerous companies that will accept these materials. Metals will be segregated and stored in skips.

6.4.8.2.2.6 Plasterboard

There are currently a number of recycling services for plasterboard (gypsum) in Ireland. Plasterboard from the Construction Phase will be stored in a separate skip, pending collection for recycling. The site manager and project engineers will ensure that supply of new plasterboard is carefully monitored to minimise waste.

6.4.8.2.2.7 Glass

Glass materials will be segregated for recycling, where possible.

6.4.8.2.2.8 Organic (Food) Waste

Where a site canteen is provided in which food is prepared for the workers, organic waste will be segregated for separate collection. Segregation at source and separate collection of organic waste is required in accordance with the *Waste Management (Food Waste) Regulations 2009* (if food is prepared on the site).

6.4.8.2.2.9 Waste Electrical and Electronic Equipment (WEEE)

Waste Electrical and Electronic Equipment (WEEE) (containing hazardous components), printer toner/cartridges, batteries (Lead, Ni-Cd or Mercury) and/or fluorescent tubes and other mercury containing waste may be generated during demolition activities or from temporary site offices. These wastes (if encountered) will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

6.4.8.2.2.10 Other Recyclables

Where any other recyclable wastes such as cardboard, soft plastic are generated in sufficient quantities, these will be segregated into dedicated skips or other receptacles.

6.4.8.2.2.11 Non-Recyclable Waste

Construction and Demolition (C&D) waste which is not suitable for reuse or recovery will be placed in separate skips or other receptacles. This will include polystyrene, some cardboard, and plastic which are deemed unsuitable for recycling (e.g., if contaminated). Prior to removal from site, the non-recyclable waste skip/receptacle will be examined by a member of the waste team to determine if any recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle and a procedure put in place to avoid a repetition.

6.4.8.2.2.12 Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e., contaminated soil, if encountered and/or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered wherever possible and, failing this, disposed of appropriately. It will be noted that all liquid wastes are to be stored in bunds.

6.4.8.2.2.13 Asbestos

It is not anticipated that any asbestos will be present on site, however, if discovered, the removal of asbestos will be carried out by a suitably qualified contractor in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010. All material will be taken to a suitably licensed or permitted facility.

6.4.8.2.3 Record Keeping

Records will be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the construction waste arisings on site.

A copy of the Waste Collection Permits, Certificates of Registration, Waste Facility Permits and IED or Waste Licences will be maintained on site at all times.

The Construction Waste Manager or designate will record the following:

- Waste removed for reuse off-site;
- Waste removed for recycling;
- Waste removed for disposal;
- Recovered waste materials brought on-site for reuse; and
- By-product material brought onto site.

For each movement of waste on or off-site, a signed docket will be obtained by the Construction Waste Manager from the contractor, detailing the weight and type of the material and the source and destination of the material.

This will be carried out for each material type. This system will also be linked with the delivery records. In this way, the percentage of C&D waste generated for each material can be determined.

The system will allow the comparison of these figures with the targets established for the recovery, reuse and recycling of C&D waste and to highlight the successes or failures against these targets.

6.4.8.2.4 Review of Records and Identification of Corrective Actions

A review of all the records for the waste generated and transported on or off-site will be undertaken mid-way through the project. If waste movements are not accounted for, the reasons for this will be established in order to see if and why the record keeping system has not been maintained.

The waste records will be compared with the established recovery/reuse/recycling targets for the site.

Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

6.4.8.2.5 Responsibility for Waste Audit

The appointed Construction Waste Manager will be responsible for conducting waste audits at the site during the C&D phase of the development.

6.4.8.2.6 Financial Issues of Waste

An outline of the costs associated with different aspects of waste management will be recorded and measured for the Proposed Development, and will consider handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

6.4.8.2.6.1 Reuse/Recovery

By reusing materials on site, there will be a reduction in the transport and disposal costs associated with the requirement for a waste contractor to take the material away to landfill. Clean and inert soils, gravel, stones etc. which cannot be reused on site may be used as capping material for landfill sites, or for the reinstatement of quarries etc. This material is often taken free of charge for such purposes, reducing final waste disposal costs.

6.4.8.2.6.2 Recycling

Salvageable metals will earn a rebate which can be offset against the cost of collection and transportation of the skips. Clean uncontaminated cardboard and certain hard plastics can be recycled. Waste contractors will charge considerably less to take segregated wastes such as recyclable waste from a site than mixed waste. Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated wastes such as timber from a site than mixed waste.

6.4.8.2.6.3 Disposal

Landfill charges in the Leinster region are currently at around €120/tonne (includes a €75 per tonne landfill levy introduced under the Waste Management (Landfill Levy) (Amendment) Regulations 2015). In addition to disposal costs, waste contractors will also charge a collection fee for skips. Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc. is also used as fill/capping material wherever possible.

7 SITE TIDINESS & HOUSEKEEPING

Further to the measures described in the previous sections, the following measures will be implemented to maintain site tidiness.

- Construction works will be carried out according to a defined schedule agreed with CMT. Any delays or extensions required will be notified at the earliest opportunity to CMT.
- Contractors will ensure that road edges and footpaths are swept on a regular basis.
- All Contractors will be responsible for the clearance of their plant, equipment, and any temporary buildings upon completion of construction.

The site will be left in a safe condition and site security will be managed in accordance with the details specified in the RWMP and the control measures outlined in Section 6.4 of this CEMP.

8 EMERGENCY PLANNING AND RESPONSE

The purpose of the CEMP is to address the potential emissions from the site, and implementing any necessary mitigation measures to ensure that there will be no negative impact on the receiving environment. The Main Contractor will ensure that all works are carried out consistent with existing emergency response plans and procedures.

8.1 Environmental Emergency Preparedness and Response

The control measures identified in this CEMP, once correctly implemented, will reduce the likelihood of the occurrence of an environmental incident (emergency).

A procedure for Environmental Emergency Preparedness and Response will be developed prior to the commencement of the Construction Phase and will be implemented by the CMT.

The Environmental Emergency Preparedness and Response Procedure will ensure that all countermeasures proceed in a controlled manner so that greater damages are avoided and the possible effects upon persons, the environment and property are avoided or limited.

All general emergency response actions will be posted at strategic locations, such as the site entrance, canteen and near the entrances to buildings.

As per Sections 5.2 and 6.3 of this CEMP, once an environmental incident has been responded to, the processes identified in the incident investigation, and the non-conformity, corrective, and preventative action procedures will be adhered to with all details pertaining to the incident recorded in the site environmental register.

As an example of emergency response actions required, in the event of a spillage, the following procedure shall be followed:

1. IF SAFE (USE PPE), stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
2. IF SAFE (USE PPE), contain the spill using the absorbent spills material provided. Do not spread or flush away the spill.
3. Cover or bund off any vulnerable areas where appropriate.
4. If possible, clean up as much as possible using the absorbent spills materials.
5. Do not hose the spillage down or use any detergents.
6. Contain any used absorbent material so that further contamination is limited.
7. Notify the Environmental Officer so that used absorbent material can be disposed of using a licensed waste contractor.
8. An accident investigation should be performed in accordance with procedures and the report sent to the Environmental Officer.

In the event of spillages or other incidents, steps will be taken to prevent environmental pollution. For example, through the protection of drains by use of drain covers or booms, use of absorbent granules following an oil / chemical spill, and turning off equipment or other sources of noise or dust.

Once the situation has been rectified, full details about the incident and remedial actions undertaken will be provided to the local authority and all other relevant authorities and recorded in the site environmental register.

9 ENVIRONMENTAL REGULATORY REQUIREMENTS

This site environmental legal register will record regulatory and legal requirements, and summarise applicable environmental legislation, (as well as other requirements) that the project must adhere to. The legal register will be available through the construction manager's office on site.

A typical register of environmental legislation is divided into a number of categories, which include:

- General Environmental Legislation;
- Flora & Fauna;
- Emissions to Air;
- Emissions to Water & Groundwater;
- Waste Management; and
- Noise & Vibration.

For each piece of legislation, the following information is provided:

- Index Number;
- Title of Legislation;
- Summary of Legislation; and
- Relevance.

All legislation included in the Register can be readily accessed on http://www.irishstatutebook.ie or will be available through the construction manager's office.

The Register of Legislation will be reviewed and updated on a minimum six-monthly basis. This is a controlled document and as such will comply with all the requirements of the Contractor document control procedures.

10 REFERENCES

Construction Industry Research and Information Association (CIRIA), 2001. Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors.

Construction Industry Research and Information Association (CIRIA), 2005. Environmental Good Practice on Site (C650).

Construction Industry Research and Information Association (CIRIA), 2006. Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006) (C648).

Construction Industry Research and Information Association (CIRIA), 2007. The SUDS Manual (C697).

Enterprise Ireland - Best Practice Guidelines (BPG CS005). Oil Storage Guidelines.

Environmental Protection Agency (2004) IPC Guidance Note - Guidance Note on Storage and Transfer of Materials for Scheduled Activities.

Environment Agency, 2004. UK Pollution Prevention Guidelines (PPG) UK.

Health and Safety Authority (2016) Code of Practice for Avoiding Danger from Underground Services
https://www.hsa.ie/eng/publications_and_forms/publications/construction/cop_avoiding_danger_from_underground_services_.pdf

Enviroguide CONSULTING

enviroguide.ie

Head Office
3D, Core C, Block 71, The Plaza, Park West, Dublin 12, D12F9TN, Ireland.
Tel: +353 1 565 4730
Email: info@enviroguide.ie

South West Regional Office
19 Henry Street, Kenmare, County Kerry, V93 CVH0, Ireland.
Tel: +353 646 641932
Email: info@enviroguide.ie

South East Regional Office
M10 Wexford Enterprise Centre, Strandfield Business Park, Rosslare Rd, Strandfield, Kerlogue, Co. Wexford, Y35 W5RD, Ireland.
Tel: +353 1 565 4730
Email: info@enviroguide.ie

Environmental Consultancy Services