Appendix 9

Construction Activities

Appendix 5.1

Construction Environmental Management Plan (CEMP)

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1. Introduction

1.1 Introduction

This Construction Environmental Management Plan (CEMP) summarises the overall environmental management strategy that will be adopted and implemented during the construction phase of the Ringaskiddy Resource Recovery Centre, hereafter referred to as the proposed development. The purpose of the CEMP is to demonstrate how the proposed construction works can be delivered in a logical, sensible and safe sequence with the incorporation of specific environmental control measures relevant to construction works of this nature. The CEMP sets out the mechanism by which environmental protection is to be achieved during the construction phase of the proposed development. Implementation of the CEMP will ensure disruption and nuisance are kept to a minimum.

The CEMP has been prepared in accordance with industry best practice guidance including:

- TII's Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan;
- Construction Industry Research and Information Association (CIRIA) in the UK, *Environmental Good Practice on Site Guide, 5th Edition* (CIRIA 2023).

The CEMP has been prepared in conjunction with the Environmental Impact Statement (EIS) and Natura Impact Statement (NIS), having regard to consultations with a range of specialists and environmental organisations. The full suite of construction mitigation and monitoring measures documented in the EIS and NIS have been included in their entirety in **Section 16** of this CEMP.

Further details on the information included in the CEMP are presented below:

- General Project Details;
- Contact Sheets;
- Reference Documents;
- Organisational Structure/Duties and Responsibilities;
- Environmental Commitments and Environmental Control Measures;
- Site Specific Method Statements/Management Plans;
  - Construction Waste Management Plan;
  - Construction Stage Health & Safety Plan;
  - Incident Response Plan;
  - Construction Traffic Management Plan;
- Environmental Awareness Training Strategy;
- Communications Strategy;
- Inspections, Auditing and Monitoring Compliance Strategy;
- Final Handover

The CEMP is a working document and will be finalised by the Contractor following appointment and prior to commencing works on site. All of the content provided in this CEMP will be implemented in full by the Contractor and the finalisation of the CEMP by the Contractor will not affect the robustness and adequacy of the information presented here.

In addition to the items listed above, the following information will also be provided by the Contractor when finalising the CEMP:

- Planning Consent - All relevant planning conditions will be included in the CEMP.
- Industrial Emissions Licence Consent - any relevant licensing conditions will be included in the CEMP.
- Comprehensively incorporate all Environmental Commitments set out in the Contract documents (with the Contractor).
- Relevant Environmental Performance Criteria prescribed in environmental legislation and in Contract documents.
- Register of all applicable legislation, including relevant standards, Codes of Practice and Guidelines.
- Description of the Environmental Management System of the proposed development, which shall be devised according to the criteria of ISO 14001:2004 – Environmental Management Systems. The CEMP will be complemented by General Procedures, Work Procedures and Operations Instructions. These documents will be in place within the site administration offices and appropriate site locations during works.

The CEMP is a dynamic document, and the Contractor will ensure that it remains up to date for the duration of the construction period.

The CEMP may need to be altered during the lifecycle of the construction period to take account of monitoring results, legislative changes, outcomes of third-party consultations etc. Additional appendices may be added to the CEMP to accommodate monitoring results, permits etc. All of the content provided in this CEMP will be delivered in full by the Contractor and the finalisation of the CEMP by the Contractor will not affect the robustness and adequacy of the information presented here. It should also be noted that there will be other project documentation required to meet other regulatory requirements e.g. Health & Safety and Quality. These other documents will serve to inform and complement the CEMP (such as the construction stage Health and Safety Plan and the Quality Plan) and within the overall project structure these documents are maintained on an equal footing.

In order to help ensure the successful development, implementation and maintenance of the CEMP, the Contractor will be obliged to appoint a Site Environmental Manager (SEM). The SEM will possess sufficient training, experience and knowledge appropriate to the nature of the task to be undertaken, a Level Eight qualification recognised by the Higher Education and Training Awards Council (HETAC), or a University equivalent, or other qualifications acceptable to Indaver, in Environmental Science or Environmental Management, or other subjects acceptable to Indaver. Further details on the roles and responsibilities of the SEM are provided throughout this document.

The Contractor will be required to submit the CEMP to Indaver after receiving notice of Commencement of Works from Indaver and at least two weeks prior to the start of works on site. In order to help fulfil his/her duties under the Contract, Indaver will carry out an audit of the CEMP at sufficient intervals to ensure that the main Contractor is complying with the environmental provisions of the Contract.

If a Project Extranet is being established, an electronic version of the CEMP will be placed on this site to allow members of staff of the Contractor, and Indaver monitor and view the CEMP.

2. Contract Procurement

A decision on the exact contractual arrangements for the construction of the proposed development has not yet been made. The Contractor for the works will be contractually bound within the contract by any conditions arising from the site constraints, the commitments and mitigation measures detailed in **Section 16** below, Indaver's requirements for the proposed development, planning conditions and any modifications that may be imposed on the proposed development by the EPA and or other Statutory Regulations. Prior to the commencement of construction, the CEMP will be finalised by the Contractor, approved by Indaver and submitted to Cork County Council for agreement.

3. The Proposed Development

3.1 Overview

The proposed development will consist principally of a waste-to-energy facility (waste incinerator) for the treatment of up to 240,000 tonnes per annum of residual household, commercial and industrial non-hazardous and hazardous waste and the recovery of energy. Of the 240,000 tonnes of waste, up to 24,000 tonnes per annum of suitable hazardous waste will be treated at the facility. The proposed development will maximise the extraction and recovery of valuable material (in the form of ferrous and non-ferrous metals) and energy (in the form of 21 megawatts of electricity) resources from residual waste.

In addition to the provision of the waste-to-energy facility, the proposed development will include an upgrade of a section of the L2545 road, a connection to the national electrical grid, an increase in ground levels in part of the site, coastal protection measures above the foreshore on Gobby Beach and an amenity walkway towards the Ringaskiddy Martello tower.

3.2 Site Location

The site for the Ringaskiddy Resource Recovery Centre is located approximately 15km to the south-east of Cork City, in the townland of Ringaskiddy on the Ringaskiddy Peninsula in the lower part of Cork harbour. Refer to **Figures 1.1** and **1.2** in **Volume 3** ***Figures*** of this EIS which show the site location.

The L2545, the main road from Ringaskiddy village to Haulbowline Island forms the northern boundary of the site. The eastern boundary of the site extends to the foreshore of Cork harbour along Gobby Beach.

The lands to the immediate south are in agricultural use. The M28 Cork to Ringaskiddy project is currently being constructed within the lands to the west of the site.

The site surrounds the Hammond Lane Metal Recycling Co Ltd facility. The site is located approximately 800m east of the village of Ringaskiddy.

4. General Construction Strategy

4.1 Duration and Activities

4.1.1 Overview

The schedule for the construction and commissioning of the Resource Recovery Centre is approximately 31 months.

The road upgrade, associated road drainage and diversions of services will take circa ten weeks to complete. The diversion to the 220kV underground cables, if required would take circa four additional weeks. It is anticipated that the road upgrade, associated road drainage and diversions of services will proceed in advance of the main construction of the Resource Recovery Centre. Refer to **Section 4.1.2** below for further details. Of the 14-week duration period, Gobby Beach car park may need to be closed for up to six weeks to facilitate the construction works. However, access to the beach will be maintained for the duration of the works.

The placement of the sacrificial beach material (shingle) required for the coastal protection works will take approximately three weeks to complete. Refer to **Section 4.2.3** below for further details. It is envisaged that the coastal protection works will be undertaken towards the end of the construction phase.

It is envisaged that the main stages of construction will be as follows:

- Implement Japanese Knotweed management plan for construction phase, continue monitoring and/or treatment as required. Note, advance knotweed treatment commenced in 2017 and during the 2024/2025 site surveys no evidence of active growth was recorded. However, monitoring and/or treatment will continue up to the start of construction and thereafter until construction is complete (Refer to **Section 10** below for further details).
- Construct temporary road to south of existing L2545 road
- Upgrading the section of the L2545 road at the northern boundary, including upgrading the drainage and diversion of services.
- Construction of new site entrance
- Diversion of existing services within the site such as the overhead power lines.
- Strip topsoil and vegetation, with topsoil stockpiled appropriately in the western field
- Bulk excavations and general site re-grading, including placing of fill in western field
- Establish the initial contractor site compound, including the construction phase power supply, fencing and securing of the site
- Construction of earth retaining structures, which will happen in tandem with bulk excavations and general site re-grading.
- Establish main contractors' compounds and laydown areas
- Construction of structural platforms
- Construction of foundations for main process building
- Construction of bunker, underground holding tanks and drainage/underground services.
- Construction of ground floor slab of main process building
- Installation of plant and equipment, which will be undertaken in tandem with external and internal completions and finishes.

- Erection of superstructure of main process building
- External and internal completions and finishes of main process building
- Construction of substation, administration building and other ancillary buildings
- Installation of external plant and equipment
- Construction of internal roads and parking areas
- Underground services
- Surface water drainage system
- Foul drainage system
- Connection to existing water and foul services
- Fit-out and commissioning buildings and equipment
- Erection of site fencing
- Site landscaping
- Placing of sacrificial material on the beach at the toe of the glacial till face at the eastern boundary of the site
- Removal of contractor facilities and site hoarding

4.1.2 L2545 Upgrade and Drainage Upgrade

Introduction

The proposed upgrade works to a section of the L2545 local road, which adjoins the northern boundary of the site, will consist of raising a section of the road to a maximum elevation of 3.495mOD, installing large diameter pipes to provide storm water storage, upgrading the surface water drainage, and will include any necessary works to the wall at the northern side of the road (on lands owned by Indaver). The likely duration of the works will be 14 weeks in total, including the diversion of underground cables. This work will be undertaken in advance of the main construction works. A summary is provided below.

Outline description of L2545 upgrade – increase in road levels

The proposed L2545 upgrade works will include raising a 190m section of the road to a maximum height of 3.495mOD between the car park and the eastern end of the Hammond Lane Metal Company. This is approximately 0.9m above the existing road level. The road will be raised over a length of approximately 190m in order to ensure a smooth transition down to existing road levels, in accordance with road design standards. The recently constructed shared use path on the northern side of the road will also be raised to the new road level.

Outline description of L2545 drainage upgrade

The proposed road drainage network upgrade will extend along the entire northern boundary of the Indaver site. The increased storage will be in the form of oversized pipes placed underneath the road. This is described further below.

A new linear concrete surface water channel, 260m in length, will extend from the western boundary (of the western field area) of the Indaver site, running along the southern edge of the L2545 until it meets the entrance to the Hammond Lane Metal Company. This section of the L2545 is currently super-elevated – i.e. the camber on the road falls from north to south, therefore surface water drains to the south. This section of the L2545 will not be raised. The new surface water channel will be integrated with the existing gully system located on the L2545, which connects to the existing 450mm diameter surface water sewer beneath the road.

The raised section of the L2545 between the car park and the eastern end of the Hammond Lane Metal Company will be drained by a kerb and gully sealed drainage system which will be connected to two new surface water pipes underneath the road.

The two 1500mm diameter pipes will be approximately 190m in length and will provide 660m^3 of surface water storage. There will be three large concrete chambers constructed on the line of the twin surface water pipes at the start middle and end of the run. The first two chambers will be situated in the road and the terminal chamber will be constructed at the entrance to the car park by Gobby Beach. The surface water drainage system on the Haulbowline road will be diverted into the terminal chamber. This chamber will be connected to the existing 450mm diameter surface water sewer via a short length of new 450mm diameter pipe, a new Class 1 bypass hydrocarbon interceptor and a new manhole constructed on the line of the existing pipe. This will allow the upgraded surface water drainage system to discharge to sea via the existing 450mm surface water outfall at Gobby Beach.

All of the above works will be within Indaver ownership, apart from a small area in Hammond Lane ownership. Consent has been given by Hammond Lane to undertake these works.

Outline description of existing services along L2545

The known underground services are a 450mm diameter watermain, 220kV electricity cables, 4 bar gas distribution main, public lighting cables, Eircom underground cables, Enet fibre optic cables, private foul sewer and surface water drainage pipes. There is also an overhead electricity cable crossing the road.

Outline description of construction works required for L2545 upgrade

A construction traffic management plan will be implemented by the appointed Contractor in advance of commencing the works on site. Refer to **Section 12** below for further details.

Whilst the construction of the road upgrade and associated drainage upgrade can proceed in parallel with the construction of the waste to energy facility, the raising of the levels of the western field lands would require the road drainage works to be complete. Therefore, it is anticipated that the road upgrade and drainage works would be commenced at the beginning of the project and progressed to completion as soon as possible.

The first task of the road upgrade will be to construct a temporary two-way road, approximately 250m long, to the south of the existing road to create working space for the construction of the raised section of the road, the upgraded drainage system and the diversion of services. The traffic will be diverted onto the temporary road until the upgrade works have been completed, with local provision made for access to the site to the north of the works as required during construction.

The construction traffic management plan will incorporate a temporary traffic management plan in accordance with Chapter 8 of the *Traffic Signs Manual (Department of Transport 2019)*. An initial site compound and site offices will be provided within the Indaver site to provide facilities for the workforce for the road upgrade works.

The existing services running along and adjacent to the road will be carefully set out and suitable working methods will be employed to ensure that the existing services are protected during construction.

There is an overhead electricity line crossing the road, however, only a marginal increase in road level (circa 100mm) is proposed at this location.

The public lighting columns at the northern edge of the shared use path, on the northern edge of the road, will have to be raised to match the new road level and the associated duct chambers will also be raised to match the new shared use path level.

New Eircom ducting is proposed for the northern road verge to allow Eircom cables to be locally diverted within the road. The gas distribution main will also be locally diverted within the road. The existing surface water drainage from the Haulbowline road will be diverted into the new surface water system. The 450mm diameter watermain will also be diverted along the section of road to be raised between the car park and east of Hammond Lane. This work will be undertaken in consultation with Cork County Council. All of the utilities providers have been consulted in relation to the proposed diversions.

The 220kV power lines and corresponding ESB telecoms fibre optics cables beneath the L2545 will need to be raised as a result of the raising of the L2545. Both ESBN and EirGrid have been consulted in relation to the proposed works. ESBN have determined that the power capacity of the cables will be de-rated because of the works. The worst-case option in terms of potential effects would involve diverting the cables into new ducts laid at a higher-level underneath the raised section of road. Three new joint bays would be required to allow the raised cable to be jointed back to the existing cables at either end and to join the short length of new cable to the recovered length of cable respectively. The joint bays would be located in the existing road.

Diversion works to the remaining services are not envisaged, however some protection measures, such as cover slabs, may need to be employed.

Due to the presence of the existing services, it may not be possible to batter back the excavation for the large drainage pipes and therefore suitable trench supports e.g. sheet piles or large trench boxes may be used.

The 1500mm diameter pipes and the other pipes, road gullies and new underground services, including the new ducts and joint bays for the potential 220kV cable diversion will be installed and the trenches backfilled, and the new road surfacing will be laid using normal construction methods and in compliance with the requirements of Cork County Council and Transport Infrastructure Ireland (TII) specifications. A temporary road surface will be provided which will be replaced with the permanent surface once the main construction project has been completed.

Provision for the site connections to the water main, telecommunications infrastructure and surface water and sanitary (foul) sewers will be made during road upgrade works.

Materials required

The road upgrade will involve the following quantities of bulk materials:

- Excavation of circa 3,050m^3 unsuitable material including circa 225m^3 bituminous macadam,
- Importation of 1,400m^3 pipe bed and surround material,
- Import 1,400m^3 select granular fill for new road construction,
- Importation of 370m^3 asphalt for new road.
- Importation of 1,000m^3 select granular fill for temporary road construction.

The imported granular fill for the construction of the temporary road may be reused for the construction of internal site roads.

Details on materials import and export requirements and disposal are provided in **Section 4.3** below.

4.2 Site Preparation Works

Once the road upgrade has been completed, the site preparation will commence with the establishment of safe access and site roads. A perimeter fence will be erected around the construction site. Re-grading work will be required. Where feasible, excavated material will be retained on site, either in the eastern area or western field, for re-use as bulk fill or for landscaping. Details on material export requirements and disposal are provided in **Section 9** below.

All traffic movements associated with the import and export of materials have been included in the construction traffic impact assessment.

It is anticipated that the bulk excavation will take approximately six months. The central part of the site for the waste-to-energy facility will require significant earth retaining structures. These will be constructed in tandem with the bulk earthworks and re-grading.

The material to be removed will comprise overburden and rock. The bedrock is comprised of sandstone/siltstone and mudstone. The top 0.5m to 1m of the bedrock is weathered and it is expected that it can be removed using a large excavator. It is expected that the remainder can be removed using chisel or hammer-operated rock breakers. It is anticipated that blasting will not be required.

Rock crushing may be undertaken on site in order to make the excavated rock suitable for re-use as general fill. Crushed stone will need to be imported onto site. Materials required from quarries will only be sourced from quarries which are listed on the register maintained by the local authority. Further details on material import requirements are provided in **Section 4.3** below.

Site preparation works will also include the facilities for the contractors and the construction management team. These will include the following:

- Setting up of access control to the site.
- Site offices.
- Site facilities (canteen, toilets, drying rooms, etc.).
- Offices for construction management team.
- Secure compound for the storage of all on-site machinery and materials.
- Temporary car parking facilities.
- Permanent and temporary fencing.
- Site Security.

The western field will be used for the construction laydown areas and the construction facilities, following an initial phase of earthworks to raise the ground levels in this area.

4.2.1 Main Construction Works

Once site levels have been established by the initial bulk excavation works and construction of the retaining structures, the construction of the waste-to-energy facility will commence with the construction of the foundations for the building and equipment, the bunker and the tanks and services to be located under the ground floor. The upper floors and main building support structures will then be completed. Installation of plant and equipment will be undertaken in parallel.

The contractor will work on the construction of the foundations and superstructure and installation of the equipment in the ancillary buildings, and the installation of the external plant and equipment, once construction of the waste-to-energy facility has progressed.

Site roads, car parks and site fencing will be completed, and the landscaping will be undertaken, when the main construction and equipment installation is completed, and commissioning is underway.

4.2.2 Construction of Grid Connection

The proposed development includes a grid connection to the ESB network. The grid connection will be made by running underground cables between the ESB Networks Loughbeg substation or the pylon located to the south of the site and the import/export substation on-site, east of the main site entrance. Underground cables will be laid, using normal construction methods and complying with ESB Networks requirements.

4.2.3 Coastal Defence Works

Approximately 1,150m^3 of imported rounded shingle of appropriate size will be placed, as sacrificial material, at the toe of the glacial till face on Gobby beach which forms the eastern boundary of the site. The works will extend along the beach from near the car park at the northern end of the Indaver site to the southern boundary of the Indaver site. The material will be deposited above the high-water mark.

The placement of the sacrificial beach material (shingle) required for the coastal protection works will take approximately three weeks to complete. It is envisaged that the first instalment of the shingle will be undertaken towards the end of the construction phase.

The sacrificial material has been designed to remain on site and help lower the natural erosion rate over a number of years. However, the expected duration of the material cannot be determined since it depends on the occurrence of extreme wave events which are impossible to forecast. Therefore, it is anticipated that monitoring of the sacrificial material and the cliff face will take place on an annual basis. Replenishment of the material will be carried out as determined by the monitoring results. It is envisaged that replenishment may be required every two to five years, but it depends on the duration of the material remaining on site. The effects described below for the initial instalment of shingle will be repeated during replenishment.

The shingle, required for the coastal protection works will be sourced from a quarry which is listed on the register maintained by the local authority. The environmental effects associated with the registered quarry have already been assessed by the local authority under Section 261 of the Planning and Development Act 2000, as amended. The registered quarry will have similar geological properties to the material found on Gobby Beach so that the shingle chosen will match the existing material on Gobby Beach.

The imported shingle will be transported by road and temporarily deposited at the car park at Gobby Beach. A bulldozer will be used to spread the imported shingle in the designated area. It is anticipated that access for construction machinery across the beach will be facilitated by laying down temporary tracks.

To ensure the safety of the general public, it is envisaged that the area of the beach, in which the construction works will take place and the area of the car park in which the materials will be stored, and which will be used by the machinery, will be closed to the public for the duration of the proposed works, approximately three weeks. However, access to the rest of the beach will be maintained for the duration of the works.

The traffic movements associated with the coastal protection works have been included in the construction traffic impact assessment.

4.2.4 Construction Methods

The proposed development will be constructed employing best practice in safety and efficiency.

In-situ reinforced concrete will be used to form foundations. In the parts of the site where the ground levels are raised, or where the bearing strata does not have the required geotechnical properties, foundations will be piled. In-situ reinforced concrete will be used to form ground bearing floor slabs, upper floor suspended slabs and earth retaining structures.

Soil nailing or rock anchors may be used for some earth retaining structures, where the rock is suitable. Underground tanks, chambers and process areas will be constructed of in-situ concrete and will be designed as water retaining structures to the relevant codes. Where required these structures will be double contained, using a high-density polyethylene or polypropylene liner.

It is likely that all concrete will be brought to site ready-mixed in trucks. The concrete may be placed directly from the trucks, or it may be pumped or be placed by skips hoisted by a crane.

It is envisaged that some of the minor structural elements (e.g. non-load bearing walls) may be constructed in concrete block work.

The superstructures for the buildings will be constructed in structural steel. Steel members will be fabricated off site, in lengths that are safe to transport, and erected on site. Structural steel will also be used to support the process equipment and to provide access platforms.

The buildings will be clad in profiled metal cladding and the roofing will consist of profiled metal cladding or a membrane type system on and metal deck. Depending on the function of the buildings, the cladding and roof will be insulated.

Cranes will be a significant element of the construction plant and it is envisaged that various crane systems will be used for lifting materials into place.

4.3 Material Imports and Export and Transportation

4.3.1 Material Imports and Transportation

The construction of the proposed development will require considerable movements of materials to and from the site. The selection and specification of construction materials will be informed by local availability of these materials. Materials will be sourced locally where possible. Within the necessary constraints of performance, durability and cost, construction materials will be sourced from local suppliers and manufacturers, where possible. Construction materials will be transported from the suppliers via the national primary route network as far as Ringaskiddy village and will use the L2545 from the Village to the site.

Almost 30,261m^3 of engineering fill and crushed stone will be imported onto the site. Of the 30,261m^3 of imported engineering fill and crushed stone required for the construction works, approximately 1,150m^3 consists of shingle required for the coastal protection works, approximately 4,796m^3 will be required for the road upgrade and approximately 24,365m^3 of engineering fill required for the site (over the eastern and western fields).

Materials required from quarries will only be sourced from quarries which are listed on the register maintained by the local authority. The environmental effects associated with the registered quarry have already been assessed by the local authority under Section 261 of the Planning and Development Act 2000, as amended.

It is envisaged that replenishment of the shingle for the coastal protection works may be required every two to five years, but it depends on the duration of the material remaining on site. The effects described for the initial instalment of shingle will be repeated during replenishment.

There are a number of sand and gravel quarries located in the glacio-fluvial gravel channel extending from west of Classes to the west of Cork City, to east of Midleton. Material from any of the gravel quarries will be a suitable source for the beach sacrificial material.

In the context of capacity of the market in Ireland for construction materials, the requirements of the construction phase will not be significant.

4.3.2 Material Exports and Transportation

The construction of the proposed development will require considerable movements of materials to and from the site. Most of the materials leaving the site will consist of soil and stone from the excavation works.

Where possible, excavated materials will be reused on site for backfilling purposes, re-grading and landscaping. However, it is expected some of the excavated material may not be suitable for reuse on site. Any excavated materials suitable for re-use may deteriorate due to poor materials handling, storage, and exposure to adverse weather conditions. In particular, where materials consist of high fines content and wet weather is experienced during the excavation activities, such materials may become unusable.

It is estimated that up to 74,664m^3 of surplus material will be removed from the site (including material from the road upgrade works). The clean and inert surplus excavated material, which is integral to the construction phase, may be reused as a by-product on other sites subject to Regulation 27 under the European Communities (Waste Directive) Regulations 2011, as amended, and notification to the EPA.

Where a re-use for the material cannot be found, the material may be sent to suitably permitted waste facilities or licensed soil recovery facilities in accordance with relevant waste legislation or disposed at suitable authorised waste facilities. The environmental effects associated with the suitably permitted waste facilities or licensed soil recovery facilities or authorised waste facilities will have already been assessed by the relevant consenting authorities.

It is unlikely that any contaminated material will be encountered, however if it is, it will be disposed of to a suitable authorised waste facility, subject to the appropriate waste acceptance criteria at the receiving facility and in accordance with relevant waste legislation.

4.4 Services and Utilities Requirements for Construction

4.4.1 Electricity

It is anticipated that the construction work will require a peak load of 300kVA. In liaison with the ESB Networks, a temporary transformer served from local supplies will be installed to provide part of this requirement. The remainder of the power required will be supplied using on-site diesel generators.

4.4.2 Water Supply

The construction activities that will require water during the construction phase will be relatively small. The estimated demand is approximately 10m^3 per day, primarily based on the demand requirement for the construction workers and the associated support facilities. In agreement with Uisce Eireann, water will be sourced from the existing water main located in the L2545 road to the north of the site where there is ample supply to meet this demand.

4.4.3 Storm Water and Foul Water Disposal

A dedicated holding tank for storage of construction foul effluent will be constructed prior to commencement of the main construction activities. The effluent will be regularly disposed of off-site by tanker by a licensed contractor to an approved licenced facility.

Storm water will be managed carefully during construction. In general, storm water will be infiltrated to ground via silt traps and managed soakaways. The laydown areas will be suitably drained and any areas which will involve the storage of fuel and refuelling will be paved and bunded and hydrocarbon interceptors will be installed to ensure that no spillages will get into the surface water or groundwater.

4.5 Employment and Welfare

Through the construction phase there will be some variation in the numbers working on site. It is anticipated that a maximum of 320 construction workers will be employed on site at any one time with around 250 workers working a daytime shift and 70 working a night shift.

Temporary office accommodation and other construction facilities will be installed on site for the construction phase. All temporary units will be of a high standard in accordance with statutory regulations, as a minimum.

The co-ordination of people and materials on-site will be one of the key activities throughout the construction phases. The construction traffic management plan will designate traffic routes, timings and parking arrangements.

The site start time will ensure that construction workers arrive in the Ringaskiddy area prior to the morning peak hour for traffic on the local network. No construction vehicles will arrive or depart the proposed development site during the morning and evening peak periods (07:00-09:00 and 16:00-18:00) during the construction phase. Typical working hours during the construction phase will be:

Start	Finish	
0600	2000	Monday – Friday
0700	1300	Saturday

It will be necessary to work overtime (including at weekends) and night shifts at certain critical stages during the project. Consideration of safety, weather or sub-contractor availability is likely to necessitate working outside normal hours. Over the 31-month construction phase there will be up to eight weeks of nighttime working. Heavy or noisy construction activities will be avoided outside normal hours and the amount of work outside normal hours will be strictly controlled.

5. Contact Sheets

Contact sheets of relevant personnel are required primarily in order to ensure the efficient reporting of environmental incidents. It is important that these contact details are frequently reviewed to ensure that they are up to date. Contact details may be broken down into three categories:

- Contractor contacts;
- Indaver contacts; and
- Third party contacts.

Contact details will include the organisation, position title, name, mobile phone number and email address of relevant personnel.

The contact sheets will be included in the CEMP finalised by the Contractor.

6. Reference Documents

This section is included in the CEMP to provide an overview of the reference documents used in its development. Reference documents are divided into two categories: Project Specific Reference documentation and General Reference and Guidance documentation.

Project Specific Reference documents have been written specifically with the proposed development in mind and will be referenced in determining the Environmental Commitments and Requirements which must be adhered to during construction. Project specific reference documents will be included in this section when the Contractor finalises the CEMP. These will include reference to documents such as the Contract Documents, ACP's Order (containing all relevant planning conditions), any relevant EPA IE Licence conditions, the Schedule of Environmental Commitments, Health and Safety Plan (for construction stage Health and Safety), Quality Plan and any other relevant project specific reference documentation.

General Reference and Guidance documentation of relevance indicate best practice approaches to addressing significant environmental impacts during construction. Cognisance of these documents will be taken in finalising the methods documented in this CEMP by which construction will be managed to prevent, reduce or compensate for potential adverse significant impacts on the environment. The list provided below is non-exhaustive and will be finalised by the Contractor as some of the standards/documents may be revised in in the interim or additional new documents added at that stage.

The main guidelines used in preparing the CEMP are:

- Environmental Protection Agency (EPA) Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022).

Waste Related

- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (Department of Environment, Heritage and Local Government, July 2006).

Earthworks

- TII (2013) Notes for Guidance on the Specification for Road Works Series NG600 – Earthworks (including NG601 Classification, Definition and Uses of Earthworks Materials and Table 6/1: Acceptable Earthworks Materials: Classification and Compaction Requirements); and

- ICE (2015) Earthworks, A Guide (2nd Edition).

Silt and Pollution Control Related

- CIRIA (C793) The SUDS Manual;
- CIRIA (C624) Development and flood risk – guidance for the construction industry;
- CIRIA (C532) Control of water pollution from construction sites, guidance for consultants and contractors (2001);
- CIRIA (C811) Environmental good practice on site guide (fifth edition) (2023).

7. Organisational Structure/Duties and Responsibilities

Information on the Contractor organisational structure/duties and responsibilities will be provided by the Contractor in this section. The Contractor's organogram will illustrate the Contractor's reporting and hierarchal structure. The Contractor will update the CEMP to include this organogram, and it will be referred to in devising the duties and responsibilities of Contractor site personnel under the CEMP. The inclusion of the organogram will also allow those auditing and reviewing the CEMP to quickly assess the extent and shape of the Contractor's project organisation and the duties and responsibilities of the various personnel.

The Contractor will update the CEMP to include the duties and responsibilities of the Contractor's personnel. The assignment and communication of duties and responsibilities to individual named members will help ensure the successful implementation of the CEMP. The Project Team, including the Project Manager, Construction Manager, Indaver contract management team and Site Environmental Manager (SEM) will liaise during the finalisation of the CEMP to assign individual duties and responsibilities bearing in mind the overall organisational structure, the nature of the Environmental Commitments and Requirements and the proposed development specific characteristics.

The role of SEM is vital in ensuring that the CEMP is finalised, implemented and maintained. The Contractor will appoint the SEM. As detailed previously, the SEM will possess sufficient training, experience, qualifications and knowledge appropriate to the nature of the task to be undertaken. The SEM will be responsible for co-ordinating the day-to-day management of environmental impacts during the construction phase and for assisting and advising the Contractor's Project Team when programming construction activities and devising methodologies, taking cognisance of EIA/AA requirements (as outlined in **Section 16** below). The SEM will ensure that works are constructed in accordance with the relevant Environmental Commitments and Requirements and that such compliance is adequately recorded and documented.

The SEM will be support the Indaver contract management team in third-party consultations and in public and internal communications on environmental issues. The SEM will also be responsible for performing site inspections/audits and maintaining records for inspection. In addition, the SEM will deal with licensing and permit issues, keep up to date with relevant environmental best practice and legislative changes, engage in staff training, manage responses to environmental incidents and engage environmental Contractors as and when required.

The SEM will procure the advice and services of specialised qualified and accredited environmental professionals as and when required in order to help fulfil the SEM's duties and responsibilities under the CEMP.

8. Environmental Commitments

The CEMP is a working document and will be finalised by the Contractor following appointment and prior to commencing works on site.

The full schedule of Environmental Commitments documented within the EIS and NIS are included within **Section 16** of this CEMP. In addition, further Environmental Commitments may emanate from, inter alia:

The Contract documents;

- Any additional commitments which arising from the EPA licensing process and including any final licence conditions related to the construction phase;
- Any planning conditions imposed by An Coimisiún Pleanála (ACP) in their consent for the proposed development; and
- Any plans, procedures or commitments submitted and agreed with Cork County Council as required by any future ACP conditions.

The Site Environmental Manager (SEM) will create a summary table in which each Environmental Commitment is noted. In order to understand the rationale for such commitment, the relevant document, legislation etc. will be referenced.

Once the Environmental Commitments have been entered, the SEM will input the method by which it is proposed to ensure that the Environmental Commitment is met (e.g. a reference to the relevant site-specific method statement or environmental control measure).

As noted previously, the CEMP is a working document and Environmental Commitments may alter, whilst still achieving the same level of environmental protection, over the course of construction. Therefore, the SEM will update the Environmental Commitments listing as appropriate. In addition, the methods by which it is proposed to ensure that the Environmental Commitments are met may alter during the course of construction for example due to a result of changes in relevant environmental legislation. Therefore, the SEM will update the method statements as appropriate.

The updated method statements will deliver the Environmental Commitments and will not affect the robustness and adequacy of the information presented here.

The Environmental Commitments table will be regularly updated during construction to indicate a reference to the documentary proof that each Environmental Commitment has been met. This may be in the form of a signed off site-specific Method Statement, consultation certificate, results of monitoring, etc., as appropriate. The documentary proof will be attached to the CEMP.

Environmental control measures are discrete actions or procedures that will assist in meeting the Environmental Commitments. They are typically set out in discrete sheets according to environmental impact type (e.g. impacts on Bats, Badgers etc). The Environmental Control Measure Sheets will include the specific information already documented in **Section 16** of this CEMP and will also list any requirements such as pre-construction site walkover, compliance with relevant licenses, approvals and legislation. It will also list the responsibilities of the individual Contractor personnel and will indicate the relevant reference documentation. It will be the responsibility of the SEM to ensure that all Environmental Control Measure Sheets are sufficient to meet the Environmental Commitments. The SEM will be responsible for bringing the Environmental Control Measure Sheets to the attention of the Contractor and the Indaver construction management team on site. The Construction Manager will be responsible for bringing the relevant Environmental Control Measure Sheet to the attention of all site personnel for review and sign-off. The SEM will formalise the Environmental Control Measure Sheets and will provide to the Contractor for inclusion in the CEMP.

For some Environmental Commitments such as construction waste management & construction traffic management, it is necessary to incorporate them into a site-specific plan.

The following plans are detailed in this CEMP:

- Construction Waste Management Plan;
- Non-native Invasive Species Management Plan;
- Incident Response Plan;
- Construction Traffic Management Plan.

9. Construction Waste Management

9.1 Introduction

A Construction waste management plan (CWMP) has been set out to ensure that waste arising during the construction of the proposed development on site will be minimised and, managed and disposed of in a way that ensures compliance with the provisions of the Waste Management Acts, 1996- 2011 and associated Regulations (1996-2011) to ensure that optimum levels of reduction, re-use and recycling are achieved.

This CWMP is a working document and will be finalised by the Contractor following appointment and prior to commencing works on site. All of the content provided in this Plan will be delivered in full by the Contractor and its finalisation by the Contractor will not affect the robustness and adequacy of the information presented here.

The CWMP has been prepared in accordance with the following documents:

- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (Department of Environment, Heritage and Local Government, July 2006).

The Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects note that Project CWMP should be prepared for Civil Engineering projects producing in excess of 500m^3 of waste, excluding site materials used for development works on the site. At planning stage, it is estimated that the proposed development project will produce in excess of 500m^3 therefore to comply with the guidelines a CWMP has been prepared.

This document is based on a high-level estimate of waste generation and management from the proposed development at planning stage.

The principal objective of sustainable resource and waste management is to use material resources more efficiently, to re-use, recycle and recover material and reduce the amount of waste requiring final disposal. To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy (see **Figure 1**).

However, where residual waste is generated, it should be dealt with in a way that follows the waste hierarchy (see **Figure 2**) and actively contributes to the economic, social and environmental goals of sustainable development.

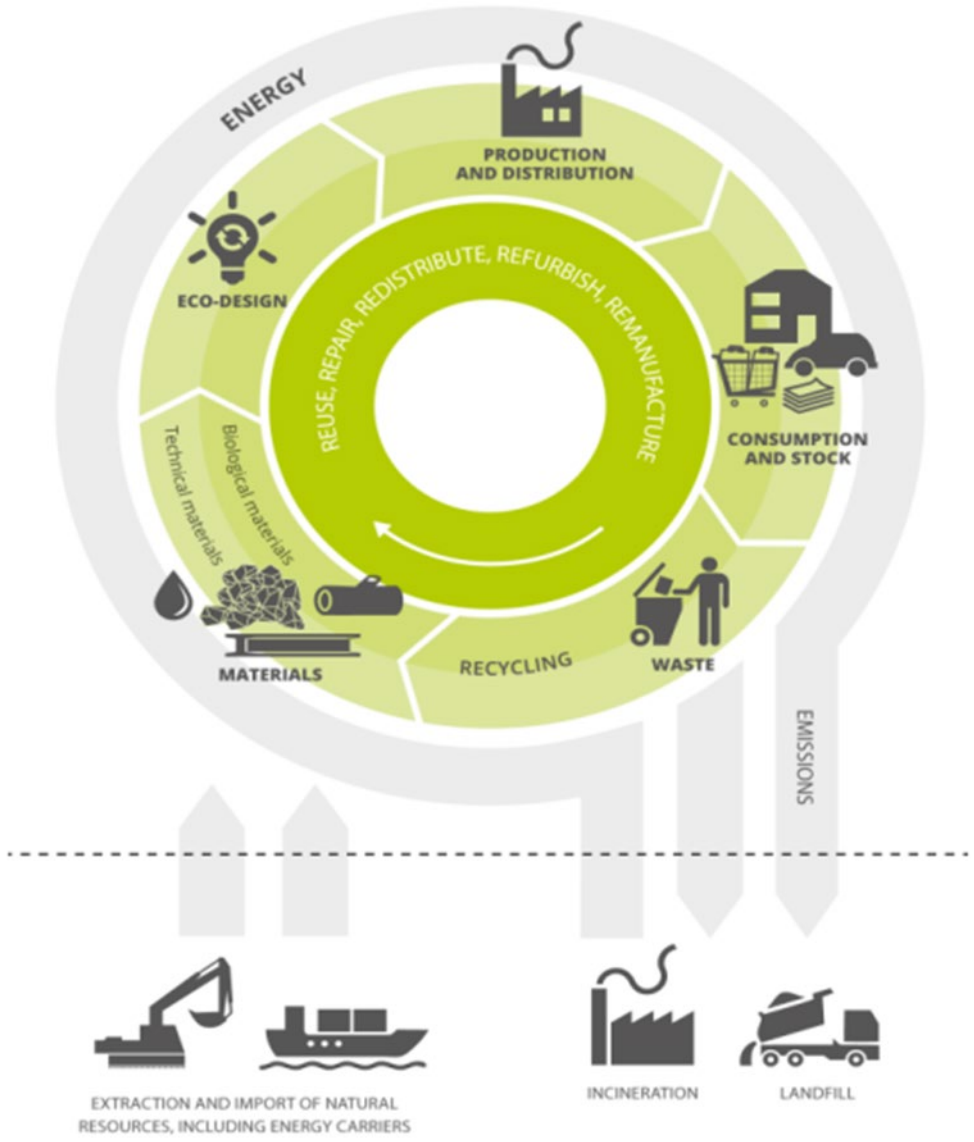

Figure 1: A simplified model of the circular economy for materials and energy (European Environment Agency, 2016)

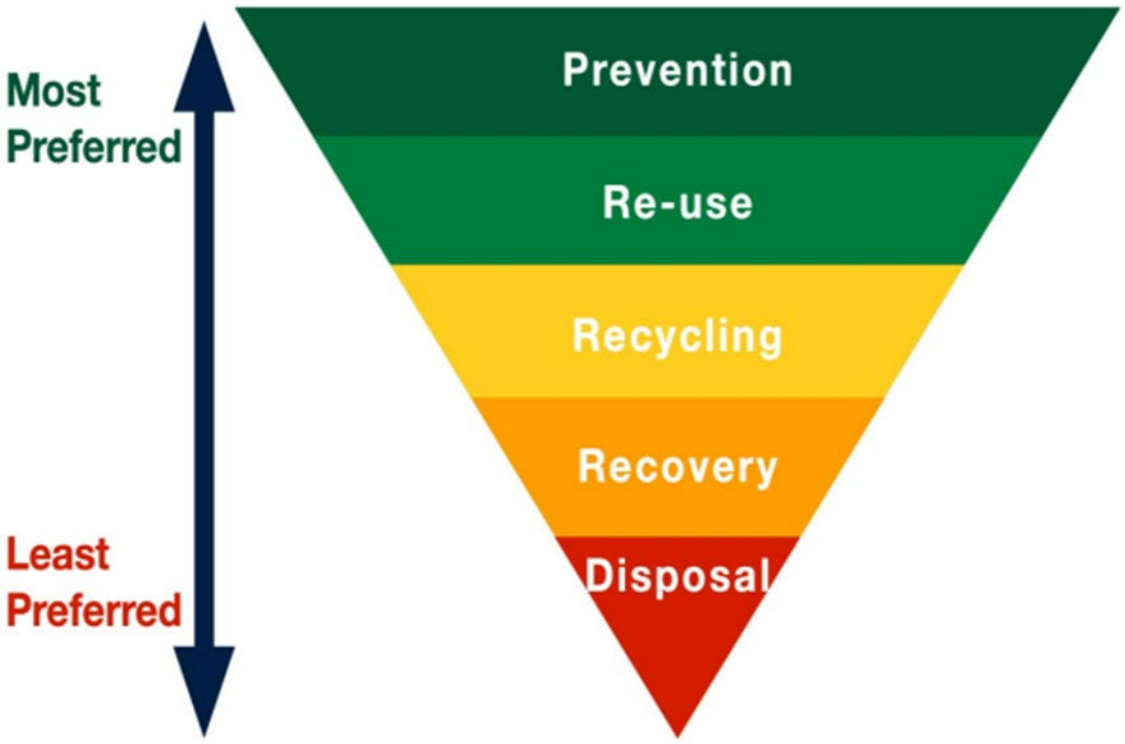

Figure 2: Waste Hierarchy

The Contractor will finalise the CWMP for the proposed development following appointment which will meet the requirements of the Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects (Department of Environment, Heritage & Local Government. 2006) and implement this C&D WMP.

9.2 Sources of Construction and Demolition (C&D) Waste

The construction works of the proposed development does not include the demolition of any structures.

9.2.1 Construction Phasing

Surplus materials generated during the following phases are addressed in this report:

- The excavation phase.
- The construction phase

Likely surplus materials which will be generated during each of these phases are described in the sections below. In line with the principles of sustainable development, the proposed development will seek to minimise the volume of material brought into the construction site.

The Contractor will endeavour to re-use as much of the surplus materials and wastes generated during demolition, excavation and construction as feasible within the proposed development boundary subject to further testing to determine if materials meet the specific engineering standards for their proposed end-use.

9.2.2 Excavation Waste Generation

It is estimated that up to 74,664m^3 of surplus material will be removed from the site (including material from the road upgrade works). The clean and inert surplus excavated material, which is integral to the construction phase, may be reused as a by-product on other sites subject to Regulation 27 under the European Communities (Waste Directive) Regulations 2011, as amended, and notification to the EPA.

Where a re-use for the material cannot be found, the material may be sent to suitably permitted waste facilities or licensed soil recovery facilities in accordance with relevant waste legislation or disposed at suitable authorised waste facilities. The environmental effects associated with the suitably permitted waste facilities or licensed soil recovery facilities or authorised waste facilities will have already been assessed by the relevant consenting authorities.

9.2.3 Construction Waste Generation

C&D waste is defined as waste which arises from construction, renovation and demolition activities, together with all waste categories mentioned in the EPA List of Wastes (LOW) Codes for Construction and Demolition Waste (See **Appendix A**).

Also included within the definition are surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities.

Construction waste can vary significantly from site to site but typically would include the following non-hazardous fractions:

- Soil and stone;
- Concrete, brick, tiles and ceramics;
- Asphalt;
- Metals;
- Wood;
- Other.

The hazardous waste streams which could arise from construction activities may include the following:

- Batteries; and
- Liquid fuels.

The construction phase of the proposed development is expected to commence in 2027. In the case of the proposed development the most likely type of waste materials will be soil and stone.

An indicative breakdown of the composition of typical C&D waste is set out in **Table 1** below. These figures should be considered as a guide only as C&D waste can vary significantly from one project to another, depending on the nature of the development and the waste management practices employed on-site.

Table 1: C&D Waste in Ireland for the year 2022

C&D Waste Type	Tonnage	% of total
Soils, stones & dredging spoil	6,741,489	82%
Concrete, brick, tile & gypsum	616,687	7%
Mixed C&D waste	544,415	7%
Metal	206,851	3%
Bituminous mixtures	104,270	1%
Segregated wood, glass & plastic	54,101	>1%
Total	**8,267,813**	**100%**

Note: The quantity of hazardous contaminated soil generated in Ireland in 2022 amounted to 41,082

9.3 Proposals for C&D Waste Management

9.3.1 Circular Economy and the Waste Hierarchy

The waste hierarchy sets out the most desirable approaches to waste management in the European Union. It became obligatory in Ireland in 2011 through the European Communities (Waste Directive) Regulations 2011. The waste hierarchy i.e. prevention, re-use, recycling, energy recovery and disposal applies in priority order with waste prevention being the most preferable option and waste disposal the least desirable.

General Construction Waste Management

The following general measures will be implemented throughout the proposed development:

- The Contractor will ensure that waste generation on site is minimised.
- Possibilities for re-use of clean non-hazardous excavation material as fill on the site and landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use.
- Where excavation material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable and ensure that disposal is minimised.
- Where re-use of surplus material within the proposed development is not feasible the Contractor will ensure that waste generated will be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996 -2011.
- The Contractor will ensure that any interim storage facilities for excavated material have the appropriate waste licences or waste facility permits in place.
- Waste and surplus excavation material from the proposed development will be delivered only to facilities which have a granted waste licence or waste permit in place.
- **Source Segregation:** Waste produced will be segregated. Where possible metal, timber, glass and other recyclable material will be segregated during demolition works and removed off site to a permitted/licensed facility for recycling.
- **Material Management:** The Contractor will ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage is not conducive to the creating of unnecessary waste. *'Just-in time'* delivery will be used so far as is reasonably practicable to minimise material wastage.
- **Waste Auditing:** The Contractor will record the quantity in tonnes and types of waste and materials leaving the proposed development during the construction phase. The name, address and authorisation details of all facilities and locations to which waste and materials from the proposed development are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered, and which is disposed.
- Hazardous wastes will be identified, removed and kept separate from other C&D waste materials in order to avoid further contamination.

9.3.2 Waste Prevention

The most environmentally sustainable means of managing excavated material is its prevention and minimisation. Prevention and minimisation is inherent in the design of the proposed development.

Where possible excavated materials generated from the earthworks will be re-used on site where it meets engineering requirements.

9.3.3 Recycling and Energy Recovery

Excavated material generated during the works will be reused within the project area where feasible. Off-site re-use options for surplus clean and inert excavated material include reuse as a by-product on other sites subject to Article 27 notification to the EPA, or recovery at suitable waste permit facilities or licensed soil recovery facilities in accordance with relevant waste legislation.

Recycling/ recovery activities also include:

- Processing of stone to produce construction aggregate;
- Infilling of quarries;
- Raising land for site improvement or development.

In addition to licensed and permitted waste facilities, some IE licenced facilities have a requirement to import soil and stones in accordance with the terms of their Closure, Restoration and Aftercare Management Plans (CRAMP). Such sites may potentially accept suitable surplus material from the proposed development.

9.3.4 Disposal

The option of delivery of inert uncontaminated material for disposal to landfill is the least desirable destination for surplus material generated by the proposed development. It will only be considered where a re-use for the material cannot be found and sufficient void capacity cannot be secured at appropriately licensed/permitted facilities for recovery purposes.

It may be unavoidable that a small percentage of excavation material will have to be disposed of at a landfill or at another type of suitably permitted facility. This disposal option applies to material having hazardous chemical or physical properties requiring special measures for its excavation, handling, storing, transportation, deposition and disposal. All material presented for disposal will have to meet the receiving sites waste acceptance criteria.

It is estimated that up to 74,664m^3 of surplus material will be removed from the site (including material from the road upgrade works).

9.3.5 Construction Compounds and Material Storage

On completion of the ground preparation works, it is proposed that the Construction Compound will be located within the western field for the main construction phase. On completion of the construction phase, temporary buildings and containers, and waste material such as rubble, aggregates and unused construction materials will not be permitted to remain on these sites and will be removed and disposed of appropriately.

Some contractor accommodation will remain and associated car-parking facilities in the main construction compound will also remain to facilitate a small number of staff from the Contractor who will still come to the site periodically during the 2-year guarantee period after the end of the commissioning phase.

9.3.6 Waste Transportation

9.3.6.1 General

Waste from the proposed development will be transported by authorised waste collectors in accordance with the Waste Management (Collection Permit) Regulations, 2007 and the Waste Management (Collection Permit) (Amendment) Regulations, 2008.

9.3.6.2 Hazardous Wastes

The following steps must be taken where hazardous waste is being transported from the proposed development to a hazardous waste recovery or disposal facility within the State:

- Waste transfer forms shall be obtained by the waste producer from Dublin City Council's web site and completed on-line before the waste is collected.

- A copy shall be downloaded, printed and signed, accompanying the consignment of hazardous waste when it is in transit.
- On the load's arrival, the operator of the recipient disposal or recovery facility shall log-in and complete the relevant details documenting the receipt of the waste.

Export of hazardous waste from the proposed development outside of the State is subject to a Europe-wide control system founded on EU Regulation 1013/2006 on the Shipments of Waste (known as the Transfrontier Shipment Regulations), as amended. This legislation is supplemented by the Waste Management (Shipments of Waste) Regulations 2007, as amended, which makes Dublin City Council responsible for the enforcement of this regulatory system throughout Ireland. Export of hazardous waste from site outside the state should comply with the procedures set out in this legislation.

9.4 Roles and Responsibilities

9.4.1 Construction Waste Co-Ordinator

Following Contractor appointment, the Contractor will appoint a Construction Waste Co-Ordinator. This function may be combined with that of the SEM and will be at the discretion of the Contractor.

The Construction Waste Co-Ordinator will be responsible for detailing and maintaining the C&D Waste Management Plan for the project and updating it as appropriate. Following each update or revision of the CWMP a copy of the new plan will be provided by the Construction Waste Co-Ordinator to Indaver, the SEM, the site subcontractors and all relevant staff.

The Construction Waste Co-Ordinator will have responsibility for implementation of the CWMP throughout the demolition, excavation and construction phases of the proposed development.

The Contractor will ensure the Construction Waste Co-Ordinator will be appropriately trained and experienced on all aspects of waste management.

In addition, the Construction Waste Co-Ordinator and all site staff handling wastes must be in a position to:

- Distinguish reusable materials from material suitable for recycling;
- Ensure maximum segregation of waste and recyclables at source;
- Co-operate with site manager on best locations for stockpiling reusable material;
- Separate material for recovery;
- Identify and liaise with operators of recovery outlets as appropriate.

In the event of the Construction Waste Co-Ordinator leaving the project team the Contractor will nominate a suitable replacement.

9.4.2 Training

The Construction Waste Co-Ordinator will have responsibility for ensuring copies of the CWMP are made available to all personnel on site. The Construction Waste Co-Ordinator will also have responsibility for ensuring that all site personnel and sub-contractors are instructed about the objectives of the CWMP and informed of the responsibilities which fall upon them as a consequence of its provision. This may be carried out during the induction process for new staff members.

The Construction Waste Co-Ordinator will also have responsibility for communicating the requirements of the plan using for example, toolbox talks, prominently displayed site notices and audits as relevant.

9.4.3 Record Keeping and Auditing Procedures

The Construction Waste Co-Ordinator shall arrange for full details of all arisings, movements and treatment of C&D waste to be recorded during the excavation, demolition and construction phases of the proposed development.

When establishing the system for managing the details of all arisings, movement and treatment of construction waste in the CWMP, the use of electronic tools should be considered to provide for convenient recording of information in a useful format.

The Contractor will be required to arrange for full details of all arisings, movements and C&D waste to be recorded during all stages of the proposed development.

Each consignment of construction waste removed from the site will be documented to ensure full traceability of the material to its final destination. Separate records will be completed in respect to each waste transfer that takes place.

The Contractor will also receive documents/records from waste collection companies employed during quantifying the exact amount of waste material removed from site. The documents/records from the waste collection companies will also identify how much material went to landfill and how much went for recycling.

All producers of hazardous waste are required by law to keep a chronological record of the quantity, nature and origin of any hazardous waste produced, as well as its destination, frequency of collection, mode of transport and treatment method. This obligation is a requirement of the European Communities (Waste Directive) Regulations 2011, which also mandate that this information be held for at least three years.

All the above records will be retained in a designated location and made available for auditing of the CWMP.

9.4.4 Waste Auditing Protocols

The Construction Waste Co-Ordinator will arrange for a waste audit of the proposed development once construction has fully commenced construction on site and of any facilities to which waste from the proposed development is delivered if required.

Indaver will receive summaries of any audit reports which will be completed within three months of the end of each calendar year. The effectiveness and accuracy of the documentation will be monitored on a regular basis via routine site visits.

10. Non-Native Invasive Species Management Plan

In 2016, ecological surveys recorded a small stand of Japanese knotweed along the western boundary of the site (in an area which was subsequently purchased by Cork County Council, but remains within the planning boundary of the site) and also outside the site's north-western boundary. Since the completion of the EIS in 2016, Indaver have engaged a specialist company to actively monitor and treat these stands of Knotweed at the boundary to prevent any spread onto the Indaver site. Monitoring and treatment of the stands has been ongoing since 2017.

As part of the ongoing management of the infestation at the Indaver site boundary, the site was resurveyed in May of 2019 and treatment (spraying of plants where accessible from the Indaver site) continued in the late summer/early autumn of 2019.

Ecological surveys in 2024 and 2025 did not record any active growth of Japanese Knotweed within these areas or within other areas of the proposed development site boundary.

The management plan comprises regular monitoring and treatment of the Knotweed stands and ensuring that there is no spread onto the Indaver site. This process will continue up to and throughout the construction phase.

To prevent Japanese Knotweed from outside the proposed development site being inadvertently being brought into the site, the contractor will be required to inspect vehicles before using them on site and will pay particular attention to caterpillar tracks and where trucks and dumpers are stowed.

The supplier of fill will be required to provide a guarantee that the fill to be imported does not contain knotweed. In addition, the fill will be inspected for signs of knotweed, prior to importation to site. The UK Environmental Agency's publication Managing Japanese knotweed on development sites - The Knotweed Code of Practice (EA 2013), states that inspection of topsoil brought into the site, should be carried out using the guidance in appendix I-IV of the code BS 3882:2007 '*The British Standard Specification for topsoil and requirements for use*'. This Standard was replaced subsequently by BS3882:2015 '*Specification for Topsoil'*. The inspection of fill will be carried out according to this Standard.

The implementation of the above measures will minimise the risk of Knotweed being spread within the site or outside the site during the construction phase of the proposed development.

11. Incident Response Plan

11.1 Introduction

The focus of including all of the detailed environmental measures in this CEMP is on prevention of the incident arising in the first place. However, an Incident Response Plan (IRP) has been prepared to ensure that in the unlikely event of an incident, response efforts are prompt, efficient, and suitable for particular circumstances. The IRP presented below is consistent with mitigation measures as detailed in **Section 16** of this CEMP. This plan is a working document and will be finalised by the Contractor, in conjunction with the Indaver contract management team on site, following appointment and prior to commencing works on site. All of the content provided in this Plan will be delivered in full by the Contractor and its finalisation by the Contractor will not affect the robustness and adequacy of the information presented here and relied upon in the CEMP.

The Incident (Emergency) Response Plan (IRP) describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and suitable for particular circumstances. The IRP details the procedures to be undertaken in the event of the release of any sediment into a watercourse, serious spillage of chemical, fuel or other hazardous wastes (e.g. concrete), non-compliance incident with any permit or licence, or other such risks that could lead to a pollution incident, including flood risks. The same process will be followed for any significant safety-related incidents.

The objective of this IRP will be to:

- Ensure the health and safety of workers and visitors along the site
- Minimise any impacts to the environment and ensure protection of the water quality and the aquatic species dependent on it
- Minimise any impacts on properties, services etc.
- Establish procedures that enable personnel to respond to incidents with an integrated multi-departmental effort and in a manner that minimises the possibility of loss and reduces the potential for affecting health, property, and the environment.

The information provided in this section is based on best practice including the following documentation:

- CIRIA (C649) Control of water pollution from linear construction projects, site guide (2006).
- CIRIA (C532) Control of water pollution from construction sites, guidance for consultants and contractors (2001).
- CIRIA (C811) Environmental good practice on site guide (fifth edition) (2023).

As required by the Safety, Health and Welfare at Work (Construction) Regulations 2013, a Health and Safety Plan will be prepared which will address health and safety issues from the design stages through to the completion of the construction and maintenance phases. This plan will be reviewed as the development progresses. The contents of the Health and Safety Plan will comply with the requirements of the Regulations.

11.2 Implementation

The likelihood of an incident or emergency can be minimised by effective planning, good site management via implementation of this CEMP and the construction stage Health and Safety Plan and through development of an IRP. The IRP will be reviewed and updated regularly so that it continues to apply to construction activities. The IRP will identify the on-site risks and appropriate responses.

It will be the responsibility of the SEM to maintain and change the IRP as required. The IRP will be reviewed on an on-going basis and immediately amended, as necessary, when applicable regulations are revised or when amendments are required by a regulatory authority.

The IRP in terms of health and safety will also require updating and submissions from the various contractors and suppliers as the proposed development progresses. The main source for these updates will come from the Health and Safety Plan which will be controlled and managed by the Contractor for construction safety on the site. The established communication between the Contractor, Construction Manager and the SEM will ensure that this is done when necessary. As previously stated, the same IRP will be followed for an environmental or a safety incident.

Cork County Council and Cork City Council each have a Major Emergency Plans respectively and prepared in accordance with the Government's Major Emergency Management Framework. The IRP details the initial contact that should be made in case of an emergency incident as well as those responsible for following up once an emergency event is declared. The emergency services (particularly fire service) will be consulted to establish safe and appropriate access points to site compounds and other areas where there may be a risk of spillage etc. (e.g. outfalls, fuel storage). In an emergency, knowing the relevant people to contact for help can save time and minimise the impacts. To cover the full site, more than one contact may be needed, so the IRP will indicate which contacts apply to which section of the site.

Numbers will be obtained for the following:

- Radio/mobile contacts for site management and trained staff;
- Out-of-hours contacts;
- Environmental regulators (hotline or local contact);
- Uisce Éireann (for spills to foul sewer);
- Cork County and City Councils (respectively);
- Inland Fisheries Ireland and National Parks and Wildlife Service;
- Environmental Protection Agency;
- Neighbouring sites such as NMCI, IMERC, Naval Base & Port of Cork; and
- Spill response and clean-up contractors.

11.3 Resources

Relevant staff, including cover staff, shall be trained in the implementation of the IRP and the use of any spill kit/control equipment as necessary. The Contractor shall provide a list of all such staff to the Indaver contract management team detailing the name, contact number, and training received, and the date of that training.

The Contractor shall provide a full list, including the exact locations, of all pollution control plant and equipment to the Indaver contract management team. All such plant and equipment shall be maintained in place and in working order for the duration of the works.

11.4 Environmental Emergency Response Procedures

The best way to manage pollution incidents is to prevent them. Emergency procedures will be developed – either project specific, site specific or activity specific and all personnel on site will be required to know these procedures.

An effective pollution IRP relies on the following elements:

- Identification of all possible emergency scenarios (both environmental and health & safety);
- Effective planning, e.g. availability of booms, spills kits at appropriate locations;
- Identification of receptors/pathways (e.g. surface water drains/river);
- Identification and dissemination of contact numbers;
- Definition of site-based staff responsibilities;
- Appropriate site-based staff training;
- Exercise of incident scenarios – spill drills;
- Availability of suitable spill kits at appropriate locations on the site;
- Implement lessons learnt from previous incidents;
- Ensure that all appropriate site staff are aware of the site emergency procedure(s) (e.g. spillage, leakage, fire, explosion and flooding), that drain covers and spill kits are available, and they know how to use them.

  In terms of pollution spill response procedures, these will vary depending on the sensitive receptor and nature of construction activities, but the following information will be included as a minimum and displayed at appropriate locations on the whole site, near outfalls etc.:

  – Instruction to stop work and to switch off sources of ignition;
  – Contain the spill; location of spill clean-up material;
  – Name and contact details of responsible staff (these staff should assess the scale of the incident to determine whether the environmental regulator needs to be called);
  – Measures particular to that location or activity (for example, close pond outlet valve).

  More detailed plans may be project-specific, location-specific or specific to a particular activity depending on the nature of the work. They will include details of site drainage, outfalls, coastline and watercourses to indicate where pollution may end up so that containment measures can be put in place at these locations. Suitable equipment, such as spill kits, oil booms and absorbent material, will be held at appropriate locations on site.

  Emergency equipment will be obtained from a reputable supplier and site staff will be trained in its correct use. Safety Data Sheets and best practice assessments will be used for advice on appropriate spill measures. The type of equipment required will depend on the activity taking place. The CIRIA document C648 Control of water pollution from linear construction projects, technical guidance (2006) provides details on the types and applications of emergency equipment. Refer to Table 15.2 of same document.

  Every effort will be made to prevent an environmental incident during the construction and operational phase of the proposed development. The focus of including all of the measures in this CEMP is on prevention of the incident arising in the first place.

Oil/Fuel spillages are one of the main environmental risks that will exist on the proposed site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. An example of the steps to follow in the event of a spillage to ensure that the environmental risk is reduced to as low as reasonably practical. This procedure can be tailored to be site/location/activity specific as required:

Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers;

- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident;
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill;
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats;
- Clean up as much as possible using the spill control materials;
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited;
- Notify the Site Environmental Manager (SEM) immediately giving information on the location, type and extent of the spill so that they can take appropriate action;
- The SEM will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring;
- The SEM will notify the appropriate regulatory body such as Cork County Council, NPWS, EPA, Department of Climate, Energy and the Environment, and Department of Housing, Local Government and Heritage, if deemed necessary.

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident will be investigated in accordance with the following steps.

The SEM must be immediately notified;

- If necessary, the SEM will inform a member of the Indaver construction management team who will in turn contact the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident;
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used, following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident;
- In the very unlikely event of an incident occurring which may impact on a sensitive receptor, the relevant persons/authorities will immediately be informed (such as the EPA, Cork County Council, NPWS, etc.);
- A record of all environmental incidents will be kept on file by the Site Environmental Manager and the Contractor. These records will be made available to the relevant authorities such as Cork County Council and the EPA if required;
- The SEM will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Contractor as appropriate;
- By carrying out the above steps, a proper system will be in place to investigate, record and report any potential accidents or incidents.

11.5 Fire Control Measures

Every effort will be made to prevent the outbreak of a fire during the construction phase of the proposed development. Fire extinguishers and first aid supplies will be available in the work area. In the event of such an incident, the health and safety of all personnel will be a priority. All relevant legislation and guidance on health and safety of people and in particular fire safety will be complied with.

11.6 Emergency Procedures During Construction for Traffic Management

The Contractor shall ensure that unobstructed access is provided to all emergency vehicles along all routes and site accesses.

The Contractor shall provide to the local authorities and emergency services, contact details of the contractor's personnel who are responsible for construction traffic management.

In the case of an emergency the IRP shall be followed:

- Emergency Services will be contacted immediately by dialling 112;
- Exact details of the emergency / incident will be given by the caller to the emergency line operator to allow them to assess the situation and respond in an adequate manner;
- The emergency will then be reported to the Site Team Supervisors and the Safety Officer;
- All construction traffic shall be notified of the incident (where such occurs off site);
- Where required, appointed site first aiders will attend the emergency immediately;
- The Safety Officer will ensure that the emergency services are directed to and arrive at the emergency site.

11.7 Training and Testing

Staff responsible for action in an emergency need to know their responsibilities. An incident at one part of the site may affect other parts of the site, so it is important that someone be responsible for informing them. Staff will be trained to use the necessary equipment such as spill kits or outlet valves. Emergency arrangements will need to be reviewed and tested periodically (and always after an incident) to ensure that measures are effective, and that the workforce is aware of what to do in the event of an incident. Emergency drills will be recorded, and improvements noted and actioned accordingly.

11.8 Corrective Action

When an incident happens, it is important to learn from it and ensure that such an incident does not occur again. This may involve changing the method of work for a particular activity, providing containment or treatment materials, or simply training staff so they are aware of the correct method of work. Similarly, if an audit of planned arrangements indicates that measures are not in place, or those in place need to be improved, action will be taken immediately.

A record of corrective actions and lessons learned will be kept and communicated to all relevant persons, teams, sub-contractors etc. across the proposed development.

12. Construction Traffic Management Plan

12.1 Introduction

The Construction Traffic Management (CTMP) will be finalised by the Contractor to ensure that construction traffic will be managed and monitored safely and efficiently throughout the construction phase.

12.1.1 Purpose and Scope

This CTMP is a key construction contract document, the implementation of which will reduce possible impacts which may occur during the construction of the proposed development.

The objectives of the CTMP are to:

- Outline minimum road safety measures to be undertaken at site access / egress locations, during the works and including approaches to such access/egress locations.
- Demonstrate to the developer, contractor and supplier the need to adhere to the relevant guidance documentation for such works.
- Ensure compliance with the mitigation measures with respect to traffic management during the construction phase (as detailed in **Section 16.1** below) and with the planning conditions relating to construction traffic management from ACP.
- Provide the basis for the preparation of a finalised CTMP by the Contractor appointed to carry out the works.

Indaver shall be responsible for ensuring that the Contractor manages the construction activities in accordance with this CTMP. The Contractor will finalise the CTMP in accordance with this document.

Objectives and measures are also included for the management, design and construction of the project to control the traffic impacts of construction insofar as it may affect the environment, local residents and the public in the vicinity of the construction works.

In line with any conditions of a future An Coimisiún Pleanála (ACP) decision, the CTMP which will be finalised by the Contractor will address these requirements, including any additional measures which are specified by Cork County Council.

The CTMP will require approval from the Cork County Council. The objective of the CTMP is to ensure that the residual impacts to the public road network during the construction phase of the proposed development which have been identified in the application documentation are minimised and that transport related activities are carried out as safely as possible and with the minimum disruption to other road users.

12.1.2 Implementation

Key to the implementation of the CTMP is the dedication of the on-site Construction Manager (nominated by the Contractor) who will regularly liaise with and update the Indaver contract management team on all environmental and construction programming issues relating to the site. All site personnel are charged with following good practice and encouraged to provide feedback and suggestions for improvements. All site personnel are also required to ensure compliance with the requirements of the site's CTMP.

12.1.3 Document Revision

The CTMP includes a summary of all the information which will be included by the appointed Contractor In particular, it will include reference any relevant conditions of a future ACP decision for the proposed development.

The CTMP will be subject to on-going review (throughout the construction phase of the proposed development), through regular auditing and site inspections. This will ensure that the performance of construction activities, including the implementation of mitigation measures, is subject to continuous improvement and ensure that objectives are met.

All of the information required for the finalised CTMP will be highlighted in the tender for the contract to build the proposed development.

12.2 Proposed Construction Traffic Generation

12.2.1 Traffic Generation from the Proposed Development

Traffic will firstly be generated during the construction phase of the development. Throughout the construction phase, three types of construction traffic will access the site.

- HGV traffic
- Workforce traffic
- General site traffic

Through the construction phase there will be some variation in the numbers working on site. It is anticipated that a maximum of 320 construction workers will be employed on site at any one time with around 250 workers working a daytime shift and 70 working a night shift.

Typical working hours during the construction phase will be:

Start	Finish	
0600	2000	Monday-Friday
0700	1300	Saturday

To minimise the potential impact of traffic flows during the construction stage, it is proposed to schedule HGV, workforce and general site traffic that it does not coincide with network peak hour periods. Therefore, as a mitigating measure no construction vehicles will arrive or depart the proposed development site from 07:00-09:00 and from 16:00-18:00.

It will be necessary to work overtime (including at weekends) and night shifts at certain critical stages during the project. Consideration of safety, weather or sub-contractor availability is likely to necessitate working outside normal hours. Over the 31-month construction phase there will be up to eight weeks of nighttime working. Heavy or noisy construction activities will be avoided outside normal hours and the amount of work outside normal hours will be strictly controlled.

HGV Traffic

The construction stage of the proposed development will involve some HGV movements. Estimates of the anticipated HGV construction traffic volumes indicate that a maximum of 11 heavy goods vehicles per hour will access the site during the daytime shift with smaller volumes expected during the night shift.

Workforce Traffic

The construction period will also generate demand in terms of construction workforce access. Throughout the construction period there will be some variation in the number of workers or size of the workforce on site. However, a maximum of approximately 320 construction workers will be employed on site, with around 250 workers required during a daytime shift and 70 working a night shift.

To determine the trips generated during construction it is assumed that 95% of the workforce will travel by car and there will be car occupancy of 1.15. These assumptions are applied to the 250 workers arriving for the day shift and also to the 70 workers leaving after the night shift.

Due to the nature of the construction stage of the proposed development, not all workers will arrive or depart simultaneously in the morning/evening as there will be some natural variation in activity throughout a typical day. For the purpose of this assessment, the following arrival and departure profile for the construction workers was assumed:

- 100% of the daytime construction workers arrive before 07:00
- 100% of the night-time construction workers leave before 07:00
- 25% of the daytime construction workers leave between 12:00-14:00, with 75% of these leaving before 13:00 and 25% arriving back before 13:00.
- 40% of the daytime construction workers leave between 18:00-19:00
- 60% of the daytime construction workers leave after 19:00
- 100% of the night shift construction workers arrive after 18:00.

General Site Traffic

The construction stage will also generate general site traffic in addition to HGV movements and workforce traffic. This general site traffic accounts for visitors and general service vehicles to the site. The general site traffic is estimated at up to a maximum of 32 vehicles (in and out) per hour between 06:00 - 19:00 with a fall-off to 6 vehicles (in and out) per hour during the night shift. As with the workforce traffic, no general site traffic will be permitted to or from the site during the 2-hour restriction periods in the morning and evening.

12.2.2 Envisaged Construction Equipment

Construction equipment and vehicles required for each construction element/operation will be delivered to site by appropriate vehicles. Details of typical construction equipment and vehicles are detailed in **Table 2** below. Specific equipment and vehicles which are deemed to be required for the proposed development by the principal contactor, suppliers and staff are to be confirmed and outlined in the Contractors finalised CTMP.

Table 2: Proposed Typical Construction Vehicles

Category/Stage	Advance Works / Site Preparation / Main Works / Reinstatement
Construction Vehicle	Tractor & Low Loader (For Delivery of Excavator and Dumper) Excavator Dumper Truck (38 Tonne) Bulldozer Wheeled Dumper / Tracked Dumper 360º Tracked Excavator (13 tonne – 75 tonne) Rock breakers All Terrain Mobile Crane Fixed Tower Crane Teleporter Road Sweeper
Delivery Vehicle	Stone Delivery Truck Bituminous Material Truck Concrete Truck Hiab Lorry

Category/Stage	Advance Works / Site Preparation / Main Works / Reinstatement
Staff / Site Vehicle	4 x 4 Vehicle Commercial Van / Jeep

12.3 Construction Traffic Management Plan Contents

The Contractor will be contractually required to ensure that the elements of this CTMP shall be incorporated by the Contractor into the CTMP. The Contractor shall also agree and implement monitoring measures to confirm the effectiveness of the mitigation measures outlined in the CTMP. On finalisation of the CTMP, the Contractor shall adopt the plan and associated monitoring measures. The finalised CTMP shall address the following issues (including all aspects identified in this CTMP):

- Site Access & Egress;
- Traffic Management Signage;
- Timings of Material Deliveries to Site;
- Traffic Management Speed Limits;
- Road Cleaning;
- Vehicle Cleaning;
- Road Condition;
- Road Closures;
- Enforcement of Traffic Management Plan;
- Emergency Procedures During Construction;
- Communication.

These items are explained in detail in the remainder of this section of the report.

12.3.1 Site Access and Egress

The site access and egress locations for construction will be finalised once a Contractor has been appointed. It is anticipated that there will be a single point of access and egress to the main construction site to the East and another to the main construction compound to the West.

Points of access and egress for the site will be confirmed and management measures identified in the application documentation will be agreed with Cork County Council.

The Contractor shall provide advanced warning signs, in accordance with Chapter 8 of the Department of Transport, Tourism and Sport *Traffic Signs Manual 2010*, on the approach to proposed site access locations a minimum of one week prior to construction works commencing at the site.

12.3.1.1 Local Road Network

The following regional and local roads will be utilised as the primary routes to the site during the construction period:

- N28 – North of Shannon Park Roundabout;
- R611 – South of Shannon Park Roundabout;
- R610 Raffeen Bridge – North of N28;

- L6473 Raffeen Road – North of N28;
- R613 Barnahely Rd – South of N28.

12.3.1.2 Site Compounds

The main construction compound containing construction staff accommodation, welfare facilities, car parking etc. will be located in the western part of the site, to the west of the Hammond Lane facility entrance. It is likely that there will be a secondary, smaller compound on the main construction site to the east of the Hammond Lane entrance.

12.3.2 Traffic Management Signage

The Indaver contract management team shall undertake consultation with Cork County Council for the purpose of identifying and agreeing signage requirements. Such signage shall be installed by either Indaver or the Contractor prior to works commencing on site.

Proposed signage may include warning signs to provide warning to road users of the works access/egress locations and the presence of construction traffic. All signage shall be provided in accordance with the Department of Transport's *Traffic Signs Manual*, November 2010 - Chapter 8 Temporary Traffic Measures and Signs for Roadworks.

In summary, the Indaver contract management team will be required to ensure that the following elements are implemented:

- Consultation with the relevant authorities for the purpose of identifying and agreeing signage requirements.
- Provision of temporary signage indicating site access route and locations for Contractors and associated suppliers.
- Provision of general information signage to inform road users and local communities of the nature and locations of the works, including project contact details.

12.3.3 Timings of Material Deliveries to Proposed Development Site

In order to reduce impacts on local communities and residents adjacent to the proposed sites, it is proposed that:

- Construction staff and vehicles will not be present on the local road network from 07:00-09:00 and from 16:00-18:00.
- In the event of another major construction project being active in the vicinity of the site, the Contractor, through the Indaver contract management team will be required to liaise with the management of other construction projects and the local authorities to co-ordinate deliveries.
- The Contractor will be required to schedule deliveries in such a way that construction activities and deliveries activities do not clash, resulting in build-up of traffic on road network.
- A construction phase programme of works shall be developed by the Contractor in liaison with the Indaver contract management team and Cork County Council, specifically taking into account potential road repair works that are included in the local authority's road works schedule.
- The Contractor will be required to co-ordinate with Indaver contract management team ensure that construction related traffic will not conflict with local activities and sensitive events such as funerals.
- Construction activities will be undertaken during permitted hours for all construction stages. It is anticipated that at critical certain stages of the construction works night time and weekend work will be required.

12.3.4 Traffic Management Speed Limits

Adherence to posted / legal speed limits will be emphasised to all staff / suppliers and contractors during induction training. Drivers of construction vehicles / HGVs will be advised that vehicular movements in sensitive locations, such as local community areas, shall be restricted to 60km/h. Special speed limits of 30km/h shall be implemented for construction traffic in sensitive areas such as school locations. Such recommended speed limits will only apply to construction traffic and shall not apply to general traffic. It is not proposed to signpost such speed limits in the interest of clarity for local road users.

12.3.5 Road Cleaning

It will be a requirement of the works contract that the Contractor will be required to carry out road sweeping operations to remove any scheme related dirt and material deposited on the local road by construction / delivery vehicles. Road Sweepers will dispose of material following sweeping of the local road, to a licensed waste facility.

12.3.6 Vehicle Cleaning

It will be a requirement of the works contract that the Contractor will be required to provide wheel washing facilities, and any other necessary measures to remove mud and organic material from vehicles exiting sites.

Chute washout will be carried out at designated locations only. These locations will be signposted throughout the construction site. The concrete plant and all delivery drivers will be informed of their location with the order information and on arrival on site. Chute washout locations will be provided with appropriate designated, contained impermeable area and treatment facilities including adequately sized settlement tanks. The clear water from the settlement tanks shall be pH corrected prior to discharge (which shall be by means of one of the construction stage settlement facilities) or alternatively disposed of as waste in accordance with the CWMP.

12.3.7 Road Condition

The extent of the heavy vehicle traffic movements and the nature of the payload may create problems of:

- Fugitive losses from wheels, trailers or tailgates.
- Localised areas of subgrade and wearing surface failure.

The Contractor shall ensure that:

- Loads of materials leaving each site will be evaluated and covered if considered necessary to minimise potential dust impacts during transportation.
- The transportation contractor shall take all reasonable measures while transporting waste or any other materials likely to cause fugitive losses from a vehicle during transportation to and from site, including but not limited to:
  - Covering of all waste or material with suitably secured tarpaulin/ covers to prevent loss.
  - Utilisation of enclosed units to prevent loss.

12.3.8 Road Closures

The upgrade to the local road L2545 as described in **Section 4.1.2** above will be carried out in advance of the main site construction works. It is not anticipated that there will be any road closures required and a temporary two-way road will be constructed to the south of the existing L2545 to avoid this.

12.3.9 Enforcement of Traffic Management Plan

All project staff and material suppliers will be required to adhere to the CTMP. As outlined above, the Contractor shall agree and implement monitoring measures to confirm the effectiveness of the CTMP and compliance will be monitored by the Indaver contract management team. Regular inspections / spot checks will also be carried out to ensure that all project staff and material supplies follow the agreed measures adopted in the CTMP.

12.3.10 Communication

The Contractor, through the Indaver contract management team, shall ensure that close communication with the relevant local authorities and the emergency services shall be maintained throughout the construction phase.

Such communications shall include:

- Updates to the CTMP as necessary.
- updates to construction programming.
- Information relating to local and community events that could conflict with proposed traffic management measures and construction traffic in order to implement alternative measures to avoid such conflicts.

The Contractor, through the Indaver contract management team, will also ensure that the local community is informed of proposed traffic management measures in advance of their implementation. This communication will primarily be achieved through a Community Liaison Committee. This is described in more detail in **Section 14** below.

Such information may also be disseminated by posting advertisements in local newspapers or delivering leaflets to houses in the affected areas. Such information shall contain contact information for members of the public to obtain additional information and to provide additional knowledge such as local events, sports fixtures etc. which may conflict with proposed traffic management measures.

12.3.11 Conclusions

This CTMP will form part of the construction contract and is designed to reduce possible impacts which may occur during the construction of the proposed development.

The CTMP will be used by the appointed contractor as a basis for the preparation of a finalised CTMP and shall detail, at a minimum, the items detailed in this CTMP and any subsequent requirements of the local authorities and ACP.

The Indaver contract management team shall be responsible for ensuring that the Contractor manages the construction activities in accordance with this CTMP and shall ensure that any conditions of planning are incorporated into the finalised CTMP prepared by the appointed works Contractor.

13. Environmental Awareness Training Strategy

All of the Contractor's site personnel will receive relevant and appropriate training to ensure that they have the appropriate knowledge to successfully implement the CEMP. The use of the term "Contractor's site personnel" in this CEMP is intended to include the site personnel of all subcontractors whom the Contractor has subcontracted part of the works. The term is also intended to include the site personnel of any specialists, nominated subcontractors, etc. Training will include that detailed below.

13.1 CEMP, EIS, NIS and Contractual Requirement Briefing

The SEM will provide a briefing for all of the Contractor's senior management including the Project Manager, Programme Manager, Construction Manager, Design Engineers, Structures Agents and Site Agents on the CEMP and the Environmental Commitments/Requirements that must be met during the construction phase. The Indaver contract management team will be monitoring compliance with the CEMP.

13.2 Environmental Induction Training

The SEM will provide Environmental Induction Training for all senior management, the contents of which will be included in the finalised CEMP. All other site personnel will receive environmental induction in conjunction with safety induction training. No person will work on site without first receiving the site safety and environmental induction. Records of training will be kept for all environmental training provided and copies of training records will be given to the SEM.

13.3 Task Specific Training

Where a site-specific method statement/plan has been devised for a works activity (e.g. working in an area where non-native invasive species are present or waste management), all Contractor site personnel involved in that activity will be given a toolbox talk outlining the Environmental Control Measures. The foreperson will be responsible for providing the toolbox talk and for providing training records to the SEM.

14. Communications Strategy

This section sets out the communications strategy which will be adopted during the construction phase. A good communications strategy promotes awareness, education and information sharing on a particular project's progress. The procedures adopted for internal and external communication of information regarding the specific elements of the proposed development strategy will be finalised by Indaver in consultation with the Contractor.

14.1 Public Communications Strategy

The Indaver contract management team will put in place a Public Communications Strategy which will provide a two-way mechanism for members of the public to communicate with a designated Indaver staff member and for the Contractor to communicate important information on various aspects of the proposed development to the public. The forum for this interaction will be the Community Liaison Committee (CLC) which will be established for the proposed development.

The CLC shall comprise seven members having an independent chairperson, two local community representatives, two elected members of the planning authority, one official of the planning authority and one representative from Indaver. Once established, an agreed calendar of regular meetings will be set up to ensure that ongoing information and updates in relation to the project can be effectively communicated and information about upcoming local events can be shared.

The public communications strategy, which will be finalised by Indaver in consultation with the Contractor, will include:

- procedures to inform members of the community (outside of the normal schedule of meetings with the CLC) directly affected by the construction phase on schedules for any activity of a particularly disruptive nature which is likely to impinge on their property such as road closures and diversions, pile driving and any mitigating actions that are being taken (shielding, restriction on work hours, etc.) to minimise such disruption.
- details of a contact name and number for any complaints that may arise during such works.

A complaints register will form part of the communications strategy and all complaints will be handled in an efficient manner. The register will have prescribed methodologies for documenting and actioning complaints received from the community and other relevant stakeholders.

14.2 Internal Communication

The Contractor will put in place an internal communications strategy which will include procedures for effective internal communications. The strategy, which will be finalised by the Contractor will include measures such as the following:

- The site management meeting will include environmental issues on the agenda;
- Weekly site safety meetings will include environmental issues on the agenda;
- The SEM will report on environmental issues to the site management meetings;
- The SEM will attend the weekly meetings.

15. Inspections, Auditing and Monitoring Compliance Strategy

This section outlines the inspections, auditing and monitoring compliance strategy that will be finalised by the Contractor.

15.1 Inspections

The SEM, who has been identified as being responsible for the successful development, implementation and maintenance of the CEMP, will carry out environmental inspections at appropriate intervals. Where appropriate and when required, the SEM will arrange to be accompanied on these environmental inspections by qualified and accredited environmental professionals, whose knowledge and experience may cover the fields of ecology, hydrology, hydrogeology, landscape architecture, noise, air quality and other environmental sciences. The locations, frequency and nature of the inspections will depend on the nature of the construction activities being carried out and the sensitivity of the surrounding environment. The inspection strategy will be finalised by the Contractor. The SEM will append the reports of the environmental inspections to the CEMP and the results of the inspections will be discussed at the weekly site safety and environmental meetings.

15.2 Monitoring

The Contract documents, EIS, NIS, Conditions and/or Modifications imposed by ACP, Schedule of Environmental Commitments, environmental legislative requirements, the provisions of licences and the results of consultations with contractually or legally prescribed third parties may require the execution of certain types of monitoring (e.g. water quality, noise and vibration and/or air quality modelling, etc.).

The SEM will draw up a schedule of monitoring required, listing the type of report expected and detailing to whom the reports should be sent, etc. It is the responsibility of the SEM to ensure that all monitoring is carried out by competent persons.

Where the monitoring results fall outside the range contractually required, the SEM is responsible for initiating and reporting on corrective action. This may require the alteration of relevant Environmental Control Measures.

15.3 Audits

The SEM in conjunction with the Construction Manager, will carry out an audit of the CEMP on each quarterly anniversary of the commencement date to determine whether the CEMP is effective in ensuring that the Contractor is meeting all Environmental Commitments/Requirements. Where required as a result of such audits, the SEM will make all necessary changes to the CEMP and bring them to the attention of the Construction Manager, etc. All changes to the CEMP will be made by the SEM and approved by the Construction Manager and the Indaver contract management team. The reports of these audits will be annexed to the CEMP. The SEM will track environmental legislation and any changes in the legislation that could affect the CEMP will be brought to the attention of the Construction Manager and the Indaver contract management team.

16. EIS and NIS Mitigation and Monitoring Measures

All mitigation and monitoring measures detailed in the EIS and NIS are detailed below.

16.1 Roads and Traffic

Indaver will appoint a construction management team for the duration of the construction phase. The team will supervise the construction of the project, including monitoring the performance of the contractors to ensure that all of the proposed construction phase mitigation measures are implemented and that construction impacts and nuisance are minimised. Indaver will liaise with neighbours and the general community during the construction phase to ensure that any disturbance is kept to a minimum.

A Construction Traffic Management Plan will be prepared by the appointed main contractor prior to construction commencing. The Construction Traffic Management Plan will comprise all of the construction traffic mitigation measures which are set out in this EIS, **Section 12** and any additional measures which are required by the conditions attached to ACP's decision. The Construction Traffic Management Plan will also include any specific requirements of Cork County Council during the construction phase including any monitoring and reporting requirements. This Plan will be submitted to and agreed with Cork County Council prior to construction commencement.

16.2 Air Quality

16.2.1.1 Mitigation Measures

The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for effect from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of dust produced will be deposited close to the generated source. A series of measures, based on best practice have been formulated (see below) for the construction phase of the project, as construction activities are likely to generate some dust emissions.

In order to ensure that no dust nuisance occurs, the following dust control measures will be implemented.

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only apart from the contractor's car park which will be hardcore only
- Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions

- Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 km/h, and on hard surfaced roads as site management dictates
- Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust
- Wheel washing facilities will be provided for vehicle exiting site in order to ensure that mud and other wastes are not tracked onto public roads
- Public roads outside the site will be regularly inspected for cleanliness, and cleaned as necessary
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions

16.2.1.2 Monitoring Measures

At all times, these procedures will be strictly monitored and assessed by the Site Environmental Manager (SEM) as outlined in **Section 7**. Boundary monitoring of dust emissions will be undertaken using Bergerhoff dust gauges at a number of locations near sensitive receptors with results compared to the TA Luft dust deposition level of 350 mg/(m^2*day) as an annual average. In the event of significant dust deposition occurring outside the proposed development site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

16.3 Climate

The objective of the mitigation measures outlined below is to ensure that GHG emissions are minimised wherever possible during the construction phase of the proposed development. The mitigation measures which are relevant to GHG emission reductions are outlined below:

- All vehicles will be required to switch off engines when stationary (no idling)
- All vehicles will be serviced and maintained to ensure emissions are minimised
- Where practicable, building materials will be reused within the extent of the proposed development; and
- Where practicable, building materials will be sourced locally (within 20-25km) to reduce the embodied emissions associated with transport

As a result of these mitigation measures, the GHG emissions will be reduced during the construction phase compared to the baseline scenario.

During construction, the Contractor will be required to mitigate against the effects of extreme rainfall / flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind / storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction.

During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

16.4 Noise and Vibration

The construction phase appraisal has indicated that, during the various key activities proposed as part of this development, construction activities can be undertaken within the proposed noise criteria at the nearest sensitive buildings. During out–of-hours construction periods, or other construction scenarios with high potential for noise and vibration generating activities best practice noise and vibration control measures will be employed by the contractor in order to avoid significant effects at the nearest sensitive buildings. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- selection of quiet plant
- noise control at source
- screening
- liaison with the public, and
- monitoring

Details in relation to these mitigation measures is set out in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise and vibration monitoring.

The SEM, appointed by the Contractor, will be responsible for the successful development, implementation and maintenance of the CEMP, will carry out environmental inspections.

16.4.1.1 Selection of Quiet Plant

This practice will relate to static plant, such as compressors and generators. Units will 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 should be selected. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

16.4.1.2 Noise Control at Source

If required, 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.

For mobile plant items such as cranes, dump trucks, excavators and loaders, the installation of an acoustic exhaust and or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB. Mobile plant will be switched off when not in use and not left idling.

- For piling plant, noise reduction will be achieved by enclosing the driving system in an acoustic shroud, where necessary. For steady continuous noise, such as that generated by diesel engines, it is possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.
- For percussive tools such as pneumatic concrete breakers, rock drills and tools 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. Further reductions in noise levels will be achieved by erecting localised screens around breakers or drill bits 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, materials will not be dropped from excessive heights. Drops chutes and dump trucks will be lined with resilient materials.

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

16.4.1.3 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. It has been assumed for the purposes of this assessment that a standard construction site hoarding will be erected around the site boundaries of the main building works of the waste to energy building. The site hoarding will be constructed of a material with a mass per unit of surface area greater than 7 kg/m^2 to provide adequate sound insulation.

In addition, careful planning of the site layout will also be considered. Where feasible, site buildings such as offices and stores will be placed between the source and receiver to provide noise screening.

16.4.1.4 Liaison with the Public

The SEM will be the designated officer appointed to site during construction works. Any noise complaints should be logged and followed up in a prompt fashion by the SEM. In addition, as part of the communication strategy for the project, prior to particularly noisy construction activity or those with potential for perceptible vibration levels, e.g. rock breaking, piling, etc., the SEM will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

16.4.1.5 Monitoring

Prior to the construction works commencing on site, environmental noise and vibration monitors will be installed at the selected monitoring locations. The SEM will be responsible for this monitoring.

Noise monitoring will be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*. Vibration monitoring will be conducted in accordance with BS 4866 (2010) *Mechanical vibration and shock. Vibration of fixed structures. Guidelines for the measurement of vibrations and evaluation of their effects on structures*.

16.4.1.6 Project Programme

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

16.5 Landscape and Visual

Mitigation measures for landscape and visual impacts have been incorporated into the design of the proposed development.

In order to ensure the designed mitigation measures are effective, the construction of the proposed development must follow the design and material and colour selection as set out in the EIS and accompanying architectural drawings.

In relation to landscape mitigation, it is important that stringent specifications will be employed with regard to all the planting works, and that the landscape contract will include a 12 month maintenance period during which any plants which fail will be replaced.

16.6 Biodiversity

The following mitigation measures will be implemented during construction phase:

16.6.1.1 Protection of Habitats

- To prevent incidental damage by machinery or by the deposition of spoil during the site clearance stage, any trees /habitats earmarked for retention will be securely fenced early in the construction phase. The fencing will be clearly visible to machine operators.

- To prevent Japanese Knotweed from outside the proposed development site being inadvertently being brought into the site, the contractor will be required to inspect vehicles before using them on site and will pay particular attention to caterpillar tracks and where trucks and dumpers are stowed. The supplier of fill will be required to provide a guarantee that the fill to be imported does not contain knotweed. In addition, the fill will be inspected for signs of knotweed, prior to importation to site. The UK Environmental Agency's publication Managing Japanese knotweed on development sites - The Knotweed Code of Practice (EA 2013), states that inspection of topsoil brought into the site, should be carried out using the guidance in Appendix I-IV of the code BS 3882:2007 '*The British Standard Specification for topsoil and requirements for use*'. This Standard was replaced subsequently by BS3882:2015 Specification for Topsoil. The inspection of fill will be carried out according to this Standard.

16.6.1.2 Protection of Water Quality

- A dedicated holding tank for storage of construction foul effluent will be constructed prior to commencement of the main construction activities. The effluent will be regularly disposed of off-site by tanker by a licensed contractor to an approved licensed facility.

- Storm water will be managed carefully during construction. In general, storm water will be infiltrated to ground via silt traps and managed soakaways. The laydown areas will be suitably drained and any areas which will involve the storage of fuel and refuelling will be paved and bunded and hydrocarbon interceptors will be installed to ensure that no spillages will get into the surface water or groundwater.

The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off, seawater or groundwater. The Construction Industry Research and Information Association (CIRIA) in the UK has issued a guidance note on the control and management of water pollution from construction sites, *Control of Water Pollution from Construction Sites, guidance for consultants and contractors* (Masters-Williams et al 2001). Additional guidance is provided in the CIRIA technical guidance on *Control of Water Pollution from Linear Construction Projects* (Murnane *et al.* 2006).

Measures, as recommended in the guidance above, that will be implemented to minimise the risk of spills and contamination of soils and waters, include:

- Training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures

- Careful consideration will be given to the location of any fuel storage facilities. These will be designed in accordance with guidelines produced by CIRIA and will be fully bunded

- All vehicles and plant will be regularly inspected for fuel, oil and hydraulic fluid leaks. Suitable equipment to deal with spills will be maintained on site

- Where feasible, soil excavation will be completed during dry periods and undertaken with excavators and dump trucks. Topsoil and subsoil will not be mixed together. Specific measures will be implemented, as specified by the Invasive Species Management Plan to ensure that Japanese Knotweed is not spread within the proposed development site or outside the site boundaries

- Ensure that all areas where liquids are stored or cleaning is carried out are in a designated impermeable area that is isolated from the surrounding area, e.g. by a roll-over bund, raised kerb, ramps or stepped access

- Use collection systems to prevent any contaminated drainage entering surface water drains, watercourses or groundwater, or draining onto the land

- Minimise the use of cleaning chemicals

- Use trigger-operated spray guns, with automatic water-supply cut-off
- Use settlement lagoons or suitable absorbent material such as flocculent to remove suspended solids such as mud and silt
- Ensure that all staff are trained and follow vehicle cleaning procedures. Post details of the procedures in the work area for easy reference

16.6.1.3 Air Quality

Construction activities have the potential to generate dust emissions, particularly during the site clearance and excavation stages. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with ambient conditions, including rainfall, wind speed, wind direction and on the distance to potentially sensitive locations. Most of the dust would be deposited close to the potential source and any effects from dust deposition would typically be within a hundred metres or so of the construction area. A dust minimisation plan will be prepared and implemented by the building contractor during the construction phase of the proposed development. The following avoidance, remedial or reductive measures will be implemented as part of the dust minimisation plan:

- During very dry periods when dust generation is likely, construction areas will be sprayed with water
- Exhaust emissions from vehicles operating within the proposed development site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor through regular servicing of machinery
- Vehicle speeds will be limited in the construction site
- Surrounding roads used by trucks for access to and egress from the proposed development site will be cleaned regularly using an approved mechanical road sweeper. Roads will be cleaned subject to local authority requirements. Site roads will be cleaned on a daily basis
- During construction wheel-wash facilities will be provided with rumble grids to remove excess mud from wheels. These facilities will be located at the exit from the proposed development site and away from sensitive receptors, where possible. Wheel wash run off will be stored in an onsite storage tank and will be disposed of by permitted waste haulage company at a permitted or licensed facility
- Internal haul roads will be paved at the earliest possible opportunity and inspected regularly for cleanliness
- Materials carried on vehicles to site will be enclosed or covered with tarpaulins
- Daily visual inspections will be carried out at locations around the proposed development site boundary as required. These inspections will monitor the effectiveness of dust mitigation measures
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind

16.6.1.4 Waste Management

- Waste generated during the construction phase will be carefully managed according to the accepted waste hierarchy which gives precedence to prevention, minimisation, reuse and recycling over disposal with energy recovery and finally disposal to landfill.
- All waste removed from the site will be collected only by contractors with valid waste collection permits, under the Waste Management (Collection Permit) Regulations 2007 and 2008. All facilities to which waste will be taken will be audited in advance, to ensure that they have appropriate waste licences or permits, under the Waste Management Act 1996 as amended by the Protection of the Environment Act 2003, and the regulations thereunder, allowing them to accept the type of waste that is to be sent there. Hazardous waste generation will be minimised, and such waste will be recovered where feasible, and only disposed of if recovery is not feasible. Hazardous waste will be managed in accordance with the relevant legislation.

16.6.1.5 Mitigation - Invasive Species

Prior to the commencement of construction works an invasive species survey will be undertaken within the proposed development boundary by a competent expert to determine if invasive species listed under Part 1 of the Third Schedule of S.I No. 477 of 2011 have established in the area in the period between pre-planning and post consent.

Amber list species (with the exception of Sycamore) will be managed/removed during construction works in line with best practice and the landscape plan.

16.6.1.6 Badger Mitigation Measures

An active sett was recorded within the proposed development site boundary. Additional surveys will be carried out immediately prior to the commencement of site works, to determine the status of the sett. This will allow a more accurate and up-to-date picture of how badgers are using the site once road construction is completed and when usage of the road commences. Once construction has been completed, there may be a change in the distribution of badgers within the site and the adjoining area. This may include the utilisation of the new artificial sett and underpass.

If Badgers are discovered at that time, the mitigation measures outlined in the NRA publication, *Guidelines for the Treatment of Badgers Prior to the Construction of a National Road Scheme* (NRA, 2005a), should be followed. If necessary, the following measures will be employed for all construction works where Badger issues arise.

- Badger sett tunnel systems can extend up to *c.* 20m from sett entrances. Therefore, no heavy machinery should be used within 30m of badger setts (unless carried out under licence); lighter machinery (generally wheeled vehicles) should not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance should not take place within 10m of sett entrances.
- During the breeding season (December to June inclusive), none of the above works should be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts.
- Following consultation with the NPWS and Badger experts, works closer to any active setts may take place during the breeding season provided appropriate mitigation measures are in place, e.g. sett screening, restricted working hours, etc.
- All affected Badger setts will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage. Bunting is an option on a temporary basis. Hazard tape is inadequate as it is prone to deterioration and damage by wind or cattle etc.
- All contractors/operators on site should be made fully aware of the procedures pertaining to each sett on site.
- Construction activities within the vicinity of affected setts may commence once these setts have been evacuated and destroyed under licence from the NPWS. Where affected setts do not require destruction, construction works may commence once recommended alternative mitigation measures to address the Badger issues have been complied with.
- Works close to Badger setts or removal of Badgers from a site may only be carried out under the supervision of a qualified expert under licence from the NPWS.

16.6.1.7 Bird Mitigation Measures

The Wildlife Act 1976, as amended, provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land, or any such growing in any hedge or ditch from the 1st of March to the 31st of August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. Nonetheless, it is recommended that vegetation be removed outside of the breeding season.

Retention of the native hedgerows and enhancement of existing scrub within the proposed development site will reduce the loss of breeding and nesting habitat for birds. Additional native planting of treelines and

hedgerows are proposed. The creation of alternative scrub habitat at the south-west of the site will provide alternative foraging/nesting habitat as this habitat matures. NRA guidelines on the protection of trees and hedges prior to and during construction should be followed (NRA, 2006). Native species will be utilised for new planting at the proposed development site. The landscape plan will in time provide alternative feeding resources for birds.

16.6.1.8 Otter Mitigation Measures

No Otter signs or holts were noted within 150m of the proposed development. However, Otters do occur within the wider landscape and are common within Cork Harbour. A detailed pre-construction survey will confirm the absence of Otter holts within 300m of the proposed development area.

16.6.1.9 Marine Mitigation Measures

Coastal protection works will take place outside the main wintering season for birds (October to March).

It is anticipated that monitoring of the sacrificial material placed on the beach and of the cliff face will take place every year. If such material is to be replaced in the future, an ecological survey will be carried out in advance to ensure that ecological conditions have not changed in the intervening period.

16.7 Soils, Geology, Hydrogeology, Hydrology and Coastal Recession

16.7.1 Soils and Geology

Threats to soil and *subsoil*

The threats of erosion, compaction and loss of organic matter on soils and subsoils during construction will be mitigated by pre-construction design and soil management in accordance with the Defra (2009) guidance document.

All earthworks will be undertaken in accordance with a project-specific earthworks specifications ensuring that all excavated material and imported material is classified appropriately to allow maximum opportunity for the reuse of materials on the proposed development.

Where compaction of the soils and subsoils has occurred under trafficked areas, haul roads and construction compounds, decompaction of the soils and subsoils is required. Where practical, compaction of any soil or subsoil which is not part of the works or to remain in-situ within the site will be avoided.

The area that will result in sealing of the soil should be minimised in the detailed design.

Loss or damage of future quarry or pit reserves

The excavated rock will be re-used as general fill onsite where feasible minimising the loss of the feature. The Contractor will ensure acceptability of the material for re-use within the proposed development boundary with appropriate handling, processing and segregation of the material.

Disturbance of natural ground

Earthworks haulage will be along predetermined routes within and outside the proposed development boundary. The identified haulage routes are along existing national, regional, and local routes or within the proposed development boundary extents.

Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practicable, compaction of any soil or subsoil which is to remain in-situ with the proposed development will be avoided.

Washout of Fines / Sediment Runoff

The design and construction of pre-earthworks drainage on the proposed development will control the surface water runoff on the site. The pre-earthworks drainage design will incorporate sediment control

measures such as silt fences, straw wattles, sediment traps and water filtration. Care will be undertaken in earthworks activities to minimise dust generation, groundwater infiltration, and generation of run-off.

Degradation of material for reuse

The earthworks will be undertaken in accordance with a project-specific earthworks specifications ensuring that the excavated and imported material is classified appropriately to allow maximum opportunity for the reuse of materials on the proposed development.

Overburden and rock excavated on the site will be assessed for re-use. The excavation, management, stockpiling and placement of engineering fill shall be undertaken in accordance with best practice to retain the existing structure and integrity of the excavated materials. Processing of marginal or unacceptable material should be considered where possible. Material that is not suitable for reuse will be exported off site for disposal or recovery at appropriately licensed or permitted sites.

Earthworks operations will be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe run-off and prevent ponding and flooding and degradation of formation.

Geological Heritage Area

The Geological Survey of Ireland (GSI) was consulted on the effect the proposed development on the Ringaskiddy County Geological Site (CK077). The GSI state that machinery accessing Gobby Beach to place the beach nourishment material above the foreshore should aim to minimise damage tolimestone boulder erratics and bedrock outcrops within the heritage area. Appropriate mitigation measures should be put in place to minimise or mitigate potential effects. The GSI is to be consulted on these mitigation measures in advance of any on-site works and will require a site visit to confirm these measures are being undertaken.

Potential Ground Contamination

It is proposed to excavate areas of made ground and export this material offsite to an appropriate licensed facility. The material shall undergo assessment in accordance with EPA guidance (2021) and the material shall be categorised in accordance with the Waste Framework Directive (2008) to classify the material for export offsite.

Geohazards and Landslide Risk

Bulk excavations for foundations on the site will be undertaken in accordance with best practice to ensure stability of open excavations and cut slopes on the site. It is proposed to construct retaining structures and retention systems in Area 2 while excavating and regrading the site to ensure a safe working environment for construction workers.

Ongoing coastal processes are causing failure on the cliff face of the eastern coastal boundary but the proposed development has been located a sufficient distance from the eastern coastal boundary to ensure that the waste-to-energy facility will not enhance or accelerate the natural process of coastal retreat at this location.

The proposed placement of sacrificial beach nourishment material above the foreshore will mitigate the coastal erosion process of the cliff face.

16.7.2 Hydrogeology

Good construction management practices, as outlined in the CIRIA guidance Control of Water Pollution from Construction Sites Guidance for consultants and contractors (Masters-Williams *et al*., 2001) will be employed by the appointed contractor to minimise the risk of transmission of hazardous materials as well as pollution of groundwater. The construction management of the site will take account of these recommendations to minimised as far as possible the risk of groundwater contamination.

Measures to be implemented to minimise the risk of spills and contamination of waters include:

- Employing only competent and experienced workforce, and site-specific training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures.

- Ensure that all areas where liquids (including fuel) are stored, or cleaning is carried out, are in designated impermeable areas that are isolated from the surrounding area and within a secondary containment system, e.g., by a roll-over bund, raised kerb, ramps or stepped access.
- Good housekeeping at the site (daily site clean-up, use of disposal bins, etc.) during the entire construction phase.
- Potential pollutants to be adequately secured against vandalism.
- Provision of proper containment of potential pollutants according to codes of best practice.
- Thorough control during the entire construction phase to ensure that any spillage is identified at early stage and subsequently effectively contained and managed.

Good construction management practices that will be employed to prevent the risk of pollution of the existing groundwater and to manage any groundwater dewatering during construction.

To mitigate any potential risks regarding groundwater contamination, groundwater monitoring campaigns are recommended.

16.7.3 Hydrology

There are no existing watercourses on site. Cork Harbour, with associated protected areas, lies adjacent to the eastern boundary of the site. The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off, seawater or groundwater. In general, storm water will be infiltrated to ground via managed soakaways. The laydown areas will be suitably drained and any areas which will involve the storage of fuel and refuelling will have paved areas with bunding and hydrocarbon interceptors to ensure that no spillages will get into the surface water or groundwater systems.

The proposed placement of sacrificial material on the beach will be undertaken above the foreshore on Gobby Beach. Clean material will be used. Refuelling of equipment will not be allowed on the beach.

16.7.4 Coastal Recession

Access to the recreational amenity of Gobby Beach shoreline and nearby car park will be temporarily impacted (for approximately 3 weeks) during the placement of sacrificial beach material. The sacrificial material consists of imported shingle which will be temporarily deposited on the car park. To ensure the safety of the general public, it is envisaged that the area of the beach, in which the construction works will taking place and the area of the car park in which the materials will be stored, and which will be used by the machinery, will be closed to the public for the duration of the proposed works. However, access to other sections of the beach will be maintained for the duration of the works.

16.8 Archaeological, Architectural and Cultural Heritage

The construction phase of the proposed development will involve ground disturbance with the potential to affect previously unrecorded sub-surface archaeological remains. The primary areas of effect are confined to three zones:

- Area 1 (Western Fields),
- Area 2 (site of Waste-to-energy facility),
- Portion of Area 3 (along the southern boundary, associated with the proposed amenity walkway).

Ground disturbance in Areas 1 and 2 will involve ground reduction and associated works. In contrast, the amenity walkway in Area 3 will be constructed using a no-dig methodology, thereby preserving any potential sub-surface archaeological material in this location. No ground reduction is proposed for the remainder of Areas 3 or 4, and as such, no archaeological mitigation is required in these areas.

All undisturbed areas, excluding the walkway footprint, will be securely fenced during construction to prevent inadvertent disturbance.

Pre-Construction Investigations

In consultation with the Cork County Council Archaeologist (Ms. Annette Quinn), a programme of licensed archaeological investigation will be undertaken in Areas 1 and 2 in advance of construction. This will include:

- Geophysical Survey in Area 1, subject to suitable ground conditions.
- Archaeological Testing in both Area 1 (to investigate any anomalies identified during the geophysical survey) and Area 2 (where ground conditions preclude geophysical survey).

The purpose of this investigation is to establish the presence, extent, and significance of any archaeological material. All works will be carried out under licence issued by the National Monuments Service and in accordance with the *Policy and Guidelines on Archaeological Excavation* (Department of Arts, Heritage, Gaeltacht and the Islands, 1999).

In addition, monitored vegetation clearance and targeted archaeological testing will be carried out along the line of the path from Gobby Beach to the Martello Tower, as shown on the first, second, and third editions of the OS maps. The aim of the testing is to determine whether any section of the original path remains intact.

Should archaeological features be identified during the course of these investigations, they will be resolved to professional archaeological standards, either by preservation *in situ* or preservation by record, as appropriate.

L2545 Road Upgrade

The proposed upgrade of the L2545 will occur within the existing road footprint. As no new ground disturbance is proposed, no archaeological mitigation is considered necessary for this element of the development.

Coastal Protection Works at Gobby Beach

An intertidal and metal detector survey was conducted at Gobby Beach in May 2015, extending across the intertidal and foreshore area to the base of the glacial till slope on the eastern site boundary. The survey identified a single find: a cast-iron cannonball (62 mm diameter). No other artefacts or features were identified.

The proposed coastal protection works will be confined entirely to the area above the high water mark, and no works will take place within the intertidal zone. However, given the potential for unrecorded sub-surface features immediately adjacent to the foreshore area, the following mitigation strategy will be implemented during coastal protection works:

- A single, clearly defined access route to the base of the glacial till slope will be established and fenced off for the duration of the works.
- All groundworks in this area will be subject to archaeological monitoring.
- Any archaeological features or artefacts identified will be addressed through preservation in situ or preservation by record, as appropriate.

Connection to the National Electrical Grid – Area 2

Two grid connection options (A and B) are proposed for the development:

Archaeological monitoring will be undertaken during the groundworks associated with the proposed grid connections; options A and B. Should archaeological features be identified, they will be resolved to professional archaeological standards, either by preservation *in situ* or preservation by record, as appropriate.

Martello Tower Vibration Monitoring

In consultation with the Cork County Council Conservation Officer (Ms. Elena Turk), it is acknowledged that while the proposed development will not physically intrude on the Ringaskiddy Martello Tower (RMP CO087-053; RPS No. 575), the monument may be sensitive to construction-related vibration, particularly during groundworks.

The tower forms part of a wider defensive complex, including its enclosing circular wall and associated ditch, which collectively contribute to its architectural and historical significance. As such, any effect on the structural integrity of these features, either through ground borne vibration or settlement, will be proactively assessed and managed. A programme of vibration monitoring will be implemented throughout the construction phase to assess and manage any potential effects on the structural integrity of the monument.

16.9 Material Assets

The proposed development will be constructed and operated in accordance with good practice in energy and resource conservation, and efficiency.

The overall environmental management strategy that will be adopted and implemented during the construction phase including the responsible and efficient management of material assets including water and waste. The contractor will appoint a Construction Waste Co-Ordinator who will be responsible for implementing the construction waste management plan (CWMP).

For further information, refer to **Section 9** above.

16.10 NIS

16.10.1 Noise & Vibration

The following mitigation is proposed with respect to noise during construction.

During out of hours construction periods or other construction scenarios with high potential for noise and vibration generating activities, best practice noise and vibration control measures will be employed by the contractor. The best practice measures set out in BS 5228 (2009) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to the following:

Selection of quiet plant

This practice will be in relation to static plant such as compressors and generators. Units will 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 should be selected.

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.
- For mobile plant items such as cranes, dump trucks, excavators and loaders, the installation of an acoustic exhaust and or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB. Mobile plant will be switched off when not in use and not left idling.
- For piling plant, noise reduction will be achieved by enclosing the driving system in an acoustic shroud, where necessary. For steady continuous noise, such as that generated by diesel engines, it is possible to

reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.

- For percussive tools such as pneumatic concrete breakers, rock drills and tools 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. Further reductions in noise levels will be achieved by erecting localised screens around breakers or drill bits 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, materials will not be dropped from excessive heights. Drops chutes and dump trucks will be lined with resilient materials.
- For compressors, generators and pumps, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation, where required.
- 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.

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. It has been assumed for the purposes of this assessment that a standard construction site hoarding will be erected around the site boundaries. The site hoarding will be constructed of a material with a mass per unit of surface area greater than 7 kg/m^2 to provide adequate sound insulation.

In addition, careful planning of the site layout will also be considered. Where feasible, site buildings such as offices and stores will be placed between the source and receiver to provide noise screening.

Monitoring

Prior to the construction works commencing on the proposed development site, environmental noise and vibration monitors will be installed at the selected monitoring locations. The monitoring programme during the constructions works will ensure the effective implementation of the mitigation measures described in the preceding sections.

16.10.2 Accidental Releases from the Site

Potential accidental releases with a higher risk of occurrence during construction would include siltation from construction runoff or hydrocarbon leaks from construction machinery.

A range of easily implemented control measures, will ensure that any risks are minimised as follows:

- To prevent incidental damage by machinery or by the deposition of spoil during the site clearance stage, any trees /habitats earmarked for retention will be securely fenced early in the construction phase. The fencing will be clearly visible to machine operators.
- A dedicated holding tank for storage of construction foul effluent will be constructed prior to commencement of the main construction activities. The effluent will be regularly disposed of off-site by tanker by a licensed contractor to an approved licenced facility
- Storm water will be managed carefully during construction. In general, storm water will be infiltrated to ground via silt traps and managed soakaways. The laydown areas will be suitably drained and any areas which will involve the storage of fuel and refuelling will be paved and bunded and hydrocarbon interceptors will be installed to ensure that no spillages will get into the surface water or groundwater.
- The construction management of the site will take account of the recommendations of the CIRIA guide *Control of Water Pollution from Construction Sites 2001*.

Construction activities have the potential to generate dust emissions, particularly during the site clearance and excavation stages. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with ambient conditions, including rainfall, wind speed, wind direction and on the distance to potentially sensitive locations. Most of the dust would be deposited close to the potential source and any impacts from dust deposition would typically be within 100 metres or so of the construction area.

The following avoidance, remedial or reductive measures will be implemented as part of the dust minimisation plan:

- During very dry periods when dust generation is likely, construction areas will be sprayed with water.
- Exhaust emissions from vehicles operating within the site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor through regular servicing of machinery.
- Vehicle speeds will be limited in the construction site.
- Surrounding roads used by trucks for access to and egress from the site will be cleaned regularly using an approved mechanical road sweeper. Roads will be cleaned subject to local authority requirements. Site roads will be cleaned on a daily basis, or more regularly, as required.
- Wheel-wash facilities will be provided with rumble grids to remove excess mud from wheels. These facilities will be located at the exit from the site and away from sensitive receptors, where possible.
- Internal haul roads will be paved at the earliest possible opportunity and inspected regularly for cleanliness.
- Materials carried on vehicles to site will be enclosed or covered with tarpaulins.
- Daily visual inspections will be carried out at locations around the site boundary as required. These inspections will monitor the effectiveness of dust mitigation measures.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind.
- Wheel wash facilities will be provided for vehicles exiting the project site. Wheel wash run off will be stored in an onsite storage tank and will be disposed of by permitted waste haulage company at a permitted or licensed facility.

Waste generated during the construction phase will be carefully managed according to the accepted waste hierarchy which gives precedence to prevention, minimisation, reuse and recycling over disposal with energy recovery and finally disposal to landfill.

All waste removed from the site will be collected only by contractors with valid waste collection permits, under the Waste Management (Collection Permit) Regulations 2007 and 2008. All facilities to which waste will be taken will be audited in advance, to ensure that they have appropriate waste licences or permits, under the Waste Management Act 1996, as amended, and the regulations thereunder, allowing them to accept the type of waste that is to be sent there. Hazardous waste generation will be minimised, and such waste will be recovered where feasible, and only disposed of if recovery is not feasible. Hazardous waste will be managed in accordance with the relevant legislation.

The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off, seawater or groundwater. The Construction Industry Research and Information Association (CIRIA) in the UK has issued a guidance note on the control and management of water pollution from construction sites, *Control of Water Pollution from Construction Sites, guidance for consultants and contractors* (Masters-Williams *et al*. 2001). Additional guidance is provided in the CIRIA technical guidance on *Control of Water Pollution from Linear Construction Projects* (Murnane *et al.* 2006).

- Measures, as recommended in the guidance above, that will be implemented to minimise the risk of spills and contamination of soils and waters, include:

- Training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures,
- Careful consideration will be given to the location of any fuel storage facilities. These will be designed in accordance with guidelines produced by CIRIA, and will be fully bunded.
- All vehicles and plant will be regularly inspected for fuel, oil and hydraulic fluid leaks. Suitable equipment to deal with spills will be maintained on site.
- Where feasible, soil excavation will be completed during dry periods and undertaken with excavators and dump trucks. Topsoil and subsoil will not be mixed together.
- All areas where liquids are stored or cleaning is carried out will be located within a designated impermeable area that is isolated from the surrounding area, e.g. by a roll-over bund, raised kerb, ramps or stepped access.
- Use collection systems to prevent any contaminated drainage entering surface water drains, watercourses or groundwater, or draining onto the land.
- Minimise the use of cleaning chemicals.
- Use trigger-operated spray guns, with automatic water-supply cut-off.
- Use settlement lagoons or suitable absorbent material such as flocculent to remove suspended solids such as mud and silt.
- Ensure that all staff are trained and follow vehicle cleaning procedures.
- Post details of the procedures in the work area for easy reference.

Appendix A

EPA – List of Waste Codes for Construction and Demolition Wastes

A.1 EPA – List of Waste Codes for Construction and Demolition Wastes

03	WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD
03 02	**wastes from wood preservation**
03 02 01*	non-halogenated organic wood preservatives
03 02 02*	organochlorinated wood preservatives
03 02 03*	organometallic wood preservatives
03 02 04*	inorganic wood preservatives
03 02 05*	other wood preservatives containing hazardous substances
03 02 99	wood preservatives not otherwise specified

13	OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)
13 07	**wastes of liquid fuels**
13 07 01*	fuel oil and diesel
13 07 02*	petrol
13 07 03*	other fuels (including mixtures)

15	WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED
15 01	**packaging (including separately collected municipal packaging waste)**
15 01 01	paper and cardboard packaging
15 01 02	plastic packaging
15 01 03	wooden packaging
15 01 04	metallic packaging
15 01 05	composite packaging
15 01 06	mixed packaging
15 01 07	glass packaging
15 01 09	textile packaging

16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 02	**wastes from electrical and electronic equipment**
16 02 09*	transformers and capacitors containing PCBs
16 02 10*	discarded equipment containing or contaminated by PCBs other than those mentioned in 16 02 09
16 02 11*	discarded equipment containing chlorofluorocarbons, HCFC, HFC
16 02 12*	discarded equipment containing free asbestos
16 02 13*	discarded equipment containing hazardous components[1] other than those mentioned in 16 02 09 to 16 02 12
16 02 14	discarded equipment other than those mentioned in 16 02 09 to 16 02 13
16 02 15*	hazardous components removed from discarded equipment
16 02 16	components removed from discarded equipment other than those mentioned in 16 02 15
16 06	**batteries and accumulators**
16 06 01*	lead batteries
16 06 02*	Ni-Cd batteries
16 06 03*	mercury-containing batteries
16 06 04	alkaline batteries (except 16 06 03)
16 06 05	other batteries and accumulators
16 06 06*	separately collected electrolyte from batteries and accumulators

17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 01	**concrete, bricks, tiles and ceramics**
17 01 01	concrete
17 01 02	bricks
17 01 03	tiles and ceramics
17 01 06*	mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06

17 02	**wood, glass and plastic**
17 02 01	wood
17 02 02	glass
17 02 03	plastic
17 02 04*	glass, plastic and wood containing or contaminated with hazardous substances
17 03	**bituminous mixtures, coal tar and tarred products**
17 03 01*	bituminous mixtures containing coal tar
17 03 02	bituminous mixtures other than those mentioned in 17 03 01
17 03 03*	coal tar and tarred products
17 04	**metals (including their alloys)**
17 04 01	copper, bronze, brass
17 04 02	aluminium
17 04 03	lead
17 04 04	zinc
17 04 05	iron and steel
17 04 06	tin
17 04 07	mixed metals
17 04 09*	metal waste contaminated with hazardous substances
17 04 10*	cables containing oil, coal tar and other hazardous substances
17 04 11	cables other than those mentioned in 17 04 10
17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 03*	soil and stones containing hazardous substances
17 05 04	soil and stones other than those mentioned in 17 05 03
17 05 05*	dredging spoil containing hazardous substances
17 05 06	dredging spoil other than those mentioned in 17 05 05
17 05 07*	track ballast containing hazardous substances
17 05 08	track ballast other than those mentioned in 17 05 07
17 06	**insulation materials and asbestos-containing construction materials**
17 06 01*	insulation materials containing asbestos
17 06 03*	other insulation materials consisting of or containing hazardous substances
17 06 04	insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05*	construction materials containing asbestos
17 08	**gypsum-based construction material**
17 08 01*	gypsum-based construction materials contaminated with hazardous substances
17 08 02	gypsum-based construction materials other than those mentioned in 17 08 01
17 09	**other construction and demolition wastes**
17 09 01*	construction and demolition wastes containing mercury

20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	**separately collected fractions (except 15 01)**
20 01 01	paper and cardboard
20 01 02	glass
20 01 08	biodegradable kitchen and canteen waste
20 01 11	textiles
20 01 21*	fluorescent tubes and other mercury-containing waste
20 01 25	edible oil and fat
20 01 27*	paint, inks, adhesives and resins containing hazardous substances
20 01 33*	batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries
20 01 36	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 39	plastics
20 01 40	metals
20 03	**other municipal wastes**
20 03 01	mixed municipal waste
20 03 07	bulky waste