

**CONSTRUCTION
ENVIRONMENTAL
MANAGEMENT PLAN FOR A
PROPOSED 110 KV
SUBSTATION AND
UNDERGROUND GRID
CONNECTION, ARKLOW,
CO. WICKLOW**

Report Prepared For

Crag Wicklow Limited

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1.0 INTRODUCTION

This Outline Construction Environmental Management Plan (CEMP) has been prepared by AWN Consulting Ltd. (AWN) on behalf of Crag Wicklow Limited for submission to Wicklow County Council (WCC) for site clearance and preparation and the development of a 110 kV substation and underground grid connection.

The Proposed Development primarily comprises the provision of two no. 110 kV transmission lines (Circuit Route A & Circuit Route B) and a 110 kV Gas Insulated Switchgear (GIS) substation compound and Transformers / MV switch room compound along with associated and ancillary works.

This CEMP explains the construction techniques and methodologies which will be implemented during construction of the proposed development.

The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures. The construction Contractor will provide a further detailed CEMP to include any subsequent planning conditions relevant to the proposed development and set out further detail of the overarching vision of how the construction Contractor of the proposed development manage the site in a safe and organised manner.

This outline CEMP has been prepared to account for activities at the site during the demolition, excavation and construction phases of the project. The main issues that have been considered within this document are as follows;

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

Preparation of the updated CEMP will comply with the mitigation measures presented by submitted expert reports, relevant legislation, guidelines, along with best practice. Additional mitigation measures may be added following consultation with relevant consultees in preparation of specific method statements prior to commencement of works.

2.0 DESCRIPTION OF THE PROJECT

The Proposed Development primarily comprises the provision of two no. 110kV transmission lines (Circuit Route A & Circuit Route B) and a 110kV Gas Insulated Switchgear (GIS) substation compound and Transformers / MV switch room compound along with associated and ancillary works. The Proposed Development is located on a Site with a total area of c. 8.69 hectares (ha) of predominantly agricultural land.

The '110 kV Substation Site', is located within the Kish Business Park and comprises part of an irregularly shaped field bounded by hedgerows typical of its agricultural setting. The 110 kV Substation Site is currently in use as agricultural lands. To the

south of the 110 kV Substation Site is Armstrong Timber Engineering, there are agricultural lands to the north and east, and the Dublin-Rosslare rail line, R772, and M11 are located to the west. The 110 kV Substation Site is presently bounded by greenfield agricultural lands to the north and east, which are subject to permitted development for a 3 no. ICT Facility Buildings and associated development under Wicklow County Council (WCC) Reg. Ref.: 201088 (hereafter referred to as the 'Permitted ICT Facility').

The 'Circuit Route A', is a linear route; between the 110 kV Substation Site to the existing 110 kV Arklow – Banoge overhead line located to the west. This route crosses perpendicular to the Dublin-Rosslare rail line, then follows the R772 to cross the culverted Moneylane Stream and underneath the M11 motorway at Junction 21, then traverses along the L6187, enters agricultural lands at Knockeneahan Road (L2190), and terminates at the existing 110 kV Arklow – Banoge overhead line.

The 'Circuit Route B', is a linear route; between the 110 kV Substation Site to the existing 110 kV Arklow – Banoge overhead line located to the west. The route crosses perpendicular to the Dublin-Rosslare rail line, the Moneylane Stream, R772, M11, then traverses an IDA Business Park, and open agricultural lands adjacent to the M11 and Knockeneahan Road (L2190) and terminates at the existing 110 kV Arklow – Banoge overhead line.

The Moneylane Stream is situated to the west of the 110 kV Substation Site and flows in a northerly direction. The 110 kV Substation Site and Permitted ICT Facility is drained by a series of agricultural ditches which connect to the Moneylane Stream and ultimately discharges into the Avoca River.



Figure 2.1 Proposed Development Lands (Red boundary)

3.0 CONSTRUCTION PROGRAMME AND PHASING

The construction works associated with the proposed development site is anticipated to be constructed over 12 months. The site office and welfare facilities (site compound) will be shared with the ICT Facility permitted under WCC Reg. Ref.: 201088. The site compound and welfare facilities for the ICT Facility is established at the south west corner of the ICT site, which corresponds to the south east corner of the substation development. The location of the site compound can be viewed in Figure 5.1, below.

It is anticipated that the site compound will remain in this general location as the development progresses, however the appointed construction contractor may shift the location in future. All of the sub-contractors as well as the main contractor and project managers will occupy offices in the same area.

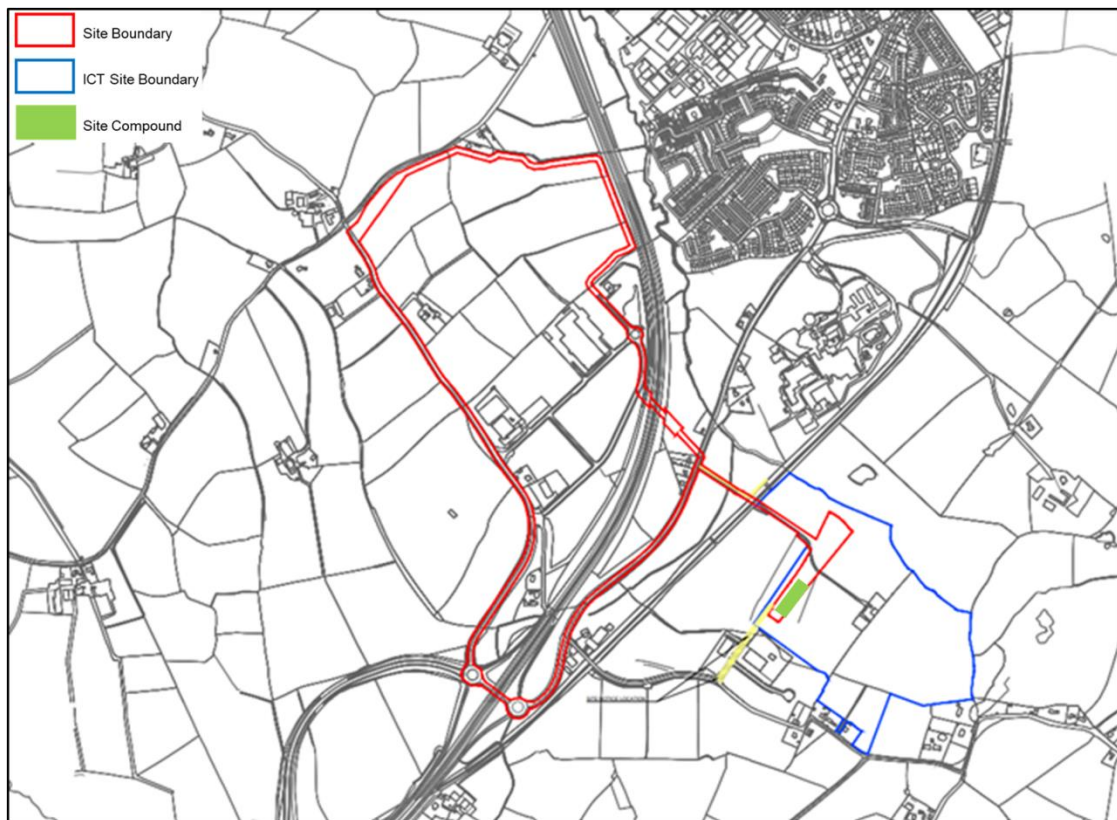


Figure 3.1 Proposed site construction compound location (incl. site offices, staff facilities and refuse storage).

The site parking for all staff will be located within the development site area. Parking for contractors and visitors will also be located in this area. The main contractor will designate this area. There will be no parking permitted on the surrounding road network or estate roads by the contractor or site operatives.

Estimates for the duration of the construction works are included in the table below. The overall start-to-finish duration is estimated to be 12 months with development aspects overlapping. Construction is anticipated to commence in Q3 2023 and be completed by Q3 2024.

No more than a 100 m section of trench will be opened at any one time. The second 100 m will only be excavated once the majority of reinstatement has been completed

on the first. The excavation, installation and reinstatement process will take place at a rate of c. 100 m per day.

Table 3.1 Estimated Construction Duration

Work Package	Estimated Construction Duration
Substation and associated works	12 months
Ducting, cabling and mast works	8 months

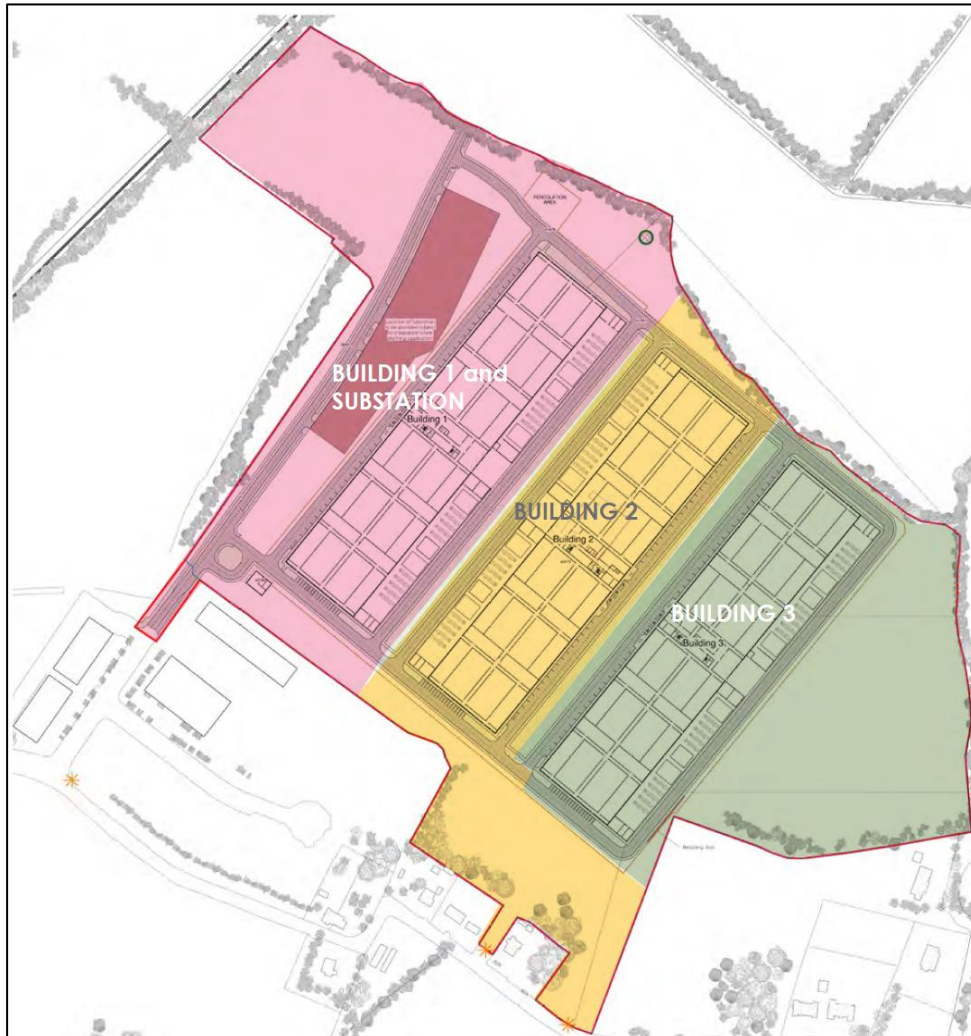


Figure 3.2 Proposed outline phasing Plan including Permitted ICT Facility

3.1 EXCAVATION & CONSTRUCTION PHASE

The project excavations will involve excavations for new foundations, site levelling and excavations for access roads and services. The Resource Waste Management Plan (RWMP) prepared by AWN Consulting Ltd (227501.0241WMR01) for the development will be updated by the main contractor and will be in compliance with the requirements of the ‘Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects’ published by the Environmental Protection Agency (November 2021) ¹, which will identify and categorise any waste arising from the development.

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

The project involves the construction of a 110 KV substation and underground grid connection and all associated site works. There will be no structural demolition associated with the proposed development. There will be the removal of a small section of redundant overhead line cable associated with the installation of the 2 no. new masts. This will generate waste metals (including their alloys), mixed metals, iron and steel, and cable.

The works will include:

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

4.0 EXCAVATIONS

4.1 ARCHAEOLOGICAL AND ARCHITECTURAL HERITAGE

An archaeological assessment of the proposed site area was carried out by Cultural Resource Development Services Ltd (CRDS Ltd) as part of the EIAR submission. The assessment was based on a desk study of published and unpublished documentary sources, as well as a field inspection, and partial geophysical survey of the proposed development area.

A suitably qualified archaeological consultant will be appointed to oversee the project from design through to planning and construction phase.

Geophysical survey was undertaken in in two phases in March and October 2020 by Target Archaeological Geophysics (Licence no. 20R0025) as part of the overall archaeological management plan for the site of the Permitted ICT Facility, that includes the site of the proposed 110 kV Substation. The survey objectives were to identify the location, form and extent of buried archaeological remains, where present within the site boundary, and to advise further works prior to proposed development at the site.

Prior to construction the geophysical survey of the proposed development, under license to the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht, will be completed across the site.

Pre-development archaeological testing, under license to the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht, will be undertaken in advance of construction on the 110 kV Substation site, as follows:

- Trenches will largely target anomalies identified by the archaeo-geophysical survey, but a number of trenches will also be excavated in areas where no features were highlighted (as per best practice guidelines; c. 10% of the site).

- Trenches will be dug by a tracked excavator equipped with a 1.8 m wide toothless ditching bucket. Each trench will be excavated to the surface of archaeological features, deposits or structures, or to the surface of the undisturbed natural soil or bedrock (typically less than 75cm). Topsoil will be removed from the test trenches in horizontal levels of not more than 0.20 m in thickness until sterile subsoil is reached.
- Should archaeological or architectural heritage features, deposits or structures be uncovered during these will be cleaned by hand, investigated and recorded.

Archaeological excavation of features, deposits or structured identified, will be undertaken in advance of construction, under license to the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht.

The archaeological sites discovered within the development area will be preserved by record (archaeological excavation), prior to construction taking place. All topsoil stripping associated with the proposed development will be monitored by a suitably qualified archaeologist.

If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht. Archaeological monitoring during the works will ensure the identification and recording of any additional archaeological remains that may be uncovered as a result of the construction.

4.2 GROUND CONDITIONS

Site investigations were undertaken in January/February 2020 by Ground Investigations Ireland (GII) within adjacent lands to the immediate East of the development area for the Permitted ICT Facility. These investigations consisted of 12 No trial pits (Table 5.1) and 4 no. boreholes.

Soil samples were compared with Waste Acceptance Criteria (WAC) and UK soil criteria based on land use. The WAC data provides assessment for suitability for disposal to landfill based on design of the landfill i.e. inert, Stable Non-reactive Hazardous Waste and Hazardous Waste Landfill. All samples were found to be below inert waste landfill criteria limits and no indications of contamination were recorded during the site investigation works.

In the event that contaminated material is found on site, this material will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled '*Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous*'² using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*³, which establishes the criteria for the acceptance of waste at landfills.

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

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

5.0 SITE LOGISTICS

5.1 SITE SAFETY COMPLIANCE

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

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

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

5.2 SITE ESTABLISHMENT AND SECURITY

The first activity to be carried out at the site will be the establishment of site facilities and security. It is anticipated that site establishment works will take approximately four weeks. The site office and welfare facilities will be confirmed in advance of the commencement of site works and agreed with WCC. Figure 3.1, above, shows the proposed locations of the site compound and staff parking.

All of the sub-contractors as well as the main contractor and project managers will occupy offices within the construction compounds. For the initial stages of construction site parking for all staff, contractors and visitors will be provided within the development site area. Carpooling and the use of public transport will be encouraged to reduce pressure on parking in the area

5.3 CONSENTS AND LICENSES

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

- Site notices;
- Construction commencement notices; and
- Licence to connect to existing utilities where required.

5.4 SERVICES AND UTILITIES

Temporary site offices and welfare facilities for construction employees will need to be established. The offices and site amenities will initially need to have their own power

supply (generator), water deliveries and foul water collection until connections are made to the mains networks.

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

During construction it is anticipated that a temporary supply will come from the local MV network with the location of the connection yet to be determined. All electrical works, including connection to the ESB network will be carried out by a suitably qualified contractor. In later phases of the construction, the utility feed will serve the development via the applicant-owned electrical compound, including transformer and associated switchgear.

Water supply required for welfare facilities, dust suppression and general construction activities will be sourced from the existing 150mm watermain under the Kish Business Park access road. Although before initial connections to the water supply are made it may need to be trucked onto site. As with electrical works, this will be carried out by a suitably qualified contractor. It will be necessary to service the site with a reliable and safe water supply.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. It is anticipated that for the duration of construction, the cabins will need to have the foul water collected by a licensed waste sewerage contractor.

5.5 SURFACE WATER DRAINAGE

The adjacent watercourses and onsite ditches will be protected from sedimentation and erosion. Surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction.

A number of erosion and sediment control features including geotextile lined settling basins and temporary moundings will be installed to ensure silts do not flow off site during the construction stage. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed. All inlets to the settling basins will be 'riprapped' to prevent scour and erosion in the vicinity of the inlet.

Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All run-off will be prevented from directly entering into any water courses as no construction will be undertaken directly adjacent to open water.

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

The following measures will be put in place during the construction phase to ensure protection of surface waterbodies. These measures are in compliance with the following relevant CIRIA guidance documents:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532) Construction Industry Research and Information Association;
- CIRIA (2015), Environmental Good Practice on Site (4th edition) (C741); Construction Industry Research and Information Association;
- BPGCS005, Oil Storage Guidelines;
- CIRIA 697 (2007), *The SuDS Manual*; and
- *UK Pollution Prevention Guidelines*, (PPG) UK Environment Agency, 2004.

5.6 MATERIAL HANDLING AND STORAGE

Key materials will be ordered by specific order for the project, a 'Just in Time' delivery system will operate to minimise storage of materials, the quantities of which are unknown at this stage. Where possible it is proposed to source general construction materials from the Wicklow area to minimise transportation distances.

Aggregate materials such as sands and gravels will be stored in clearly marked receptacles in the compound area within the site. Liquid materials will be stored within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006⁴) to prevent spillage.

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

Waste receptacles will be stored adjacent to the construction areas as required and will move from west to east in each of the sub-phases as the construction works progress. The segregated receptacles will be maintained close to each other in a designated Waste Storage Area (WSA) insofar as possible and will be clearly signed to identify the types of waste to be placed in each in accordance with the requirements of the Resource and Waste Management Plan. Segregated skips will be located in the material storage area, as required, and wheelie bins (or other suitable waste receptacles) for the offices and welfare facilities will be provided in strategic locations around the compound.

5.7 VISITOR MANAGEMENT

Visitors will only be allowed to enter the site in vehicles via the main haul road or via designated pedestrian access gates. A dedicated, secured footpath to the main site offices will be established for registration and obtaining PPE prior to entering the site. A log will be maintained by security to control access to the site. Visitors will be required to attend a site-specific induction to allow access to the site unless being accompanied by an inducted member of the site team. Visitors will then be taken by an inducted member of the construction team to the required area of the site.

5.8 SITE WORKING HOURS

Site development and building works will only be carried out between the hours of 0700 to 1900 Mondays to Fridays inclusive and between 0800 and 1400 hours on Saturdays. There will be no construction works carried out on Sundays or public holidays. Deviation from these times will only take place when written approval is granted by WCC in exceptional circumstances.

5.9 EMPLOYMENT AND MANAGEMENT WORKFORCE

It is estimated that there will initially be 15-20 staff on site on a typical day, however during peak construction periods this is expected to fluctuate up to a maximum of 35-60 staff and contractors on site per day. Site staff will include; management, engineers, construction crews, supervisors, environment health and safety personal, and maintenance contractors.

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

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

6.0 CONSTRUCTION TRAFFIC AND SITE ACCESS

The proposed construction vehicle routes for the 110 kV Substation site are shown in Figure 6.1, below. To minimise construction impacts upon the surrounding road network, it is recommended that all construction traffic accesses and exits the site from the M11/N11 Junction 21 with no HGV construction traffic permitted to travel through Arklow town, as illustrated by Figure 6.1, below.

Construction traffic operation would only be limited 0700 to 2000 from Monday to Friday and 0800 to 1500 on Saturday. These times may vary to facilitate specific site requirements and/or construction activities associated with the site. Any variation will be discussed and agreed in advance with WCC.

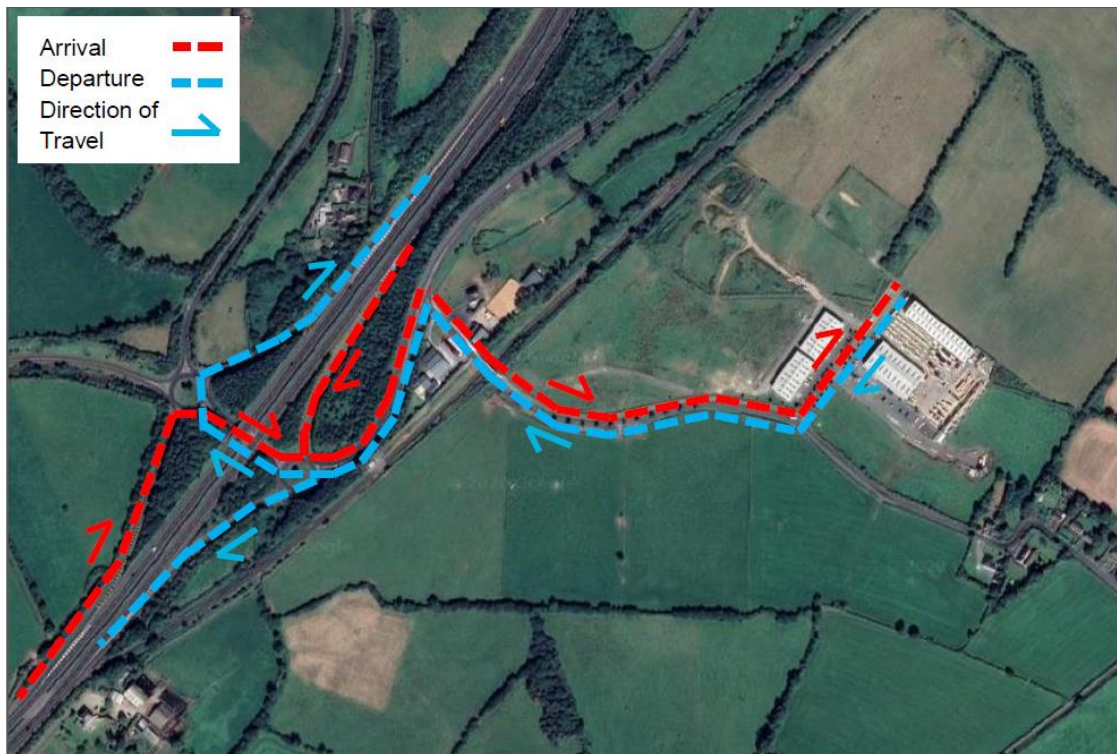


Figure 6.1 Proposed Construction Traffic Route (source AECOM TTA 2020 – submitted with planning application Reg. Ref. 201088)

Traffic management will be undertaken for the site works in accordance with the principles outlined below and shall comply at all times with the requirements of:

- Department of Transport Traffic Signs Manual 2010 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks ⁵
- Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010) ⁶
- Any additional requirements detailed in Design Manual for Urban Roads & Streets (DMURS) ⁷

6.1 CONSTRUCTION TRAFFIC MANAGEMENT

Below is a list of the proposed traffic management measures to be adopted during the construction works. Please note that this is not an exhaustive list, and that it will be the appointed contractor's responsibility to prepare a detailed construction management plan.

- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access locations;
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes;
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on trucks carrying dust producing material;
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds within the site;

- Parking of site vehicles will be managed and will not be permitted on public road, unless proposed within a designated area that is subject to traffic management measures and agreed with WCC;
- A road sweeper will be employed to clean the public roads adjacent to the site of any residual debris that may be deposited on the public roads leading away from the construction works;
- On site wheel washing will be undertaken for construction trucks and vehicles to remove any debris prior to leaving the site, to remove any potential debris on the local roads;
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel. Spill kits will be available on site. All scheduled maintenance carried out off-site will not be carried out on the public highway; and
- Safe and secure pedestrian facilities are to be provided where construction works obscure any existing pedestrian footways. Alternative pedestrian facilities will be provided in these instances, supported by physical barriers to segregate traffic and pedestrian movements, and to be identified by appropriate signage.
- Pedestrian facilities will cater for vulnerable users including mobility impaired persons.
- Material deliveries and collections from site will be planned, scheduled and staggered to avoid any unnecessary build-up of construction works related traffic.
- Deliveries to site shall be booked in advance using a delivery schedule, so as to prevent lorry congestion on the road networks surrounding the site. Alternative safe routeways shall be established for traffic and pedestrians where existing routeways have to be altered, removed or worked on during the project.

The mitigation measures will therefore ensure that the presence of construction traffic will not lead to any significant environmental degradation or safety concerns in the vicinity of the proposed works. Furthermore, it is in the interest of the construction programme that deliveries, particularly concrete deliveries, are not unduly hampered by traffic congestion, and as a result continuous reviews of haulage routes, delivery timings and access arrangements will be undertaken as construction progresses to ensure smooth operation.

6.2 SITE HOARDING AND SECURITY FENCING

Erection of security fencing and hoarding will take place at the start of the project alongside the site establishment and security works. It is estimated that erection of hoardings and fencing will require 2 weeks to complete.

All areas of construction will be fenced / hoarded off to prevent unauthorized access. This fencing shall remain closed at all times during construction works and closed and locked after construction work hours / break times.

This fencing shall be erected in accordance with good practice and the Construction Regulations 2013. Fencing arrangements shall be reviewed as the life of the project progresses.

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

7.0 SAFETY, HEALTH AND ENVIRONMENTAL CONSIDERATIONS DURING CONSTRUCTION WORKS

7.1 CONSTRUCTION HEALTH & SAFETY PLAN

The appointed main contractor will be required to prepare a Construction Health & Safety Plan which will be put in place prior to commencement of the works. At a minimum, this plan will include:

- Construction Health & Safety training requirements;
- Induction procedures;
- Emergency protocols; and
- Details of welfare facilities.

7.2 CONSTRUCTION LIGHTING

Construction work will generally be confined to daylight hours and lighting will generally not be required for the construction phase. There will however be occasions where the provision of portable lighting will be required (works on roadways and power floating floors as examples). Where possible and without jeopardising site safety lights will be pointed down at a 45-degree angle and away from sensitive receptors. The site compound will have external lights for safety and security. These lights will be pointed down at a 45-degree angle and away from sensitive receptors where possible.

7.3 AIR QUALITY

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

- Department of Environment, Heritage and Local Government (DOEHLG), *Quarries and Ancillary Activities, Guidelines for Planning Authorities* (2004) ⁸;
- US Environment Protection Agency (USEPA), *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition* (periodically updated) (1986) ⁹;
- The Scottish Office – Development Department, Planning Advice Note PAN50 Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings (1996) ¹⁰; and
- Institute of Air Quality Management (IAQM), *Guidance on the Assessment of Dust from Demolition and Construction* (2014) ¹¹.

7.3.1 Site Management

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

- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board will also include head/regional office contact details;
- Community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- Complaint registers will be kept detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out;
- Equipment and vehicles used on site will be in good condition such that emissions from diesel engines etc. are not excessive; and
- Pre-start checks will be carried out on equipment to ensure they are operating efficiently and that emission controls installed as part of the equipment are functional.

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

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

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

7.3.2 Dust Control Measures

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

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

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

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

Site Roads

Site access routes (particularly unpaved routes) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25% to 80%¹².

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

Land Clearing/Excavation

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

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

Stockpiling

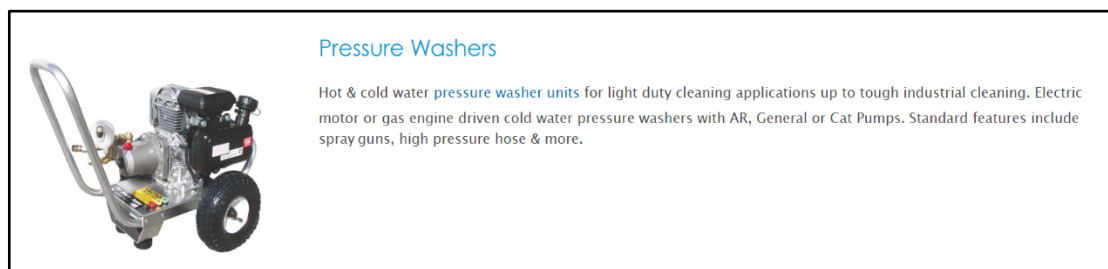
The location and moisture content of rubble stockpiles are important factors which determine their potential for dust emissions. The following measures will be put in place:

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site. Where possible storage piles should be located downwind of sensitive receptors;

- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency (UK Office of Deputy Prime Minister, 2002);
- Where feasible, hoarding will be erected around site boundaries to reduce visual impact. This will also have an added benefit of preventing larger particles from impacting on nearby sensitive receptors.

Site Traffic on Public Roads

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



Insert 7.1 Example of Proposed wheel cleaning equipment example

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered at all times to restrict the escape of dust;
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate, and an example of the washing equipment can be seen in insert 7.1 ; and
- Road sweepers will be employed to clean the site access route as required.

General

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

7.4 ECOLOGY

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

- All site clearance and landscaping works will comply with current legislative requirements and best practice;
- Where possible, the removal of trees and tree lines suitable for use by nesting birds will be undertaken outside the bird nesting season (avoiding the period 1st March to 31st August);
- Should any trees or tree lines be removed that contain features suitable for roosting bats, such work will only be done during the autumn months;

- An outlier badger sett is located under the footprint of Phase 1 in the western part of the ICT site (Reg. Ref. 201088). It will be necessary to exclude badgers from this sett early in the development. The exclusion will be mitigated through the construction of a artificial sett within the site. These measures will be implemented under licence from the National Parks and Wildlife Service. No other active badger setts have been recorded on the lands however should it be necessary to close any other badger setts on development lands these will be closed and excluded under licence from the NPWS. Such works will be undertaken outside the breeding season (that is, outside the period 1st December to 31st June) and will involve appropriate mitigation of any impacts;
- Taking measures to limit the working area during the construction phase will reduce the impacts of the development on adjacent areas. The construction area will be clearly delimited by the site boundary hoarding and machinery should operate only within this allocated site area;
- All construction-related fuel will be contained within specially constructed bunds to ensure that fuel spillages whether accidental or otherwise are fully contained;
- All re-fuelling of plant, equipment and vehicles will be carried out at the construction site boundary. All fuels, chemicals, liquid and solid waste will be stored in areas bunded in accordance with established best practice guidelines at the construction compound also; and Provision of spill kits;
- The measures outlined in Section 5.5 will ensure that silt run-off and potential flooding risks are minimised which will protect any ecological receptors associated with the site; and
- Construction lighting will be designed so as to be sensitive to the potential presence of bats and should adhere to the following guidance:
 - Bats & Lighting: Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Trust, 2010) ¹³;
 - Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011) ¹⁴;
 - Bats and Artificial Lighting in the UK – Bats and the Built Environment Series. Guidance Note 08/18 (Bat Conservation Trust UK, 2018) ¹⁵.

7.5 NOISE AND VIBRATION

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

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

Construction Noise Limit Values

As referenced in the EIA Report prepared for the proposed development, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the *British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise* ¹⁶.

Table 7.1 Construction Noise Limit Values

Days and Times	Noise Levels (dB re. 2x10 ⁻⁵ Pa)
	L _{Aeq} (1hr)
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65
Evening* (19:00 to 23:00hrs)	55
Night time* (23:00 to 07:00hrs)	45

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

The total noise (L_{Aeq}) which should not be exceeded during daytime is therefore 65dB.

General Noise and Vibration Mitigation

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

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

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

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

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

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

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

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

More specifically the Contractor will ensure that:

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

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

The noise monitoring terminals should provide the following at minimum:

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

Vibration monitoring terminals should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with BS ISO 4866: 2010: *Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures* ¹⁷.

The mounting of the transducer to the vibrating structure, by way of resin fixings only, will need to comply with BS EN ISO 5348: 1998: *Mechanical vibration and shock – Mechanical mounting of accelerometers* ¹⁸. In summary, the following ideal mounting conditions apply:

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

7.6 RESOURCE AND WASTE MANAGEMENT

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

Adherence to the RWMP prepared for the construction works will ensure that the management of waste arising is dealt with in compliance with the provisions of the *Waste Management Act 1996* as amended ¹⁹, associated Regulations, the *Litter Pollution Act of 1997* as amended ²⁰ and the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* ²¹, and achieve optimum levels of waste reduction, re-use and recycling.

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

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

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

Waste Minimisation

Waste minimisation measures proposed are summarised as follows (and are described in more detail in the RWMP):

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

Waste Storage

The main waste storage area will be located in the site compound. A dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the active construction phase of the development site. Additionally, skips and/or bins will be located in the materials storage area adjacent to the site compound.

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

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

Pest Management

A pest control operator will be appointed as required to manage pest onsite during the construction phase of the project. Organic and food wastes generated by staff will not be stored in open skips, but in closed waste receptacles. Any waste receptacles will be carefully managed to prevent leaks, odours and pest problems.

Responsibility

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

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

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

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

7.7 SURFACE WATER MANAGEMENT

Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All run-off will be prevented from directly entering into any water courses as no construction will be undertaken directly adjacent to open water.

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

The following measures will be put in place during the construction phase to ensure protection of surface waterbodies. Construction works are informed by best practice guidance from Inland Fisheries Ireland on the prevention of pollution during development projects:

- Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532); and
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).
- Environmental Good Practice on Site (3rd edition) (C692).

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

It is envisaged that a number of geotextile lined settling basins and temporary mounding's and/or silt fences will be installed to ensure silts do not flow off site during the construction stage. This temporary surface water management facility will throttle

runoff and allow suspended solids to be settled out and removed. All inlets to the settling basins will be 'riprapped' to prevent scour and erosion in the vicinity of the inlet.

7.7.1 Pollution Control

Management of Suspended solids in run-off

Any temporary storage of spoil, hardcore, crushed concrete or similar material will be stored as far as possible from any surface water drains and also stored in receptacles where possible. In order to minimise the risk of contamination, the stockpiled material will be removed off-site as soon as possible. Surface water drain gratings in areas near or close to where stockpiles are located will be covered by appropriate durable polyurethane covers or similar.

There will be no direct pumping of silty water from the works to any watercourse. Sediment entrapment facilities will be installed to reduce sediment discharges to downstream properties and receiving waters. All run-off leaving a disturbed area should pass through a sediment entrapment facility before it exits the site and flows downstream such as straw bales, silt fencing, silt barriers and diversion dams.

Soil Removal and Compaction

Excavated material will be reused on site where possible. All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, this soil will be segregated, and samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred.

Concrete Run-off

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

Fuel and Chemical Handling

The following mitigation measures will be taken at the construction stage in order to prevent any spillages of fuels and prevent any resulting impacts to surface water systems;

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

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

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

Accidental Spills and Leaks

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

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

The following mitigation measures will be taken at the construction site in order to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:

- Refuelling will be undertaken off site where possible;
- Where mobile fuel bowsers are used the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowsers to carry a spill kit and operatives must have spill response training; and
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

Monitoring

Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 10m from surface water receptors. A regular log of inspections will be maintained and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

8.0 SUMMARY

This CEMP sets out the overall management strategy for construction works on the proposed Crag Wicklow Limited development. The CEMP aims to ensure the management of construction activity is carried out in a planned, structured and considerate manner which minimises the impacts of the works on the local environment, residents and commercial activities in the vicinity of the site. Due to the

nature of construction works, there may be unforeseen events which occur at the site and the project team will actively manage any changes and discuss with the relevant authorities, where required.

The CEMP will be reviewed regularly and will be updated by the construction contractor to account for any subsequent planning conditions issued, any updated guidance released and circumstantial changes at the site as the development progresses. The project team are committed to ensuring that the construction activities to be carried out are pro-actively managed so as to minimise potential impacts.

9.0 REFERENCES

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18. British Standards Institution (BSI), *BS EN ISO 5348: 1998: Mechanical vibration and shock – Mechanical mounting of accelerometers* (1998).
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20. *Litter Pollution Act 1997* (No. 12 of 1997) as amended
21. Eastern Midlands Waste Region, *Eastern-Midlands Region Waste Management Plan 2015 – 2021* (2015).