

APPENDIX 16.5 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Residential Development at Mount Avenue, Dundalk

Construction Environmental Management Plan

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1 Works Proposal

The proposed development comprises 1058no. dwellings (10no. 2 bedroom bungalows, 34no. 2 bedroom 2-storey houses, 534no. 3-bedroom 2-storey houses, 223no. 4-bedroom 2-storey houses (765no. houses total), 33no. 1 bedroom duplex units, 75no. 2 bedroom duplex units, 42no. 3 bedroom duplex units (150no. duplex units total), and 78no. 1 bedroom apartment units, 65no. 2 bedroom apartment units (143no. apartment units total) across 4no. apartment blocks) including 2no. duplex units (unit type Q) with an option to accommodate a childcare facility at ground floor level.

The proposed development is located at lands in the Townlands of Newtownbalregan, Castletown and Farrandreg, at Mount Avenue, Castletown, Dundalk, Co. Louth.

The construction management issues addressed within this plan include the following:

- Working Hours
- Traffic and Transportation
- Pedestrian and Cyclist Safety
- Soils and Geology
- Water Hydrogeology
- Material Assets – Site Services
- Biodiversity
- House/Building Construction
- Waste Management
- Noise and Vibration
- Air, Dust & Climatic Factors
- Landscape and Visual Impact
- Archaeology
- Site Compound Facilities and Parking

This Preliminary Construction & Environmental Management Plan shall be referenced in all tender and contract documentation for the proposed works and is to be read in conjunction with all relevant Engineering and Architectural documentation. A detailed Construction and Environmental Management Plan is to be prepared by the contractor at construction stage.

All works must be carried out in accordance with the measures outlined in this document.

2 Construction Phasing

The proposed development will be constructed in 3 phases, see figure 2-1 and Table 2-1 Below for breakdown of phases.

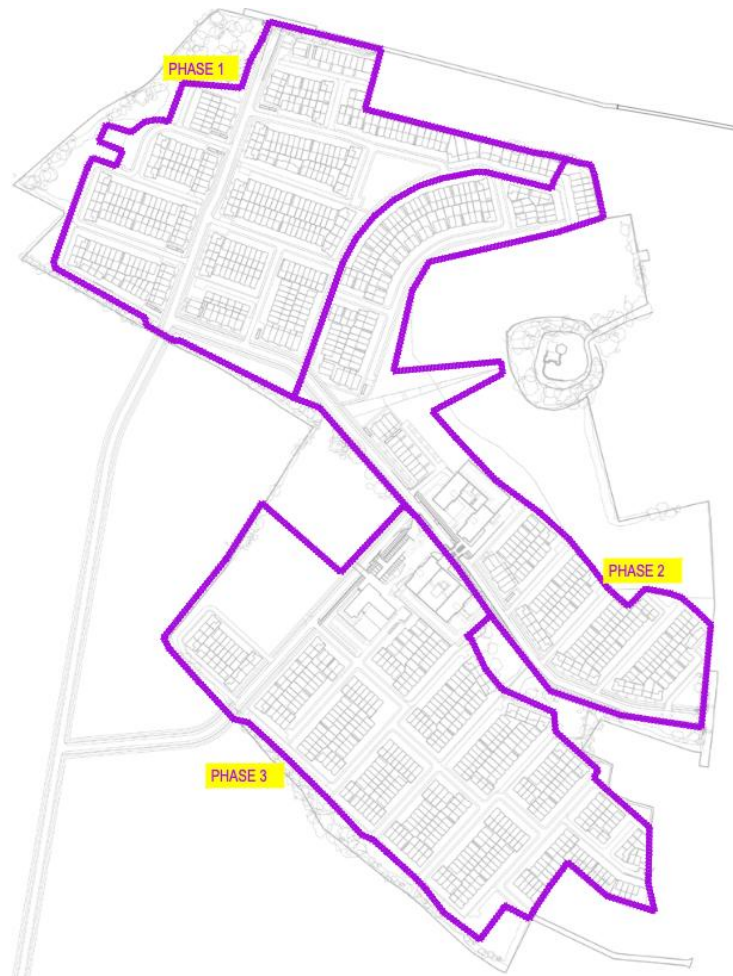


Figure 2-1 Phasing Map

Phase	No. of residential units delivered in Phase	Total No. of Residential units delivered	Non residential units included in phase
1	348	348	Temporary Crèche
2	307	655	local centre comprising ground floor retail units, a medical unit, and mobility hub Crèche
3	403	1058	

Table 2-1 breakdown of development by phase

3 Project Responsibilities

The Contractor appointed to undertake the construction works, shall be responsible for developing, and managing, the project specific Construction Environmental Management Plan (CEMP) incorporating the methodologies described in this preliminary plan. The plan will be developed in consultation with Louth County Council. The proposed methodologies described in this report are industry best practice. Logistical issues, such as traffic restrictions and available space for storage, manoeuvres etc. may necessitate certain revisions.

The Contractor's Project Manager will be responsible for the overall implementation of the plan and associated procedures. The Project Manager will ensure that reporting and recording requirements are met and all necessary resources are in place to support the implementation of the plan.

The anticipated programme for subject site will be circa 84 months (7 years). The proposed units will be constructed via traditional construction methods with the dwellings being timber frame. To ensure the CEMP remains 'fit for purpose' for the duration of the project it will be reviewed and updated by the Project Manager during the life of the project to ensure that it remains suitable to facilitate efficient and effective delivery of the project environmental commitments. The environmental review will consider past performance from inspections, audit report and monitoring data, and plan actions required to mitigate forthcoming risks.

The Contractor shall designate a Site Engineer/Manager/Assistant Manager as the Construction Waste Manager and who will have overall responsibility for the implementation of the Project Waste Management Plan (WMP). The Waste Manager will have the authority to instruct all site personnel to comply with the specific provisions of the Plan. A technically competent person will also be required to assess waste arisings and determine classification in accordance with the Hazardous Waste List. The Project Manager will instruct all site personnel to comply with the CEMP.

At operational level, a foreman from the Contractor and appropriate personnel from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the operations stated in the CEMP are performed on an on-going basis. Key aspects would be waste management, dust control, minimising noise and vibration, chemical management, SuDs/Landscaping, traffic management and the control of silt generation and fuel spills.

The Contractor shall employ the services of an approved Specialist Waste Management Sub-Contractor to assist with the safe management and disposal of contaminated waste materials. They shall specialise in the investigation of such material, the carrying out of sampling and testing of hazardous material and the preparation of treatment and disposal methodologies.

A report and method statement will to be prepared by the Contractor, in consultation with their approved Waste Management Specialist Sub-Contractor, for the safe removal and disposal of the identified hazardous materials. This must be agreed with the Employers Representative prior to commencement of any excavation activities.

Reporting

The Site Manager / Project Manager is responsible for collating and maintaining all reporting. This would include all environmental and compliance documentation.

Environmental Targets and Objectives

Targets:

- Zero pollution incidents;
- Segregation of site waste to include timber, general waste and other materials;
- Completion of environmental checklists as required;
- Fuel spill kit to be present on each site at all times; and
- Maintain all waste licences and waste transfer notes for all waste movements including contractors.

Reporting Specific Objectives:

- Environmental incidences to be reported to Site Manager without delay.

The following documentation will be reported to Louth County Council (LCC) on a 4 weekly basis:

Environmental incidents and nonconformities raised, including nature, status, corrective and preventive actions and potential for statutory intervention;

- Key environmental issues raised by others;
- Significant environmental incidents;
- Complaints and the current status of those complaints; and
- Actions or interventions undertaken by enforcement organisations.

Site Specific Objectives:

- Reduce waste, water and energy use on the project including within all of the site offices;
- Ensure that everyone comply with the environmental requirements in the contract;
- Seek ways to incorporate environmental protection opportunities within the design;
- Seek ways to reduce the carbon footprint of the contract;
- Reduce the amount of construction waste and excavated material generated which goes to landfill;
- Zero pollution incidents onsite;
- Recycle construction waste where possible;
- Maximise beneficial reuse of the materials: and
- Ensure that all waste documentation (waste transfer docket, permits etc.) is available for inspection at the site office / in head office.

Environmental Complaints and Incidents

The site manager will develop and implement an appropriate queries / complaints procedure. Records will include full details of the concerns expressed and ensure that a formal assessment is commenced of the reported concern. The site manager will also discuss complaints with the Project Manager and oversee an initial response to the person who has submitted the complaint/concern confirming its receipt.

An investigation to assess the issue of concern will be carried out and decisions made to see what corrective and/or preventive action, or further investigation is necessary. With overall responsibility for complaints, the site manager will respond within a reasonable timescale and maintain records of all correspondence and actions taken. If significant corrective action and external stakeholder involvement is required, the site manager / project manager will oversee all elements of the process.

Any complaints received will be logged, assessed and appropriate action taken as soon as practical. The construction company will be actively seeking liaison with all parties throughout the construction periods. It will be critical to the success of the project that key issues are properly addressed from the outset to create a good working relationship and an integrated team approach to identifying and resolving potential issues before they may cause environmental impacts.

The project team appreciates that occasionally incidents arise whereby it is impossible or impractical to comply with all the requirements. In these emergency situations, as much notice as possible about the works will be given to Louth County Council (LCC).

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

Once the situation has been rectified, full details about the incident and remedial actions undertaken will be provided to the corporation and relevant authorities and recorded in the site environmental register. Feedback will be provided to all CEMP implementation personnel where required.

4 Working Hours

For the duration of the proposed infrastructure works the maximum working hours shall be 07:00 to 18:00 Monday to Friday (excluding bank holidays) and 08:00 to 14:00 Saturdays, subject to the restrictions imposed by the local authority.

No working will be allowed on Sundays and Public Holidays.

Subject to the agreement of the local authority, out of hours working may be required for water main connections, foul drainage connections etc.

5 Traffic and Transportation

A Traffic Management Plan (TMP) will be prepared for the works in accordance with the principles outlined below and shall always comply with the requirements of:

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

In general, the impact of the construction period will be temporary in nature and less significant than the operational stage of the proposed development (HGV vehicle movements not expected to exceed 8 vehicles per hour during the busiest period of construction works).

The proposed entrances to the site will be from Castletown Road from the north of the site. It should be noted there is a HGV ban on Mount Avenue.

Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site staff and management
- Construction vehicles e.g. excavation plant, dump trucks and material delivery vehicles, involved in site development works

On-site employees will generally arrive before 08:00, thus avoiding morning peak hour traffic. These employees will generally depart after 16:00.

It should be noted that a large proportion of construction workers would arrive in shared transport.

Where feasible, excavated material will be reused as part of the site development works (e.g. use as fill material beneath houses and roads) in order to minimise truck movements to and from the site, however, some unsuitable excavated subsoil is expected and will have to be removed to an approved landfill.

With regards to pedestrian and cyclist safety at the site accesses, it is noted that currently there are no walking or cycling facilities on the south side of Castletown Road (where the northern site construction access is proposed). It is therefore assumed that the number of pedestrians and

cyclists interacting with the construction site access will be minimal. Nevertheless, extra caution will be taken at the site access with regards to pedestrian and cyclist safety. When vehicles are entering the site, or leaving the site, these movements should be supervised by road marshals. The construction site gates will be kept closed when not in use and monitored by security. Traffic cones and set-back signage should be put in place to warn and safely direct cyclists around obstructions.

6 Pedestrian and Cyclist Safety

Members of the public will have no access to any part of the new Link street or development until the completion of the first phase of works. However, the general public will have right of way along the existing Castletown Road and Mount Avenue. Roadworks will be managed in accordance with Chapter 8 of TSM to manage pedestrian and cyclists and within the site dedicated pedestrian routes will be installed to avoid conflict between site vehicles and pedestrians. There will be security at the construction access from Castletown Road to supervise vehicles entering or leaving the site, pedestrian and cycle zones at this entrance will be prioritised over construction traffic at the access point. The construction site gates will be kept closed when not in use and monitored by security. Traditional building construction will follow on from enabling ground works and landscaping and finishing works will typically take place at the end of the project.

Upon completion of the proposed development a high quality pedestrian footway and cycle track will be provided along the Link street, allowing pedestrians and cyclists to move between the existing facilities along Castletown road and Mount Avenue. Connection to recently upgraded pedestrian and cyclist facilities on the southern end of mount avenue.

7 Soils and Geology

Site development works will include stripping of topsoil and excavation of subsoil layers. These activities have potential to expose the soils and geological environment to pollution.

The contractor shall obtain approval of their proposed erosion and sediment control measures from Louth County Council's Environment Section prior to commencing works on site. The contractor shall also agree the rock breaking methodology with Louth County Council where required.

The following measures are to be implemented in order to mitigate against such risks.

Stripping of Topsoil

- Stripping of topsoil shall be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development.
- At any given time, the extent of topsoil strip (and consequent exposure of subsoil) shall be limited to the immediate vicinity of active work areas.
- Topsoil stockpiles shall be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains.
- Topsoil stockpiles shall also be located so as not to necessitate double handling.

Excavation of Subsoil Layers

- The design of road levels and finished floor levels has been carried out in such a way as to minimize cut/fill type earthworks operations.
- The duration that subsoil layers are exposed to the effects of weather shall be minimised. Disturbed subsoil layers will be stabilised as soon as practicable (e.g. backfill of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping).
- Similar to comments regarding stripped topsoil, stockpiles of excavated subsoil material shall be protected for the duration of the works. Stockpiles of subsoil material shall be located separately from topsoil stockpiles. These stockpiles will be monitored throughout the construction phase. Monitoring ground conditions and stability of excavations will be an on-going basis.

- Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds, surface water inlet protection and earth bunding adjacent to open drainage ditches).

Weather Conditions

- Typical seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations with an objective of minimising soil erosion and silt generation. The approach of extreme weather events will be monitored to inform near-term operational activities.

Surface Water Runoff

- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate. Monitoring of these sediment control measures will be undertaken throughout the construction phase. Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds.
- On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion.
- Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed on site
- Surface water discharge points during the construction phase are to be agreed with Louth County Council's Environment Section prior to commencing works on site

Water Pumped from Excavations

- Rainwater pumped from excavations is to be directed to on-site settlement ponds.
- Groundwater pumped from excavations is to be directed to on-site settlement ponds.
- On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion. Monitoring of same will be undertaken.
- Surface water discharge points during the construction phase are to be agreed with Louth County Council's Environment Section prior to commencing works on site.

Construction Traffic

- Earthworks plant and vehicles delivering construction materials to site will be confined to predetermined haul routes around the site.
- Vehicle wheel wash facilities will be installed in the vicinity of any site entrances and road sweeping implemented as necessary in order to maintain the road network in the immediate vicinity of the site.
- Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods.
- A construction traffic management plan will be prepared by the contractor prior to any works commencing on site.

Accidental Spills and Leaks

- All oils, fuels, paints and other chemicals shall be stored in a secure bunded hardstand area.
- Refuelling and servicing of construction machinery shall take place in a designated hardstand area which is also remote from any surface water inlets (when not possible to carry out such activities off site).
- A response procedure shall be put in place to deal with any accidental pollution events and spillage kits shall be available and construction staff will be familiar with the emergency procedures and use of the equipment.
- Monitoring of all fuel / oil storage areas will be undertaken, and spill kits will be available on site.

Ground Conditions

- Any potentially contaminated soil encountered during the works will be assessed and if appropriate the material disposed of at a licensed waste facility, under strict controls agreed with Louth County Council.
- Recommendations have been made that an intrusive investigation be carried out to confirm the ground model and to further understand the Geo-hazards potentially present on site.
- Geo-environmental sampling and testing will be carried out during the geotechnical Ground Investigations (GI) and monitoring of the groundwater to determine the general flow direction of the groundwater beneath the site.

- Investigative locations will be located close to the old disused railway line to establish if the soils here have any impact on the condition of the soils or groundwater in this area.
- Environmental samples to be taken and testing performed to characterise material requiring disposal off site.
- Ground workers and other staff potentially at risk will be made aware of potential site hazards via site safety induction procedures.
- Health and Safety risk assessment will be undertaken, and management measures implemented via appropriate method statements. Direct contact between any potentially contaminated soils and skin or personal clothing will be avoided by the use of protective clothing: gloves, overalls, goggles etc.
- Site specific ground investigations will be carried out to determine if there are any other potential risks which should be considered.
- Stockpiles of earthwork materials will be stored at least 10m from any watercourses.
- Water-proof construction will be used for structures beneath the water table. Suitable free-draining material will be incorporated in the backfill of retaining walls, arranged to allow the existing groundwater regime to be effectively re-established.
- Control measures regarding preventing pollution via site run off are provided in Section 5.9.

8 Water Hydrogeology

The following measures are to be implemented during the construction phase in order to mitigate risks to the water and hydrogeological environment.

Erosion and Sediment Control

- Measures shall be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds, surface water inlet protection, fencing and signage around specific exclusion zones and earth bunding adjacent to open drainage ditches).
- Surface water runoff from areas stripped of topsoil and rainwater collected in excavations shall be managed locally and measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- Implementation of measures to be reviewed and mitigated against as required during construction stage.
- Surface water discharge points during the construction phase are to be agreed with Louth County Council's Environment Section prior to commencing works on site.
- Weather conditions and seasonal weather variations shall also be taken account of when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion.

Accidental Spills and Leaks

- All oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area.
- Refuelling and servicing of construction machinery shall take place in a designated hardstand area which is also remote from any surface water inlets (when not possible to carry out such activities off site).
- Discharge from any vehicle wheel wash areas is to be managed locally and reviewed at construction.
- A response procedure shall be put in place to deal with any accidental pollution events and spillage kits shall be available and construction staff will be familiar with the emergency procedures and use of the equipment.

Concrete

- Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed on site.

- Pumped concrete will be monitored to ensure there is no accidental discharge.
- Mixer washings are not to be discharged into surface water drains.

9 Water – Water Supply, Drainage & Utilities

The following measures are to be implemented during the construction phase in order to mitigate risks to the water supply, drainage and utilities.

- Surface water runoff from areas stripped of topsoil and surface water collected in excavations shall be managed locally where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established.
- The construction compound's potable water supply shall be located where it is protected from contamination by any construction activities or materials.
- Relocation of any overhead ESB lines shall be fully coordinated with ESB Networks to ensure interruption to the existing power network is minimized. Two 38kV overhead ESB lines pass through the site and a 10kv overhead line passes from the Castletown road to Cú Chulainn's castle along the sites eastern boundary.. Adequate exclusion zones, in accordance with ESB code of practice, should be provided when plant machinery is working within the vicinity of these lines.

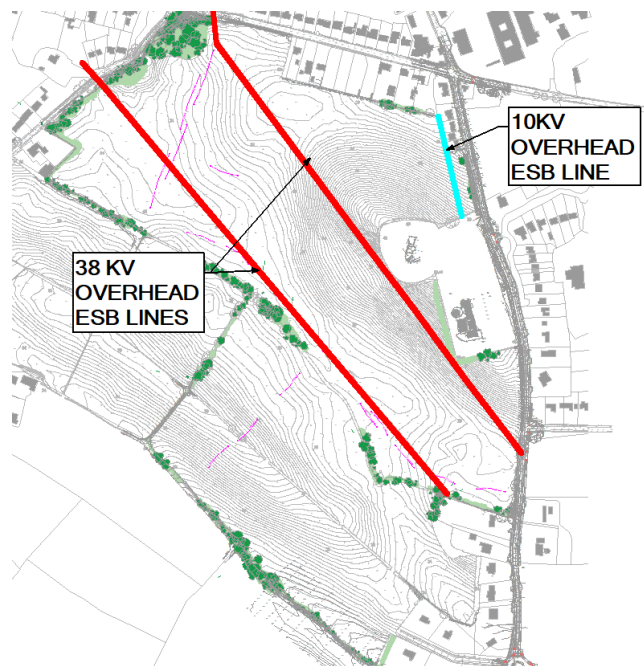


Figure 9-1 Location of Overhead ESB Lines

10 Biodiversity

The following measures are to be implemented during the construction phase:

- High value hedgerows/treelines will be retained as per tree felling plan.
- The removal of vegetation will not take place between 1st March and 31st August as per section 40 of the Wildlife Act. Where this cannot be avoided, vegetation must first be inspected by a suitably qualified ecologist for signs of nesting. Where no nesting is observed, vegetation can be removed within 48 hours. Where nesting is underway, vegetation cannot be removed unless under licence from the NPWS.
- The badger sett located on site, and the associated 30m exclusion zone is to be clearly marked out on site and all construction activity is to keep clear of this location,
- To avoid damage to trees the developer will follow the guidance from the National Road's Authority in establishing root protection areas (RPA) along hedgerows to be retained.

The NRA gives the following equation for calculating the root protection area (RPA) (NRA, unknown year):

$$RPA(m^2) = \pi(\text{stem diameter mm } 12)/1,000) \times 2$$

The RPA gives the area around which there should be no disturbance or compaction of soil. This will be calculated for the largest tree within each hedgerow. Prior to construction this area will be clearly labelled 'sensitive ecological zone', fenced off with durable materials and instruction given to construction personnel not to disturb this buffer zone. As a rule of thumb this buffer zone should extend at least to the canopy of the trees concerned. Prior to construction this area will be clearly labelled 'sensitive ecological zone', fenced off with durable materials and instruction given to construction personnel not to disturb this buffer zone.

- Nocturnal mammals are impacted by lighting. Therefore, it is important that temporary lighting installed within the proposed development site is completed with sensitivity for local wildlife while still providing the necessary lighting for human usage. The following principals will be followed:
 1. Temporary lighting design should be flexible and be able to fully take into account the presence of protected species if present on site. Therefore, appropriate lighting, as detailed below, should be used within a proposed development and adjacent areas with more sensitive lighting regimes deployed in wildlife sensitive areas.

2. Dark buffer zones can be used as a good way to separate habitats or features from lighting by forming a dark perimeter around them. This could be used for habitat features noted as foraging areas for bats if present on site.
3. Buffer zones can be used to protect Dark buffer zones and rely on ensuring light levels (levels of illuminance measured in lux) within a certain distance of a feature do not exceed certain defined limits. The buffer zone can be further subdivided into zones of increasing illuminance limit radiating away from the feature or habitat that requires to be protected.
4. Luminaire design is extremely important to achieve an appropriate lighting regime. Luminaires come in a myriad of different styles, applications and specifications which a lighting professional can help to select. The following should be considered when choosing luminaires. This is taken from the most recent BCT Lighting Guidelines (BCT, 2018).
 - 1) All luminaires used should lack UV/IR elements to reduce impact.
 - 2) LED luminaires should be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
 - 3) A warm white spectrum (<2700 Kelvins is recommended to reduce the blue light component of the LED spectrum).
 - 4) Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
 - 5) The use of specialist bollard or low-level downward directional luminaires should be considered in bat sensitive areas to retain darkness above.
 - 6) Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
 - 7) Only luminaires with an upward light ratio of 0% and with good optical control should be used.
 - 8) Luminaires should always be mounted on the horizontal, i.e. no upward tilt.
 - 9) Any external security lighting should be set on motion-sensors and short (1min) timers.
 - 10) As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.

- The following recommendations from Inland Fisheries Ireland '*Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*' (2016) will be considered:
 1. When cast-in-place concrete is required, all works must be done in the dry and effectively isolated from any flowing water (or water that may enter streams and rivers) for a period sufficient to ensure no leachate from concrete.
 2. No direct discharges be made to waters where there is potential for cement or residues in discharge.
 3. The pH of any and all discharged made from and during construction works shall be in the range of 6.0 – 9.0 units and not alter the pH of any receiving fisheries waters by more than +/- 0.5 pH units.
 4. The level of suspended solids in any discharges to fisheries waters as a consequence of construction works shall not exceed 25 mg/l, nor result in the deposition of silts on gravels or any element of the aquatic flora or fauna.
 5. All oils and fuels shall be stored in secure bunded areas and care and attention taken during refuelling and maintenance operations.
 6. There shall be no visible oil film in any discharges from construction works to waters.
 7. Water abstraction for dust suppression shall not take place from any water body containing or suspected to contain aquatic invasive species.
 8. Abstraction for dust suppression is confined to only those larger waters identified and agreed as being of sufficient size and volume so as to allow abstraction without adverse impact.
 9. Abstraction points shall be screened to ensure that fish and aquatic plants are not removed from waters in the abstraction process.
 10. Abstraction from existing surrounding water sources is not required.

11 House/Building Construction

The buildings will be constructed by the following methodology:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Bord Gáis, Eircom, Louth County Council etc. will be contacted and all drawings for all existing services sought.
- The area of each building will be marked out using ranging rods or wooden posts and the soil and overburden stripped and removed to nearby storage area for later use in landscaping. Any excess material will be sent to an authorised recovery facility.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the area down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it;
- traditional building construction (block built, strip and pad foundation etc) will be provided;
- The block work walls will be built up from the foundation (including a DPC) and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors;
- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the buildings for this operation;
- Any concrete slabs will be lifted into position using an adequately sized mobile crane;
- The timber roof trusses will then be lifted into position using a telescopic load all or mobile crane depending on site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather.
- Windows, electrics, plumbing and all other building components and services will be installed in as timely a manner as is possible.
- Each building will be inspected and certified by an engineer at the appropriate stages of construction.

12 Waste Management

The principle of 'Duty of Care' in Waste Management Act 1996-2008 states that the waste producer is responsible for waste from the time it is generated through to its legal disposal (including its method of disposal). Waste materials generated by earthworks, demolition and construction activities will be managed according to the Department of the Environment, Heritage and Local Government's 2021 Pollution – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects.

The following measures are to be implemented during the construction phase in order to reduce the amount of waste produced, manage the waste generated responsibly and handle waste in such a manner as to minimise the effect on the environment:

This project is currently at planning stage and as such input from the contractor has not been incorporated into this document. On appointment of a contractor a detailed Construction Management Plan (CMP) shall be prepared. The detailed CMP shall incorporate the requirements of Best Practice Guidelines in the preparation of Waste Management Plans for Construction & Demolition Projects (DOEHLG, 2006).

- Copies of final Construction Waste Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed on the objectives of the Construction Waste Management Plan and informed of their responsibilities.
- The nominated Construction Waste Manager responsible for implementation of this Construction Waste Management Plan will be identified prior to construction commencement and will arrange for a waste audit of the project once construction has fully commenced on site (and of any facilities to which waste from the project is delivered as required).
- Building materials should be chosen with an aim to 'design out waste'.
- On-site segregation of non-hazardous waste materials into appropriate categories. All waste material will be stored in skips or other suitable receptacles in a designated area of the site.
- On-site segregation of hazardous waste materials into appropriate categories. Hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection licence holder.

- All wastes segregated at source where possible.
- Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain including photographs as appropriate.
- The site will be maintained to prevent litter and regular picking will take place throughout the site.
- Materials will be ordered on a 'just-in-time' basis to prevent over supply and site congestion (i.e. to minimise materials stored on site).
- Materials will be correctly stored and handled to minimise the generation of damaged materials
- All waste material will be correctly stored in skips or other suitable receptacles in a designated area of the site.
- Left over materials (e.g. timber off-cuts) shall be re-used on site where possible.
- All waste leaving the site will be recycled, recovered, or reused where possible.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted, or licensed facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

13 Noise and Vibration

Noise-related management methods are described below and will be implemented for the project in accordance with best practice. These methods include:

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise;
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;
- All site access roads will be kept even to mitigate the potential for noise and vibration from lorries.
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- Noise and vibration during the construction phase will be controlled with reference to the best practice control measures within BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2. The contractor will ensure that all best practice noise and vibration control methods will be used as necessary in order to ensure impacts to nearby residential noise sensitive locations are not significant. This will be particularly important during site preparation works and piling works.
- Limiting the hours during which site activities which are likely to create high levels of noise or vibration are permitted;
- Monitoring levels of noise and vibration during critical periods and at sensitive locations;
- Establishing channels of communication between the contractor/ developer, Louth County Council and residents so that receptors are aware of the likely duration of activities likely to generate higher noise or vibration, and;
- The Contractor appointing a Site Environmental Manager (SEM) responsible for matters relating to noise and vibration.

Noise Limits

Whilst no specific construction noise limits are set by LCC with respect to noise, a common approach across the Dublin Agglomeration refers to the use of BS 5228 2009 +A1 2014 *Code of practice for noise and vibration control on construction and open sites* Parts 1 and 2 with respect to the controlling noise and vibration impacts. In this instance, appropriate criteria relating to permissible construction noise levels are taken from Part one of the standard *Noise*.

This document suggests an absolute construction noise limits depending on the receiving environment. The documents states:

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

Given the suburban location of the development, a limit value of 70dB $L_{Aeq,T}$ during daytime periods for construction is considered to be reasonable. Construction machinery should be kept a minimum of 25m from noise sensitive areas when practicable to minimise noise to existing residents.

This limit value is also in agreement with those set by Transport Infrastructure Ireland (TII) for construction projects. Their 2014 document *Good Practice Guidance for the Treatment of Noise during the planning of National Road Schemes* recommends the following construction noise limit values.

Days & Times	L_{Aeq}	L_{AFmax}
Monday to Friday (07:00 to 19:00hrs)	70	80
Monday to Friday 19:00 to 22:00hrs	60	65
Saturday 08:00 to 16:30hrs	65	75
Sundays and Bank Holidays 08:00 to 16:30hrs	60	65

Table 13-1 TII Maximum Recommended Noise Levels at the Façade of Nearby Dwellings during Construction

Vibration Limits

Guidance relevant to acceptable vibration within buildings during construction works is contained in the following documents:

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

BS 7385 states that there should typically be no cosmetic damage if transient vibration does not exceed 15mm/s at low frequencies rising to 20mm/s at 15Hz and 50mm/s at 40Hz and above.

These guidelines relate to relatively modern buildings and should be reduced to 50% or less for more critical buildings.

BS 5228 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. It is therefore common, on a cautious basis to use this lower value. Where continuous vibration is such as to give rise to dynamic magnification due to resonance, the guide values may need to be reduced by up to 50%. Both standards note that important buildings that are difficult to repair might require special consideration on a case by case basis but building of historical importance should not (unless it is structurally unsound) be assumed to be more sensitive. If a building is in a very unstable state, then it will tend to be more vulnerable to the possibility of damage arising from vibration or any other ground borne disturbance. Taking the above into consideration the vibration criteria in Table 11.0 is recommended as the maximum allowable vibration.

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:-		
Less than 15Hz	15 to 40Hz	40Hz and above
12 mm/s	20 mm/s	50 mm/s

Table 13-2 Maximum Allowable Vibration Criteria during Construction Phase

14 Air, Dust & Climate Factors

The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed construction phase management measures are implemented, and that construction impacts and nuisance are minimised. The following measures are to be implemented during the construction phase:

- During working hours, dust control methods shall be monitored as appropriate, depending on the prevailing meteorological conditions;
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details;
- Community engagement shall be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register shall be kept on site detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out.
- The contractor must demonstrate full compliance with the dust control conditions;
- At all times the procedures put in place are to be strictly monitored and assessed;
- 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;
- A speed restriction of 20 km/hr shall be applied as an effective control measure for dust for on-site vehicles using unpaved haul roads;
- Construction access to the site will be directly from the Castletown Road. Refer to DBFL drawing 240102-X-04-Z00-DTM-DR-DBFL-CE-1200 for further information;
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period;
- 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;

- 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;
- During periods of very high winds (gales), construction activities likely to generate significant dust emissions should be postponed until the gale has subsided;
- 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;
- Where feasible, hoarding will be erected around site boundaries. This will have the benefit of reducing the impact of larger particles on nearby sensitive receptors;
- 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 such as rock blasting or earthworks are necessary during dry or windy periods; and
- Before entrance onto public roads, trucks will be adequately inspected to ensure there is no potential for dust emissions and will be cleaned as necessary;
- It is recommended that dust deposition monitoring be put in place to ensure dust management measures are adequately controlling emissions. Dust monitoring should be conducted using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119;
- In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations;
- Vehicles delivering or collecting material with potential for dust emissions shall be enclosed or covered with tarpaulin at all times when practicable to restrict the escape of dust;
- At the main site traffic exit, a wheel wash facility will be installed. All trucks leaving the site must pass through the wheel wash. In addition, public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary;

15 Landscape and Visual Impact Assessment

Proposed construction phase measures are summarised below:

- Site fencing/hoarding shall be erected to restrict views of the construction activity e.g. standard 2.4m high
- Establishment of tree protection measures (no-dig construction zones, tree protection fencing and existing hedgerow retention).
- Appointment of an Arborist to oversee all works relevant to trees
- Monitoring of tree protection measures, e.g. maintenance of protective fencing to the satisfaction of the Arborist
- Hand dig excavation under supervision of an arborist is required should excavation be necessary in a tree protection area
- Tree protection fences are to be constructed in accordance with BS 5837:2012 "Trees in Relation to Design, Demolition and Construction - Recommendations"
- A 'Construction Exclusion Zone' notice shall be placed on tree protection fencing at regular intervals
- Tree Protection Zones are not to be used for car parking, storage of plant, equipment or materials
- A post construction re-assessment of retained trees shall be carried out

16 Archaeology & Cultural Heritage

- All topsoil stripping of previously undisturbed areas that is 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 DoCHG.
- All recommendations are subject to approval by the National Monuments Service of the Heritage and Planning Division, Department of Culture, Heritage and the Gaeltacht.

17 Site Compound Facilities and Parking

It is proposed to have 1 no. construction compound to serve all phases of the development.

Access will be from the Castletown Road to the north of the site. It should be noted a HGV ban is located on the Mount Avenue Road to the east of the site. No access should be provided from this road.

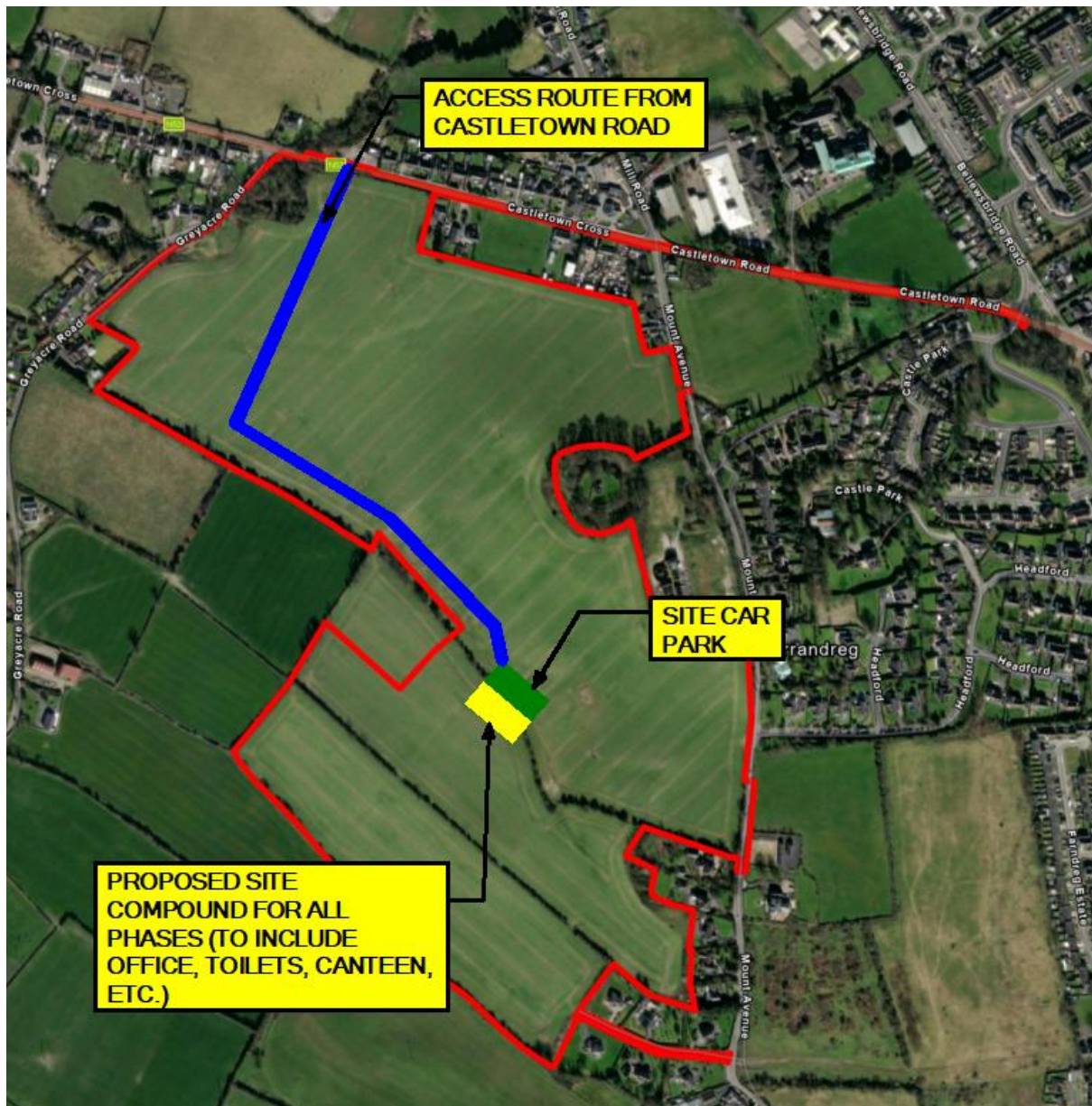
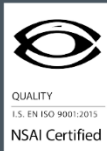


Figure 17-1 Proposed location for compound to serve construction phases of the development

- The construction compounds include adequate welfare facilities such as washrooms, drying rooms, canteen and first aid room as well as foul drainage and potable water supply.

- Foul drainage from the construction compound will continue to be discharged to temporary holding tank(s) the contents of which will periodically be tankered off site to a licensed facility until a connection to the public foul drainage network has been established.
- The construction compound's potable water supply shall continue to be protected from contamination by any construction activities or materials.
- The construction compound is enclosed by a security fence.
- Access to the compound will continue to be security controlled and all site visitors will be required to sign in on arrival and sign out on departure.
- Permeable hardstanding area's will be provided for staff car parking.
- Separate permeable hardstanding area's will be provided for construction machinery and plant.
- The construction compound will include designated construction material recycling areas.
- A series of way finding signage will be provided to direct staff, visitors and deliveries as required.
- All construction materials, debris, temporary hardstands etc. in the vicinity of the site compound will be removed off-site on completion of the works.
- Low level lighting will be provided for both construction compound and motion detectors will be used where appropriate for lighting to ensure the impact on fauna is minimised



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