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Kilternan Village SHD

Lands at Wayside, Kilternan

Outline Construction Management Plan

Liscove Ltd.

June 2022

Notice

This document and its contents have been prepared and are intended solely as information for Liscove Ltd. and use in relation to this Outline Construction Management Plan for Lands at Wayside, Kilternan, Dublin 18 Strategic Housing Development (SHD) Planning Application.

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This document has 31 pages including the cover.

Document history

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Client signoff

Client	Liscove Ltd.
Project	Lands at Wayside, Kilternan, Dublin 18 SHD Planning Application
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1. Introduction

This document comprises an Outline Construction Management Plan for a Strategic Housing Development (SHD) at lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18 in the administrative areas of Dun Laoghaire Rathdown Council. Liscove Limited intend to apply to An Bord Pleanála for permission for a proposed SHD development at the application site which comprises a ca. 10.8 hectare (ha) site at Wayside, Enniskerry Road, Kilternan, Dublin 18.

Items discussed in this document include a brief description of the project, and an outline of project sequencing along with environmental management and monitoring requirements. The purpose of this report is to identify and summarise the measures to be implemented at this preliminary juncture and to guide the Main Contractor who will be required to develop and implement a Detailed Construction Management Plan on site during the course of the construction and demolition period, all of which will be agreed with the Local Authority, prior to commencement of the development.

It should be noted that all relevant health and safety considerations and statutory requirements (including but not limited to the preparation of a Preliminary Safety and Health Plan) will be addressed separately as the project progresses. As such, health and safety aspects are not included in this preliminary document.

1.1. Site Location

The site is located at Wayside, Enniskerry Road, Kilternan, Dublin 18. The development site is ca. 10.8 ha in size and is bounded by the Glenamuck Road to the north; Kilternan Farmers Market and the Sancta Maria residence to the north-west; a recently constructed residential development named "Rockville" to the north-east; the Enniskerry Road to the south-west; dwellings to the south; and lands that will facilitate the future Glenamuck Link Distributor Road to the east. Refer to Figure 1.1. The development site area and drainage work areas will provide a total application site area of ca. 11.2 ha.

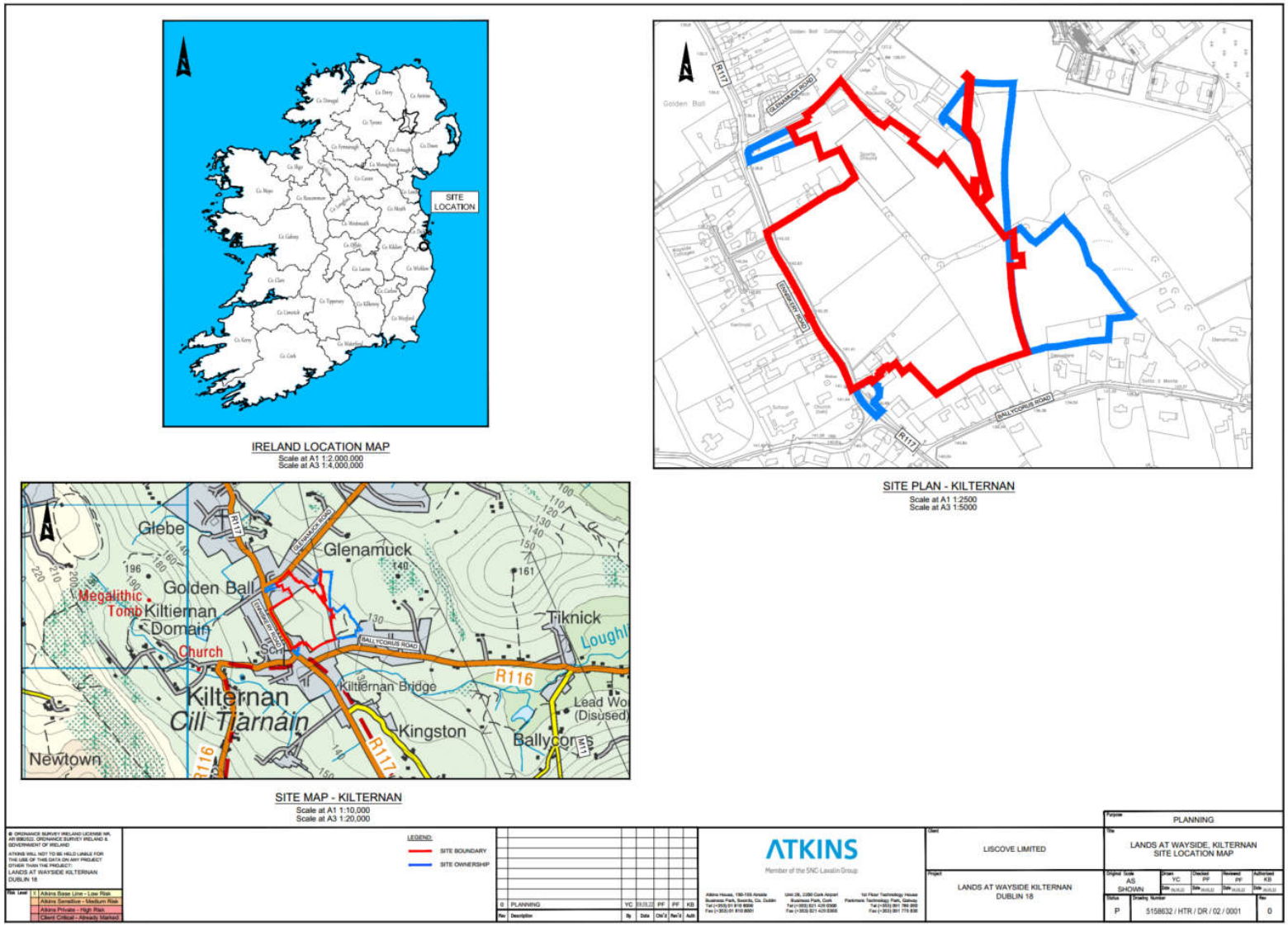

Figure 1-1 - Site location of Lands at Wayside, Kilternan, Dublin 18

1.2. Proposed Scheme Description

The development will principally consist of: the demolition of c. 573.2 sq m of existing structures on site comprising a derelict dwelling known as 'Rockville' and associated derelict outbuildings; and the provision of a mixed use development consisting of 383 No. residential units (165 No. houses, 118 No. duplex units and 100 No. apartments) and a Neighbourhood Centre, which will provide a creche (439 sq m), office (317 sq m), medical (147 sq m), retail (857 sq m), convenience retail (431 sq m) and a community facility (321 sq m). The 383 No. residential units will consist of 27 No. 1 bedroom units (19 No. apartments and 8 No. duplexes), 128 No. 2 bedroom units (78 No. apartments and 50 No. duplexes), 171 No. 3 bedroom units (108 No. houses, 3 No. apartments and 60 No. duplexes) and 57 No. 4 bedroom units (57 No. houses). The proposed development will range in height from 2 No. to 5 No. storeys (including podium/undercroft level in Apartment Blocks C and D and in the Neighbourhood Centre).

The development also provides: pedestrian links from Enniskerry Road and within the site to the neighbouring "Rockville" development to the north-east and a pedestrian/cycle route through the Dingle Way from Enniskerry Road to the future Glenamuck Link Distributor Road; 678 No. car parking spaces (110 No. in the undercroft of Blocks C and D and the Neighbourhood Centre and 568 No. at surface level) including 16 No. mobility impaired spaces, 73 No. electric vehicle spaces, 1 No. car share space, 4 No. drop-off spaces/loading bays; motorcycle parking; bicycle parking; bin storage; the decommissioning of the existing telecommunications mast at ground level and provision of new telecommunications infrastructure at roof level of the Neighbourhood Centre including shrouds, antennas and microwave link dishes (18 No. antennas and 6 No. transmission dishes, all enclosed in 9 No. shrouds together with all associated equipment); private balconies, terraces and gardens; hard and soft landscaping; sedum roofs; solar panels; boundary treatments; lighting; substations; plant; and all other associated site works above and below ground. The proposed development has a gross floor space of c. 43,099 sq m in addition to undercroft levels (under Apartment Blocks C and D measuring c. 1,280 sq m and under the Neighbourhood Centre measuring c. 2,179 sq m, which includes parking spaces, external storage, bin storage, bike storage and plant).Refer to Appendix A for the proposed development layout.

2. General Site Set-Up and Pre-Commencement Measures

In advance of any works commencing onsite, a Detailed Construction Management Plan will be submitted to the Local Authority as part of obtaining a validated Commencement Notice and will elaborate on the principles set out below. The Detailed Construction Management Plan will include all relevant mitigation measures and monitoring requirements as stated within the EIAR (Enviroguide Consulting, 2022), along with any relevant conditions which may be attached to statutory consents (including but not limited to planning permission) for the proposed development.

In general, the following measures will be carried out by the Main Contractor in advance of commencing any Works and will be included in the pre-commencement Construction and Demolition Management Plan:

- A full condition survey of the public infrastructure that will be utilised or affected by construction traffic, prior to the commencement of any work on the site, will be carried out. This condition survey will include an inventory of the road network intended to be used by vehicles, weight restrictions to be imposed on vehicles, a full colour photographic record of the road network intended to be used, a full written account of the existing condition and structural integrity of the infrastructure detailing all existing defects and features;
- Prior to any site works commencing, the Main Contractor will investigate / identify the exact location of and tag all existing services and utilities around and through the site with the assistance of the relevant Local Authority Technical Divisions and Utility Providers;
- A site compound including offices and welfare facilities to accommodate all operatives will be set up by the Main Contractor including sufficient hardstanding to ensure that no parking of construction related vehicles will be permitted on the adjoining road network and if required to hold on site for a period of time, they can be accommodated within the site boundary, see Figure 3.1 for indicative locations;
- Measures will be put in place to ensure no waste, dirt, debris, or other material shall be deposited on the public road or verge by machinery or vehicles travelling to or from the site during the construction phase. Excavated material will generally be stored on site for removal near to the completion of the project or at a stage where the removal can be aligned with favourable weather conditions, timing relative to local traffic, etc;
- Site access will be controlled, and the surrounding road network monitored to ensure that the roads and footpaths affected by the construction works are maintained in a safe and tidy condition. Road sweepers will be utilised as required;
- Site security lighting will be located and designed so as not to result in glare on the public road or to impact negatively on any nearby dwellings and will be cognisant of ecology requirements;
- Typical working hours for the site will be subject to the condition of the planning permission but are expected to be Monday to Friday from 07:00 to 19:00 and Saturdays from 07:00 to 14:00. Special construction operations may need to be carried out outside these hours to minimise disruption to the surrounding area, which will be subject to agreement with the Local Authority. No activities will be permitted onsite outside of these hours unless by prior agreement with the Local Authority;
- All comments and any specific considerations/requirements as noted in the final planning permission grant will be addressed in the detailed Construction Management Plan for approval by the Local Authority ahead of implementation onsite; and,
- Prior to commencement the contractor will review what routes are available for construction traffic. It is envisaged the initial phases will be accessed from the Enniskerry road via Glenamuck Road and once the Glenamuck Link Distributor Road (GLDR) becomes available construction traffic will divert onto this route.

3. Project Programme, Sequencing & Methodology

3.1. Phasing

The construction of this development is intended to take place in the following phases (Phase 1, 2, 2A, 3, 4 and 5) (refer to Figure 3-1) starting from the western central portion of the site, moving in an anti-clockwise direction through Phase 2 and Phase 2A to the East and Phase 3 to the North. The southern two sections of the site will be completed next, starting in the south-eastern corner of the site (Phase 4) and moving south westerly to Phase 5. The proposed sequence of construction outlined below is subject to confirmation once the building contract has been awarded and on completion of the Detailed Construction Management Plan for agreement with the relevant Local Authority. The construction of the development is anticipated to run for 5no. years between April 2023 and April 2028.

Each Phase can be summarised as follows:

Phase 1 – The demolition of c. 573.2 sq m of existing structures on site comprising a derelict dwelling known as 'Rockville' and associated derelict outbuildings. Central Western portion of the site consisting of 91 residential units (made up of houses, duplexes), and all associated landscaping works and drainage for Phase 1. Main Public Open Space, Central Green Way Link, Dingle Way and off-site drainage through southern lands. Access to Glenamuck Link Distributor Road (GLDR) will also be formed in this phase (if the GLDR is in place).

- Phase 2 and Phase 2A– Central Eastern portion of the site consisting of 126no. residential units made up of (houses, duplexes, and apartments) and Neighbourhood Centre along with all associated landscaping works and drainage for Phase 2, 2A and the Neighbourhood Centre. Access to GLDR will be constructed if not completed in Phase 1.
- Phase 3 – North - Eastern portion of the site consisting of 59no. residential units (made up of apartments), with all associated landscaping works and drainage for Phase 3, along with the creation of a new access to Glenamuck Road.
- Phase 4 – South Eastern portion of the site consisting of 97no. residential units (made up of houses and duplexes), along with all associated landscaping works and drainage for Phase 4; and,
- Phase 5 – South Western portion of the site consisting of 10no. residential units (made up of duplexes), and commercial elements with all associated landscaping works, and drainage for Phase 5.

Refer to Appendix A for the proposed site layout.

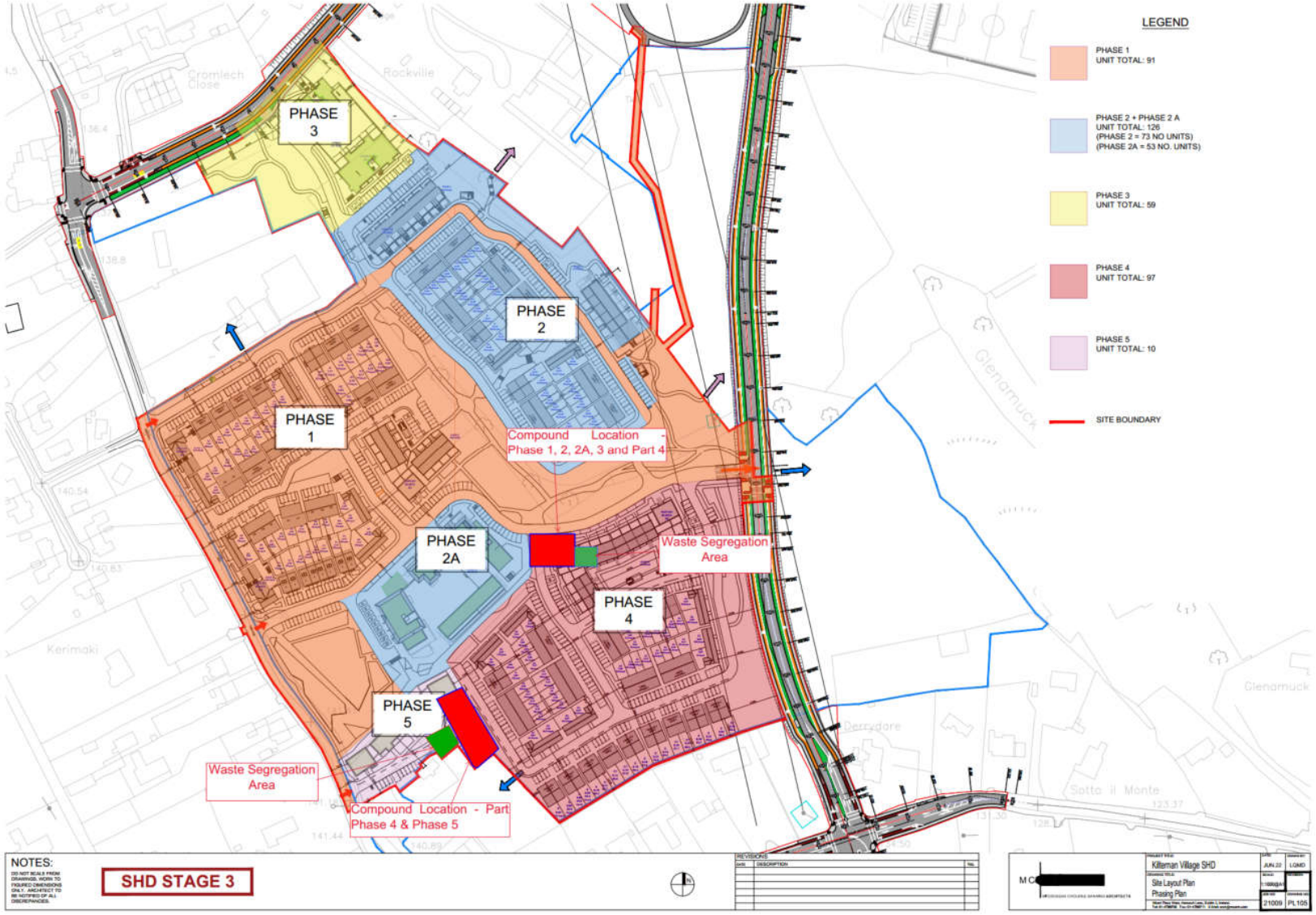

Figure 3-1 – Proposed Phasing and Indicative proposed site compound locations and waste segregation areas.

3.2. Key Demolition and Construction Activities

There are several key construction activities involved in a mixed-use development such as the proposed site, independent of phasing, which can be generally divided into five categories:

Demolition – this includes the demolition of an existing structures on site. Prior to demolition works the following shall be carried out:

- Completion of an asbestos survey (and offsite removal and disposal of any identified asbestos by specialist contractors); and,
- Completion of any additional pre-demolition surveys (as may be required).

Any demolition waste must be transported by appropriately permitted hauliers and disposed of / recycled to an appropriate licensed Waste Facility in accordance with all relevant waste management legislation.

Excavation – this includes site clearing and earthworks required to prepare the site for building foundations and installing utility services. All generated material will be stockpiled in designated areas and removed from site in line with the methodology which will be set out in the Outline Construction & Demolition Waste Management Plan.

Structure – the structure includes the foundations and the physical frame of the apartment buildings and housing elements. Generally, the frame will be constructed using a combination of in-situ reinforced concrete frame and precast concrete elements with the more low-rise housing units constructed in a combination of block work, timber frame and precast concrete all subject to detailed design.

Envelope/façade – the building enclosures will be formed using a combination of block work, render, timber frame, glazing and relevant roofing systems all with the required levels of insulation, ventilation, and weathering in accordance with the relevant building regulations.

Services – the requisite services will be provided such as drainage, water supply, telecoms, electricity, and lighting which will all be coordinated with the relevant utility providers including obtaining permits and connection agreements where relevant.

Landscaping – The landscaping works include some hard landscaping, roads, footpaths, cycle-paths, beds and tree planting, and the relevant areas of open space associated with each Phase.

3.3. Site Compound

A site compound and waste segregation areas will be required for each phase of the proposed development. Indicative compound locations and waste segregation areas for each phase are shown in the Figure 3.1. These layouts are preliminary and will need to be confirmed by the Contractor once appointed.

4. Waste Management Plan

Waste management during the Construction Phase will be managed in accordance with the Construction and Demolition Waste Management Plan prepared by Enviroguide Consulting (2022) for the Proposed Development. Waste will be managed in compliance with the Waste Management Act 1996 (as amended) and all subordinate legislation. Measures to minimise waste generation, promote re-use and recycling and recovery of wastes will be implemented throughout the Construction Phase.

Waste will be stored onsite in the dedicated Waste Segregation Areas in such a manner as to:

- Prevent environmental pollution.
- Minimise nuisance generation such as dust.
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling, and recovery.

In the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor will notify DLRCC 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 proposed authorised waste collector(s). According to the CDWMP, it is anticipated that there will be no asbestos containing materials (ACMs) generated during the Construction Phase of the Proposed Development. If ACMs are identified on site at a later stage, a full asbestos report will be carried out. Removal of asbestos or ACMs will be carried out by a suitably qualified contractor and ACM's will only be removed from site by a suitably permitted/licenced waste contractor. in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.

The monitoring of C&D waste during the Construction Phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the Site boundary. The Main Contractor will be responsible for monitoring and record keeping in respect of waste leaving the facility and that these records will be maintained on site.

5. Environmental Management Plan

A Construction Environmental Management Plan (CEMP) had been prepared in order to support the Lands at Wayside, Kilternan Dublin 18 SHD Planning Application (Enviroguide Consulting, 2022). The purpose of the CEMP is to provide effective, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the Construction Phase of the project and ensure that construction activities do not adversely impact the environment. The objective of this document is to set out and communicate the procedures, standards, management responsibilities and key environmental obligations that apply to the Main Contractor and sub-contractors to address and prevent environmental effects that may arise from the Construction Phase of the Proposed Development. The following measures have been obtained from Enviroguide Consulting (2022) Construction Environmental Management Plan.

5.1. Control of Emissions to Surface Water, Groundwater and Soil

5.1.1. General Protection Measures

All works carried out as part of the Proposed Development will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990, and the adopted construction techniques will comply with the requirements of all relevant statutory bodies (e.g., Building Control Amendment Regulations, Health Service Executive inspections).

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

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

The Proposed Development will be designed to avoid/mitigate as much as possible any potential water pollution causing scenarios during the Construction Phase. Some of the mitigation measures that will be implemented during construction include:

- Avoid working on floodplains and/or sequence construction to avoid temporary increase in flood risk and water pollution incidents,
- The compensatory and attenuation storages will be constructed in advance of constructing the buildings and the car park,
- The Site Compound will be located outside of the floodplain,
- Implement best practice construction methods and practices complying with relevant legislation to avoid or reduce the risk of contamination of watercourses.
- The CEMP will be implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the CEMP.
- Surface water runoff from work areas and construction dewatering water will be directed to on-site settlement ponds will be discharge at controlled rate.
- Washing of trucks and other construction equipment will take place off site. If within the site, the discharge from this area must be directed to on-site settlement ponds.
- Oil and fuel will be stored in designated bunded areas and away from surface water drainage features.
- Refuelling of construction machinery will be undertaken in designated areas away from surface water drainage to minimise potential contamination of the water environment. Spill kits will be kept in these areas in the event of spillages.
- Hazardous construction materials will be stored appropriately to prevent contamination of surface water, groundwater or soil.

- Spill kits will be kept in designated areas for re-fuelling of construction machinery.
- Potential pollutants will be adequately secured against vandalism and will be provided with proper containment according to the relevant codes of practice. Any spillages will be immediately contained, and contaminated soil will be removed from the Proposed Development and properly disposed of in an appropriately licensed facility.
- Silt traps will be placed in gullies to capture any excess silt in the run-off from working areas.
- Soil and water pollution will be minimised by the implementation of good housekeeping (daily site clean-ups, use of disposal bins, etc.) and the proper use, storage and disposal of these substances and their containers as well as good construction practices.
- A contingency plan for pollution emergencies will also be developed by the contractor prior to the commencement of the works and regularly updated during construction. This contingency plan will identify the actions to be taken in the event of a pollution incident in accordance with the CIRIA Guidance 37 which requires the following to be addressed:
  - Containment measures
  - Emergency discharge routes
  - List of appropriate equipment and clean-up materials
  - Maintenance schedule for equipment
  - Details of trained staff, location and provision for 24-hour cover
  - Details of staff responsibilities
  - Notification procedures to inform the EPA or Environmental Department of DLRCC
  - Audit and review schedule
  - Telephone numbers of statutory water consultees; and
  - List of specialist pollution clean-up companies and their telephone numbers.

5.1.2. Existing Waterbodies

Good construction management practices that will be employed to minimise the risk of pollution of existing water courses and water bodies due to the storage and transport of the excavated materials include:

- Where feasible all excavated spoil will be treated to remove excess fluid prior to stockpiling and transportation.
- Where feasible transfer of excess soil materials from stockpile areas off-site will be undertaken during dry periods.
- Stockpile and transfer of excess soil material will be restricted to specified and impermeable areas that are isolated from the surrounding environment.
- Wheel washes will be provided at site entrances to clean vehicles prior to exiting the work site, and,
- All staff will be trained and follow vehicle cleaning procedures. Details of these procedures will be posted in all work sites for easy reference.

The implementation of the above measures will ensure that the risk of pollution of groundwater and nearby water bodies resulting from the construction activities will be minimised.

5.1.3. Exportation of Soil and Bedrock

Prior to excavation, a detailed review of the final cut and fill model will be carried out to confirm cut and fill volumes. Detailed quantities of material to be excavated will be verified through accurate survey techniques and detailed in the CDWMP (Enviroguide Consulting, 2022) which will be further developed by the appointed Contractor in advance of works commencing. All surplus materials and any waste will be removed off-site in accordance with the requirements outlined in the CDWMP (Enviroguide Consulting, 2022) and will be managed in accordance with all legal obligations.

The re-use of soil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended.

Any surplus soil not suitable for re-use as a by-product and other waste materials arising from the Construction Phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

It will be the Contractor's responsibility to either; possess a waste collection permit or, to engage specialist waste service contractors who will possess the requisite authorisations, for the collection and movement of waste off-site. Material will be brought to an authorised facility that has been adequate assessed and any potential impacts

mitigated as part of statutory consent procedures. Accordingly, there will be no impact on any off-site destination site associated with the Construction Phase of the Proposed Development.

Materials and waste will be documented prior to leaving the Proposed Development site. All information will be entered into a waste management register kept on the Proposed Development site.

Vehicles transporting material with potential for dust emissions to an off-site location will be enclosed or covered with a tarpaulin at all times to restrict the escape of dust.

Public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. The wheels of all Lorries will be cleaned prior to leaving the site so that traffic leaving the site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain. A wheel-wash or similar approved will be installed at the egress point and road sweeper will be deployed where necessary to ensure that public roads are kept free of debris.

5.1.4. Reuse of Soil and Stone

The reuse of excavated soil and stone for the Proposed Development (i.e., for structural fill, non-structural fill and landscaping) will be subject to testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development.

5.1.5. Management and Control of Soils and Stockpiles

Where possible, stockpiling of soil and stone on-site will be avoided. However, in the event that stockpiling is required, stockpiled materials pending removal off-site or reuse on-site will be located in in designated areas only and there will be no storage of materials within 10m of any open ditches / watercourses at the Proposed Development site. Where required during periods of wet weather appropriate containment measures will be implemented to prevent excessive runoff and entrainment of sediment. These will include battering of stockpiles, covering of stockpiles with tarpaulins and use of sandbags to contain any runoff from the stockpiles.

The extent of the required work area and batter for bulk excavation at the site will be minimised where appropriate to prevent unnecessary excavation of soil and tracking over soil and subsoil outside of the excavation work areas as a result of compaction and rutting from construction traffic.

Dedicated internal haul routes will established and maintained by the contractor to prevent tracking over unprotected soils.

Exclusion zones will be established where soft landscaping is proposed in particular along site boundaries which are outside of the areas where excavation to ensure soil structure is maintained.

Segregation and storage of soils for re-use onsite or removal offsite and waste for disposal off site will be segregated and temporarily stored on-site pending removal or for reuse onsite in accordance with the CMP, CEMP and the CDWMP.

For any excavated material identified for removal offsite, while assessment and approval of acceptance at a destination reuse, recovery site or waste facility is pending, excavated soil for recovery/disposal will be stockpiled as follows:

- A suitable temporary storage area will be identified and designated.
- All stockpiles will be assigned a stockpile number.
- Soil waste categories will be individually segregated; and all segregation, storage and stockpiling locations will be clearly delineated on the site drawings;
- Erroneous pieces of concrete will be screened from the stockpiled soils and segregated separately;
- Soil stockpiles will be sealed to prevent run-off from the stockpiled material generation and/or the generation of dust; and
- Any waste that will be temporarily stored / stockpiled only impermeable surface high grade polythene sheeting, hardstand areas or skips to prevent cross-contamination of the soil below or cross contamination with soil.

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

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust; and,

- Stockpiles will not be located near Proposed Development site boundaries or sensitive receptors and a set-back of 100ml will be maintained from any boundary with offsite receptors.

When a stockpile has been sampled for classification purposes, it will be considered to be complete and no more soil will be added to that stockpile prior to disposal. An excavation/stockpile register will be maintained on-site.

Waste will be stored on-site, including concrete, asphalt and soil stockpiles, in such a manner as to:

- Prevent environmental pollution (bunded and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required);
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent reuse, recycling and recovery; and
- Prevent hazards to site workers and the general public during construction phase (largely noise, vibration and dust).

5.1.6. Degradation of Soils

The segregation and stockpiling of soil and stone at the Proposed Development site pending reuse or removal offsite will be carefully managed and maintained in order to minimise potential impact on soil quality. Handling of the stockpiled soil and stone will be minimised and will not be disturbed once formed. Stockpiles will be formed to minimise infiltration or accumulations of rainwater in the stockpiles.

5.1.7. Export of Resource (soil and stone)

Prior to excavation, a detailed review of the final cut and fill model will be carried out to confirm cut and fill volumes. Detailed quantities of material to be excavated will be verified through accurate survey techniques and detailed in the CDWMP (Enviroguide Consulting, 2022a) which will be further developed by the appointed Contractor in advance of works commencing.

All surplus materials and any waste will be removed off-site in accordance with the requirements outlined in the CDWMP (Enviroguide Consulting, 2022a) and will be managed in accordance with all legal obligations.

The re-use of soil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended.

Any surplus soil not suitable for reuse as a by-product and other waste materials arising from the Construction Phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures

It will be the contractor's responsibility to either; possess a waste collection permit or, to engage specialist waste service contractors who will possess the requisite authorisations, for the collection and movement of waste off-site. Material will be brought to an authorised facility that has been adequate assessed and any potential impacts mitigated as part of statutory consent procedures. Accordingly, there will be no impact on any off-site destination site associated with the Construction Phase of the Proposed Development.

Materials and waste will be documented prior to leaving the Proposed Development Site. All information will be entered into a waste management register kept on the Proposed Development Site.

Vehicles transporting material with potential for dust emissions to an off-site location will be enclosed or covered with a tarpaulin at all times to restrict the escape of dust.

Public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. The wheels of all Lorries will be cleaned prior to leaving the site so that traffic leaving the site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain. A wheel-wash or similar approved will be installed at the egress point and road sweeper will be deployed where necessary to ensure that public roads are kept free of debris.

5.1.8. Import of Aggregates

Contract and procurement procedures will ensure that all aggregates and fill material required are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity and compliance standards and statutory obligations.

The importation of aggregates will be subject to management and control procedures which will include testing and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development including the suitability of material that may be imported in accordance with an Article 27

By-Product Notification. Therefore, any unsuitable material will be identified and avoided prior to importation to the Proposed Development site.

5.1.9. Concrete Works

The cementitious grout and other concrete works during the Construction Phase, will avoid any contamination of ground through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards (e.g., Guidance for Consultants and Contractors, CIRIA - C532', CIRIA, 2001).

Pre-cast concrete will be used where technically feasible to meet the design requirements for the Proposed Development. Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving geological environment through the use of appropriate design and methods implemented by the appointed Contractor and in accordance with industry standards.

All ready-mixed concrete will be delivered to the Proposed Development Site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out.

The following measures will be implemented where poured concrete is being used on site:

- The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on site.
- Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed.
- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening.
- Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete.
- Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite, and
- Surplus concrete will be returned to batch plant after completion of a pour.

5.1.10. Foul Water Drainage

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

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

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

Foul water discharge from the temporary welfare units at the site during the Construction Phase will be either tankered off-site in accordance with waste management legislation or discharged under temporary consent to the IW mains foul network for treatment at Shanganagh WWTP subject to agreement with Irish Water.

5.1.11. Emergency Procedures

Emergency procedures will be developed by the appointed Contractor in advance of works commencing and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements.

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the Proposed Development site;
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants;
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained;
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Proposed Development site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards;
- All construction works staff will be familiar with emergency procedures for in the event of accidental fuel spillages; and
- All construction works staff on-site will be fully trained on the use of equipment.

This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving hydrological and hydrogeological environment associated with the Construction Phase of the Proposed Development. These measures will also ensure that there is minimal risk to soils and geology associated with the Construction Phase of the Proposed Development.

5.2. Controls to Protect Biodiversity

5.2.1. Habitats

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

- All trees along the proposed development boundary that are to be retained, both within and adjacent to the proposed development boundary (where the root protection area of the tree extends into the proposed development boundary), will be fenced off at the outset of works and for the duration of construction to avoid structural damage to the trunk, branches or root systems of the trees as per the requirements of the British Standard Institution (BSI) British Standard (BS) 5837:2012 Trees in relation to in relation to design, demolition and construction – Recommendation . Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree. The RPA will be defined based upon the recommendation of a qualified arborist;
- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it;
- The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas will not be undertaken within 10m of any retained trees, hedgerows and treelines;
- A qualified arborist shall assess the condition of, and advise on any repair works necessary to, any trees which are to be retained or that lie outside of the proposed development boundary but whose RPA is impacted by the works. Any remedial works required will be carried out by a qualified arborist; and,
- A buffer zone of at least 5m will be maintained between construction works and retained hedgerows to ensure that the root protection areas are not damaged.

5.2.2. Badger

As the usage of the proposed development site by badgers can change over time, a confirmatory pre-construction check of the proposed development site for new burrow entrances will be carried out immediately prior to construction works commencing to confirm their usage by badger.

Any new badger setts present will be afforded protection in line with the requirements set out in the NRA (2005) guidance document as follows:

1. Badger setts where encountered will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage;

2. In the season June to November, no heavy machinery shall be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) shall not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance shall not take place within 10m of sett entrances;
3. During the breeding season (December to June inclusive), none of the above works shall be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts; and,
4. Works can be undertaken within these zones following consultation with, the approval of and, if required, under the supervision of an ecologist with experience of badger mitigation.

5.2.3. Breeding Birds

Vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st of March and the 31st of August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within three days of the nest survey. Where the vegetation is not cleared within three days of checks, a repeat check will be required. Should nesting birds be encountered during surveys, the removal of vegetation will be required to be delayed until after the nesting has finished.

5.2.4. Bats

- Although no evidence of bats was recorded in the buildings or PRF trees located within the proposed development site, precautionary mitigation has been proposed in the event that any bats are found to be roosting within the aforementioned structures, during demolition or clearance works, as the usage of the proposed development site by bats can change over time. A suitably qualified bat ecologist, licenced as necessary, will undertake a confirmatory preconstruction survey to assess for any changes since the planning surveys. Thereafter they will be on site during the demolition works of the building, and that if bats are encountered during any works at the site the relevant activity will be suspended until appropriate measures are enacted. A derogation licence may need to be sought from NPWS in order to permit removal of bats and mitigate for the loss of any roosts on the site. This may include measures as outlined in NRA guidance 2006.
- Lighting proposals for the construction phase will adhere to the advice provided in Bats and Lighting – Guidance for Planners, Engineers, Architects and Developers (Bat Conservation Ireland 2010), Bats and artificial lighting in the UK Bats and the Built Environment series Guidance Note 08/18 (Institution of Lighting Professionals & Bat Conservation Trust, 2018) and Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011). Construction stage lighting details shall be reviewed by a qualified bat ecologist. If necessary, the bat ecologist shall recommend adjustments to directional lighting (e.g. through cowls, shields or louvres) to restrict light spill in sensitive areas.

5.2.5. Biosecurity

In addition, the following will be adhered to, to avoid the introduction of invasive species to the Proposed Development Site during both the Construction and Operational Phases.

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

5.3. Control of Noise and Vibration

In order to control likely noise impacts caused by the Proposed Development, best available technology will be employed by the appointed Main Contractor to minimise noise from the construction operations and all comply with the following mitigation measures as set out in BS 5228-1: A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise:

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by site constraints.
- Avoid unnecessary revving of engines and switch off plant items when not required.

- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Use of alternative reversing alarm systems on plant machinery.
- Where noise becomes a source of resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limiting the hours during which site activities likely to create high levels of noise are permitted.
- Appointing a site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations

The Main Contractor will monitor the likelihood of prolonged exposure to excessive noise and will commission a noise surveying/monitoring where necessary. The following control measures are to be implemented by the Main Contractor:

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise;
- The Main Contractor will assess risk arising from noise prior to each activity taking place and determine appropriate action. The aim will be to minimise the exposure to excessive noise levels;
- If it is likely that the noise exposure exceeds Lower Action Value, then hearing protection must be made available;
- If it is likely that the noise exposure exceeds Upper Action Value, then hearing protection is mandatory to be used. The work supervisor will decide on the most suitable hearing protection to be used based on exposure and worker’s personal preference (earmuffs or earplugs);
- The Main Contractor will ensure proposed measures are put in place and that their effectiveness and suitability is evaluated on regular bases;
- The Main Contractor will minimise noise at work by looking for alternative processes and/or working methods, which would make the work quieter and/or exposure times shorter;
- The Main Contractor will liaise with all sub-contractors to effectively control noise exposure;
- The number of people working near source of the noise will be minimised;
- Plant and machinery will be compliant with current legislation and fitted with silencers where possible;
- Employees must use hearing protection where its use is made compulsory;
- Hearing protection zones will be identified where necessary;
- Spot checks on appropriate use of hearing protection will be carried out;
- Operators of rock breaking machines and workers nearby must wear adequate ear protection;
- During construction, the contractor will manage the works to comply with noise limits outlined in BS 5228-1:2009+A1 2014. Part 1 – Noise;
- All plant to be serviced and maintained in good working order to ensure noise production is kept to a minimum;
- Idle plant to be switched off or throttled down to both save energy and reduce noise emissions;
- All plant operators to be qualified in their specific piece of plant;
- Compressors and generators will be sited in areas least likely to give rise to nuisance where practicable;
- If the Contractor gets a complaint about noise from a neighbour, they will act immediately to remedy the situation.

5.3.1. Monitoring of Noise and Vibration

The control measure outlined in Section 5.3 are to be implemented and furthermore, the Main Contractor will monitor the likelihood of prolonged exposure to excessive noise and commission a noise surveying/monitoring programme where necessary. Specific monitoring will be carried out at the nearest sensitive locations which are presented in Table 5.1.

Table 5-1 - Sensitive Receptor Locations

Name	Type	Coordinates		Orientation Relative to Site Boundary	Distance from the Site Boundary
Cromlech Close / Glenmuck Road	Residential	53.240048	-6.194793	North	40m
Rockville Woods	Residential	53.240128	-6.193471	East	30m
Wayside Cottages	Residential	53.227752	-6.195784	West	30m
Ballycorus Road	Residential	53.225937	-6.191261	South	30m

5.3.2. Control of Air Quality

It is not expected that adverse air quality impacts are likely to occur at sensitive receptors as a result of the Proposed Development. However, in order to sufficiently mitigate any likely air quality impacts associated with emissions from the site and vehicles / machinery, a schedule of appropriate mitigation measures, as outlined below, will be employed as necessary during the Construction Phase of the Proposed Development to prevent any such impacts occurring:

- Engines and exhaust systems will be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle / equipment type and mode of operation.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Use mains electricity or battery powered equipment wherever practicable in place of diesel- or petrol-powered generators.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)
- No burning of materials will be permitted on site.
- Water sprays and cannons will be used where possible during cutting, with protective measures applied to retained finishes local to the cutting.
- Prior to commencement, the Main Contractor will be required to identify the construction operations which are likely to generate emissions and to draw up action plans to minimise emissions.

5.3.3. Control of Dust

In order to prevent dust being generated during the Construction Phase, permanent controls using best available technology will be employed by the appointed Main Contractor. Where preventing dust is not reasonably practicable then it will be reduced as far as reasonably practicable.

In order to sufficiently mitigate any impacts associated with dust generation at the site, a Dust Management Plan (DMP) will be developed and implemented. The DMP may include measures to control other emissions, at the request of the Local Authority. The DMP will include a program for dust monitoring and for conducting regular onsite and offsite dust inspections. The level of detail to be included in the DMP will depend on the risk, and should include, as a minimum, the recommended mitigation measures included in this document.

Dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations will be agreed with the Local Authority. Baseline monitoring will commence at least three months before work commences onsite, and/or before work on specific phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

Monitoring of dust deposition will be undertaken at the nominated boundary locations to ensure that dust levels comply with the TA Lift limit value of 350mg/(m²/day) based on a 30-day average using Bergerhoff gauges (Limits to be agreed with local authority).

The Main Contractor will be required to allocate suitably qualified and experienced personnel to ensure that the generation of dust is minimised and effectively controlled. The appointed personnel will:

- Carry out daily inspections onsite and at the site boundary, record inspection results, and make an inspection log available to the local authority when asked.

- Carry out off-site inspections of receptors (including roads) to monitor dust, including regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of the site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
- Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

The Main Contractor will plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is possible, and will implement additional control measures including:

- Erecting solid screens or barriers around dusty activities or the site boundary thatare at least as high as any stockpiles on Site.
- Fully enclosing specific operations where there is a high potential for dust production and the Site is active for an extensive period.
- Remove materials that have a potential to produce dust from Site as soon as possible, unless being re-used on Site.
- Netting will be provided to enclose scaffolding to mitigate escape of air borne dust from the existing buildings.
- Piling machinery will be shrouded when operating near to boundaries.
- Dust emissions over the site boundary will be minimised using static sprinklers or other watering methods as necessary.
- Water sprays for dust suppression will be affixed to mechanical excavators/munchers involved in demolition works.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Demolition waste will be removed from site as quickly as possible to minimise risk of dust generation and any fine material will be covered with a tarpaulin or similar material and tied down.
- In areas of poor natural ventilation, dust capture/extraction methods will be employed by the Main Contractor.

Wherever construction activities that have the potential to create dust are taking place at the site of the Proposed Development, the following control measures will be implemented:

- Cutting, grinding or sawing equipment will be fitted with, or used in conjunction with, suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems.
- Chutes, conveyors and covered skips will be used for moving and storing dusty materials.
- Drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment will be minimised and fine water sprays will be used on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian or mulches where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust. Site roads (particularly unpaved roads) 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 of 15 km/hr. Studies show that these measures can have a control efficiency ranging from 25 to 80%. Additional dust control measures for site roads include:

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the sur- face as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site logbook.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- If practicable, the wheel wash facility will be employed at the exit of the Site so that traffic leaving the Site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain.
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates will be located at least 10m from receptors where possible.

Public roads outside the Site will be regularly inspected for cleanliness, as a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris. Vehicles delivering material with potential for dust emissions to an off-site location will be enclosed or covered with tarpaulin always to restrict the escape of dust.

5.4. Control of Traffic

During the construction phase the appointed Works Contractor on site will be responsible for the planning, design, implementation, maintenance and removal of traffic safety and management measures required in order to facilitate and complete the works. The closure of the any roads to traffic during the works period will not be permitted.

The Contractor will notify all businesses within the extent of the Works of the start date and duration of the Works through a letter/email drop 2 weeks in advance of the start date. Further information leaflets will be issued at monthly intervals throughout the duration of the Works or as may be required to advise of any interference with access.

During the construction phase the appointed Works Contractor will comply at all times with the requirements of the Department of the Environment Chapter 8 -Traffic Signs Manual, Temporary Traffic Management Design Guidance, Temporary Traffic Management Operations Guidance, Temporary Traffic Measures and Signs for Roadworks and also the Guidance for the Control and Management of Traffic at Road Works (Second Edition, 2010) prepared by the Local Government Management Services Board and any additional requirements detailed in the Design Manual for Roads and Bridges.

The design and implementation of Traffic Safety and Management measures will be conducted by a Traffic Management Design Specialist appointed by the Contractor.

5.4.1. Monitoring

During the Construction Phase the following monitoring is advised:

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

5.5. Control of Impacts on Archaeology and Heritage

It is possible that excavation works associated with the Proposed Development may have an adverse impact on small or isolated previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level. If any archaeological remains are discovered during this project, all works will

cease and an expert archaeologist will be brought to Site and all future works will be carried out under the supervision of the archaeologist.

5.6. Control of Impacts on Landscape and Visual

The key landscape and visual mitigation measures used during the Construction Phase have been incorporated into the layout of the site and design of the proposed buildings. The buildings will be low height (2-5 storeys), clad in a similar neutral coloured material and will have a similar horizontal emphasis. The measures proposed revolve around the implementation of appropriate site management procedures - such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc. Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures and work practices to ensure the Site is kept tidy, dust is kept to a minimum, and that any locations close to public areas are kept free from building material and site rubbish.

Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate. To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound(s) and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above.

For those trees proposed for retention, all necessary mitigation measures will be put in place in order to prevent or reduce impact to its very minimum. Mitigation measures used will need to include the erection of protective fencing at the very start of the works, ground protection installation within root zones where fencing cannot be erected to enclose the entire root zones, monitoring of the site works by the project Arboriculturist throughout the construction process and the use of tree friendly techniques and products for the construction process.

6. Outline Construction Traffic Management Plan

6.1. Overview

Prior to commencement the contractor will review what routes are available for construction traffic and this will be agreed with the roads department of the Local Authority in advance of construction activities commencing on-site. The objective of this is to ensure that the impacts of all related construction activities generated during the construction phase of the proposed development upon both the public (off-site) and internal (on-site) construction workers environments are fully considered and proactively managed and scheduled with full consideration of the requirements of key stakeholders. This will ensure that the safety, health and well-being of both the public and the construction workers are maintained at all times.

The likely traffic impact of the construction works will be short-term in nature. The number of staff on site will fluctuate over the construction phases of the subject development. From similar developments completed by the Applicant, workers will typically make use of shared transport thereby reducing traffic generation and will also utilise public transport facilities; the peak level of site personnel activity and number of trips have been estimated. The arrival times and departure times for staff are likely to be scheduled to avoid the peak traffic hours.

6.2. Traffic Analysis

The transport effects of the proposed development during the demolition and construction phases are considered through the following key transportation issues:

- Vehicle routing;
- Demolition and construction traffic impacts;
- Pedestrian and cycle impacts; and
- Public transport impacts.

As per Chapter 12 of the EIAR, it is assumed that all demolition and construction vehicles will remain on the strategic road network for as long as possible and that the “last mile” will be undertaken on local roads (i.e.: that all construction traffic will approach the site from the N50 corridor). During the demolition and construction of the proposed development there is the potential for temporary local disruption to pedestrian, cycle and vehicular traffic users because of demolition and construction traffic. The likely traffic impact of the construction works will be short-term in nature.

Once a contractor has been appointed the details set out which the Chapter 12 of the EIAR will be reviewed and updated to reflect contractor advise and requirements in lien with best practice safety and environmental practices.

Typically, construction working hours adjacent to residential areas or sensitive noise receptors will be limited to:

- 7am - 7pm, Monday to Friday; and
- 7am - 2 pm, Saturday
- Sunday – no working
- Bank and Public Holidays – no working

6.3. Construction Haul Routes

For phase 1 it has been assumed that the Glenamuck District Roads Scheme (GDRS) is not available and therefore it is likely that HGV’s will utilise Junction 15 of the M50, coming from the northerly or southerly direction to access the Glenamuck Road North Roundabout and travel westerly along the Glenamuck Road before accessing the R117 and entering the proposed development. HGV’s leaving the site are likely to will utilise the same route in reverse.

For Phase 2 to 5 it has been assumed that the GDRS will be available. Therefore, it is likely that HGV’s will utilise Junction 15 of the M50, coming from the northerly or southerly direction to access the Glenamuck Road, before accessing the Glenamuck District Distributor Road (GDDR) and from there the GLDR before accessing the site via new junction onto the GLDR. HGV’s leaving the site are likely to will utilise the same route in reverse. The proposed haul route is shown in Figure 6.1.

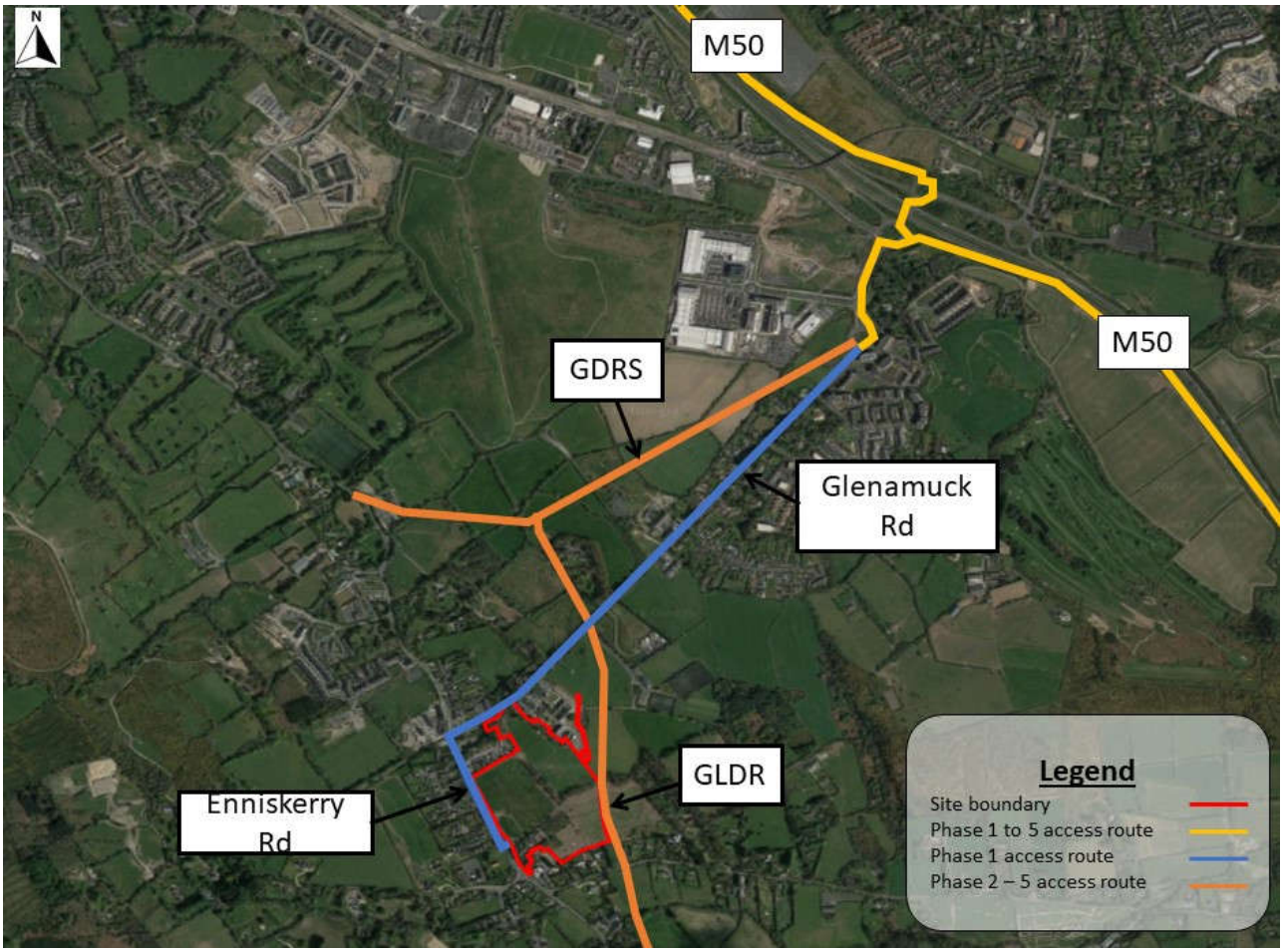

Figure 6-1 – Potential Construction Haul Routes

6.4. Anticipated Construction Traffic

A total of 40,850 cubic metres of material will be required to be exported off site and 63,600 cubic material required to construct building up to finish floor level (grey slap). Anticipated HGV movements associated with this volume have been estimated based following steps. Anticipated HGV movements associated with this volume have been estimated based following steps:

1. Total volumes divided by
    - Average number of construction days per month – 20 days
    - Construction time period of phase
2. This provides average volume moved per day
3. Average truck capacity is 25 tons with soil density of 1.9kg/m3 provide a cubic capacity of 13 cubic metres per truck
4. Assumed all trips will be two-way there both an inward and outward trip will be required
5. Phase 2 and 2a will run concurrently.

Based on this the HGV movements per phase are set out in Table 6.1.

Table 6-1 - HGV daily two-way movements associated with exported and import of material

Phase	IN	Out	Total
1	8	10	18
2 and 2a	6	8	14
3	4	2	6

4	4	6	10
5	2	4	6
Total	24	30	54

Other materials delivered by HGV in significant quantities throughout a project would include stone fill, steel reinforcement, blocks and bricks, mortar, precast concrete floors and balconies, timber and roof trusses, windows and cladding, roof tiles/slates, paving and drainage materials. Materials for general internal finishes would tend to be in smaller vehicles but some of the bulkier items would include timber, plaster slabs, kitchens and wardrobes, bathrooms and plumbing supplies. However, these vehicle movements will be spread out over the entire duration of the programme (five years) with vehicle numbers not anticipated to be as numerous or as prolonged as the two scenarios outlined above. As an estimate, it is assumed that there would be circa 12 two-way vehicle movements over a typical construction day. It is anticipated that these vehicle movements would occur outside peak times of avoid delays on the road network and minimise lost time and costs.

In terms of construction personnel, it is anticipated that ca. 100 people would be employed on site during peak periods. Table 6.2 outlines the anticipated movements.

Table 6-2 - Construction Personnel Movements

Number of Construction Staff	100
Average Car Occupancy	3
Percentage Arriving by Public Transport	10%
Daily Number of Public Transport Trips (for construction)	100
Percentage Arriving by Public Car	90%
Daily Number of Car Trips (for construction)	30
Arrival Profile	
0700-0800	80%
0800-0900	20%
Departure Profile	
1600-1700	10%
1700-1800	10%
1800-1900	80%

As per the EIAR '*construction impacts on the local road network are considered to be negligible'.*

6.5. Relevant Management Issues

The primary issues that affect construction projects include:

- General site access and egress;
- Interaction with existing facilities and operations;
- The location and amount of parking;
- The timing and extent of material deliveries;
- Traffic conflicts with both existing vehicles and other construction traffic;
- Traffic congestion and conflicts on external roads; and,
- Signage and directions.

6.6. Site Actions

It is proposed to manage the impact of construction traffic through the provision of controlled access points to the site. These will be carefully coordinated to minimise conflicts with other activities.

Note; this is not an exhaustive list, and it will be the appointed contractor's responsibility to prepare a detailed Construction Traffic Management Plan to be approved with the Planning Authority prior to commencement of construction. Below is a list of measures which may potentially be adopted during the construction works which are typically included in a detailed Construction Traffic Management Plan:

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

The above measures will minimise any significant environmental degradation or safety concerns in the vicinity of the proposed works, due to the presence of construction traffic. 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 review of haulage routes, delivery timings and access arrangements will be undertaken as construction progresses to ensure smooth operation.

7. References

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Health and Safety Authority's (2010) Code of Practice for Avoiding Danger from Underground Services

National Roads Authority, 2004. Guidelines for the Treatment of Noise and Vibration in National Road Schemes.

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Appendix A: Proposed Development Layout

LEGEND

SITE BOUNDARY
TOTAL AREA (inclusive of drainage & road works): 11.2HA
TOTAL UNITS : 383 NO. UNITS

DEVELOPABLE SITE AREA : 8.6 HA
DENSITY: 44.5 U/HA

NOTES:

DO NOT SCALE FROM DRAWINGS. WORK TO FIGURED DIMENSIONS ONLY. ARCHITECT TO BE NOTIFIED OF ALL DISCREPANCIES.

SHD STAGE 3

REVISIONS

DATE	DESCRIPTION	No.

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PROJECT TITLE	DATE	DRAWN BY
Kilternan Village SHD	MAY '22	LQMD
DRAWING TITLE: Site Layout Plan	SCALE: 1:1000	REVISION:
	JOB NO: 21009	DRAWING NO: PL101

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