



Trinity
Consultants

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Construction Environmental Management Plan

Project Title : Naas Racecourse

CLIENT

Ballymore
Developments
Ltd

DOCUMENT REFERENCE

257501.0874WMR03

DATE

15/04/2026

DOCUMENT CONTROL SHEET

Document Control Sheet		
Our Reference	257501.0874WMR03	
Original Issue Date	15/04/2026	
Client:	Ballymore Developments Ltd	
Revision	Revision Date	Description

Details	Written by	Approved by
Signature		
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Date	15/04/2026	15/04/2026

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1. INTRODUCTION

AWN Consulting, a Trinity Consultants Team, has prepared this Construction Environmental Management Plan (CEMP) on behalf of Ballymore Developments Ltd (the Client) for the construction of a Large-scale Residential Development (LRD) consisting of 234 no. residential units (115 houses; 21 apartments units within a three-storey apartment block, 80 no. own-door apartments within duplex-type buildings and 18 no. own-door apartments within triplex-type buildings and 77 apartment units provided across duplex and triplex buildings with own-door access), a childcare facility, associated roads and cycle infrastructure, communal and private infrastructure, landscaping, underground services, and all ancillary works (the Proposed Development) located to the west of Naas Racecourse in Naas, County Kildare (the site).

The CEMP will be implemented and adhered to by the Main Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager, Environmental Clerk of Works and Ecological Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures.

The Main Contractor will provide a further detailed CEMP to include any subsequent planning conditions relevant to the Proposed Development and set out further detail of the overarching vision of how the Main Contractor of the Proposed Development manage the site in a safe and organised manner.

This CEMP has been prepared to account for activities at the site during the demolition, excavation and construction phases of the Proposed Development.

The main issues that have been considered within this document are as follows:

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

1.1 LRD Opinion Response

To demonstrate compliance with the LRD Opinion issued for the Proposed Development, Table 1.1 provides a summary of each relevant LRD item and identifies where it has been addressed within this CEMP.

LRD Item	Requirement	Where Addressed in the CEMP
Item 4 – Environment	Demonstrate that consideration has been given that during Construction Phase that a Surface Water Management Plan will be in place in accordance with IFI Publication 2016 "Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters". Note: the Plan should address the collection, control and management of any	Section 7.6 (Surface Water Management): Contains commitment to preparing a Surface Water Management Plan (SWMP) prior to commencement.

LRD Item	Requirement	Where Addressed in the CEMP
	surface water run-off from the site to prevent any polluting matter, suspended solids and silt, being discharged to any receiving water.	
	a) Site Layout Plan at sufficient scale identifying any potential surface water and/or groundwater receptors	Section 7.6: Contains commitment to prepare a SWMP layout drawing showing receptors.
	b) The location and design of any proposed mitigation measures	Section 7.6 and 7.6.1: Contains full mitigation suite and references to IFI (2016)
	c) Proposals for a surface water and/or groundwater monitoring programme, as appropriate.	Section 7.6.1: Contains monitoring programme commitment
Item 9 – Roads & Transportation	a) A Construction Traffic Management Plan indicating all haul routes to and from the site. Delivery times for plant and materials and waste collection shall have consideration to morning and evening peak school times in the area and peak traffic periods. This plan is also to contain mitigation measures to minimize the effects the proposed development would have on the immediate public road and footpath network, existing VRU and traffic movements.	Addressed in Section 6 (Construction Traffic and Site Access). The CEMP confirms a full Construction Traffic Management Plan (CTMP) will be prepared prior to commencement and will identify all haul routes to and from the site. Section 6 also includes commitments to schedule delivery times to avoid morning and evening peak periods and school drop-off / pick-up times (08:00-9:30 and 14:30-15:30), and outlines mitigation measures to minimise impacts on the public road and footpath network, vulnerable road users (VRUs) and traffic movements. These measures will include controlled HGV routing, banksmen deployment, temporary traffic management where required, pre-booked delivery slots and proactive management of construction vehicle movements, in line with Item 9(a) of the LRD Opinion.
	b) Wheelwash arrangements and locations for the construction phase.	Figure 7.1 provides an example of the proposed wheel-cleaning equipment to be used on site, while Figure 3.1 includes AWN's annotations indicating the potential wheel-cleaning points on the site compound drawing.
	c) Location of the construction compound, use of cranes, scaffolding and screening, parking and storage areas during the	Addressed in Section 3 (Construction Programme and Phasing) and Figure 3.1. The CEMP confirms the location of the

LRD Item	Requirement	Where Addressed in the CEMP
	construction phase with particular consideration to adjacent residential property.	construction compound, site offices, staff parking and material storage areas, with indicative annotations added to Figure 3.1. The CEMP also states that the final compound layout, including cranes, scaffolding and screening arrangements, will be confirmed by the Main Contractor and designed to minimise impacts on neighbouring residential properties, in line with Item 9(c).
	d) Relevant construction site warning signs shall be in accordance with the Department of Transport, Tourism and Sport (DTTAS) Traffic Signs Manual for the overall development.	Section 6 (Construction and Site Access): The CEMP confirms that all construction phase warning signage and temporary traffic control measures will comply with the DTTAS Traffic Signs Manual, including Chapter 8 and all other requirements.
	e) Hours of operation during the construction phase to be 08.00 hours to 18.00 hours Monday to Friday and 08.00 hours to 14.00 hours Saturday. No work permitted on the Sundays and public holidays. (This is in the interest of the existing residential amenity of properties in the area).	Section 5.7 and Section 6: The CEMP confirms construction working hours as 8.00 hours to 18.00 hours Monday to Friday and 08.00 hours to 14.00 hours Saturday, with no works outside these hours without prior approval.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

The site is located on lands extending to c. 8.7 hectares located to the west of Naas Racecourse, Naas, Co. Kildare.

The Proposed Development is an LRD comprising:

- ▶ 234 residential units, consisting of:
 - 115 houses;
 - 21 no. apartments units within a three-storey apartment block;
 - 80 no. own-door apartments within duplex-type buildings and 18 no. own-door apartments within triplex-type buildings;
- ▶ Ancillary public, communal and private open space;
- ▶ Landscaping and play areas;
- ▶ Internal roads and footpaths;
- ▶ Car and bicycle parking;
- ▶ Refuse storage
- ▶ Drainage infrastructure;
- ▶ Utilities and services (including 2 no. ESB kiosks); and
- ▶ All associated site and ancillary works.

The Proposed Development also includes a childcare facility with associated outdoor play space, set-down area and parking.

Transport and connectivity infrastructure includes:

- ▶ The construction of an extension to Gallops Avenue connecting the existing Gallops Avenue to Tipper Road, upgrades to the existing section of Gallops Avenue (including cycle infrastructure and junction improvements);
- ▶ Junction and traffic management works at Dublin Road and Tipper Road;
- ▶ Provision for future vehicular access connections to adjoining lands;
- ▶ A new pedestrian connection to Kingsfurze Avenue, and provision for a future pedestrian connection along the western boundary to Kingsfurze Avenue.

The Proposed Development also includes site clearance, demolition of an existing shed, removal of sections of existing boundary treatments, undergrounding of existing overhead lines, public lighting and all associated infrastructural works.

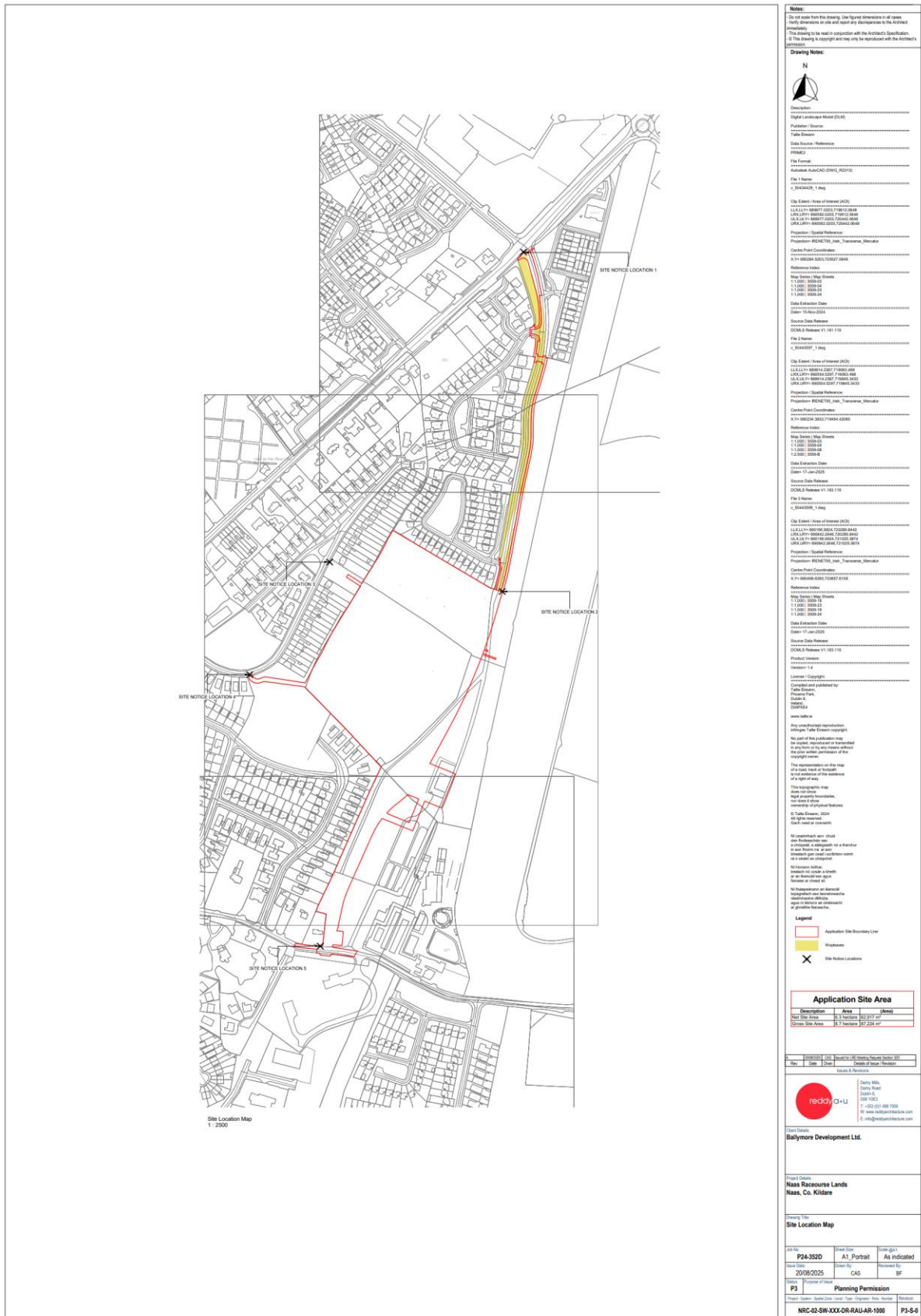


Figure 2.1 Proposed Development Site Location (Source: Reddy Architecture A+U, Drawing No: NRC-02-SW-XXXX-DR-RAU-AR-1000, 2025)



3. CONSTRUCTION PROGRAMME AND PHASING

The construction works associated with the Proposed Development are anticipated to commence in August 2026 and to be completed over a period of approximately 24 months.

Subject to detailed planning at the construction stage, it is currently envisaged that the construction compound, offices, staff parking and storage areas will be located to the southeast of the Phase 1 development area, as indicated in Figure 3.1.

The exact size, location and configuration of the site compound will be confirmed by the Main Contractor prior to the commencement of works and incorporated into the live version of the CEMP. Any modifications to the compound location or layout during the construction phase will be updated in the CEMP accordingly.

The Proposed Development will be constructed in a sequenced manner across the site (Phase 1, and Phase 2), as indicated in Figure 3.1. These labels refer solely to construction sequencing and do not constitute separate delivery phases of the Proposed Development.

Figure 3.1 has also been annotated for the purposes of this CEMP to identify indicative locations of wheel cleaning points. Final construction compound layout, including cranes, scaffolding and screening arrangements, will be confirmed by the Main Contractor and designed to minimise impacts on neighbouring residential properties, in line with item 9(c) of the LRD Opinion. The full site Layout and Phasing can be seen in Appendix A of this CEMP.

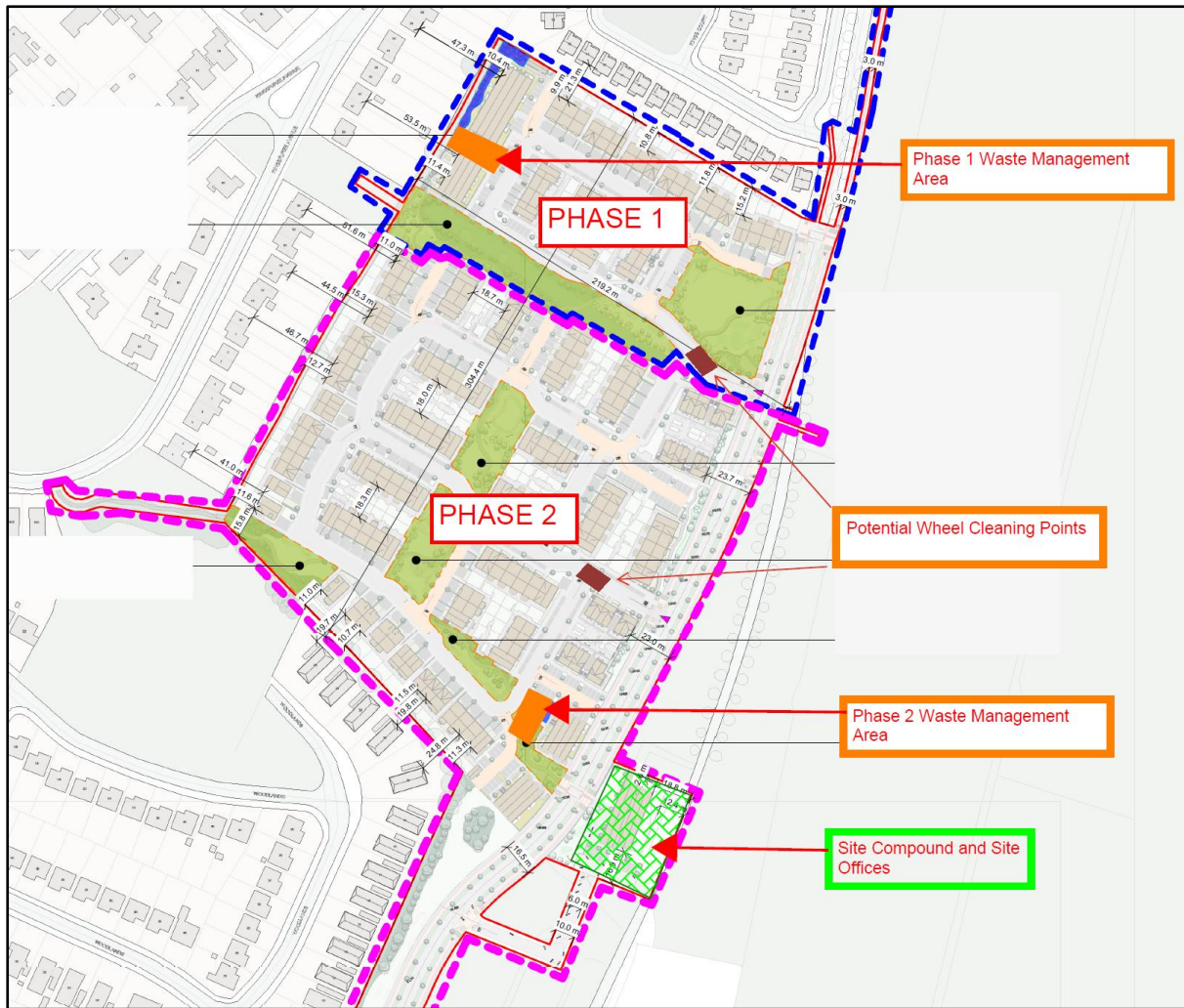


Figure 3.1 Site Construction Compound Location and Phasing Plan (with AWN annotations indicating potential wheel cleaning points). Base drawing by Reddy Architecture A+U, Drawing No: NRC-02-SW-XXXX-DR-RAU-AR-1013 (2026)

3.1 Demolition Phase

The demolition phase will involve - the demolition of an existing shed and sections of boundary walls / gates as part of enabling works for the Proposed Development. All demolition works will be carried out in full compliance with BS 6187 *Demolition in Buildings*¹, and all necessary measures will be implemented to protect the surrounding environment, public areas and site personnel from damage or injury.

Prior to the commencement of demolition, a Construction and Demolition Waste Resource Management Plan will be updated and finalised by the appointed demolition contractor in accordance with the Environmental Protection Agency (EPA) *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*² (2021)², and to reflect any planning conditions.

Demolition works will commence with the identification and removal of any hazardous material (if present) by an appropriately qualified contractor, with disposal undertaken at a suitably authorized waste facility. If any suspected hazardous material is identified, it will be isolated and managed in accordance with applicable health and safety waste legislation. Following this, all non-structural elements will be removed and segregated for re-use or re-cycling where feasible.

The remaining components of the shed will then be demolished in an approved sequence set out in a Method Statement prepared by the demolition contractor's structural engineer, once appointed.

3.2 Excavation & Construction Phase

The Proposed Development excavations will involve excavations for new foundations, site levelling and excavations for service connections. A Resource Waste Management Plan (RWMP) prepared by AWN Consulting Ltd (AWN Report Ref: 257501.0874WMR01) for the Proposed Development, will be updated by the Main Contractor to ensure compliance with the requirements of the '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*' (EPA, 2021), which will identify and categorise any waste arising from the Proposed Development.

The plan contains the proposals for the minimisation, re-use and re-cycling of site generated waste. As part of this plan:

- ▶ Separate storage areas will be designated on the site for various types of material in order to maximise reuse and recycling potential; and
- ▶ Procedure will be implemented to ensure all subcontractors fulfil the requirements of the Waste Management Plan.

The works will include:

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

4. EXCAVATIONS

4.1 Archaeological and Architectural Heritage

A Cultural Heritage Impact Assessment (CHIA) has been prepared for the Proposed Development by Archeological Consultancy Service Unit Ltd (hereinafter referred to as 'ACSU') (2025). The site contains no monuments listed in the Record of Monuments and Places (RMP) or the Sites and Monuments Record (SMR), nor any sites listed in the Kildare County Development Plan 2023-2029. There are also no protected structures or sites listed on the National Inventory of Architectural Heritage (NIAH) within the site boundary.

The site comprises two large agricultural fields, with boundaries largely unchanged since the 19th century. However, one monument (KD019-063), where human remains have previously been recovered, is located approximately 257m west of the site, and another possible 17th century burial ground (KD019-21) lies approximately 442m south of KD019-063. Given this proximity, there is a possibility that archaeological material may be present with the site. ACSU has therefore recommended the following mitigation measures:

- ▶ A geophysical survey and targeted test excavation to be carried out prior to any development works;
- ▶ All archaeological investigations to be undertaken by a suitably qualified archaeologist under licence from the Department of Housing, Local Government and Heritage (DHLGH); and
- ▶ If archaeological material is identified, further mitigation may be required, including preservation in situ or preservation by record (excavation) following consultation with the National Monuments Service (NMS).

Based on the implementation of these mitigation measures, no direct impacts on archaeological or architectural heritage are anticipated.

4.2 Ground Conditions

Site investigations and environmental soil testing were undertaken by Ground Investigations Ireland (hereinafter referred to as 'GII') between December 2024 and February 2025. These investigations identified localised Made Ground across parts of the site, with trace chrysotile asbestos (<0.1% dry mass) detected in Made Ground at TP11. No asbestos was detected in any other tested locations.

In the event that contaminated material is found on site, this material will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled '*Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous*'³ using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*⁴, which establishes the criteria for the acceptance of waste at landfills

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

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the Main Contractor will notify Kildare County Council (KCC) and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of

location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s).

5. SITE LOGISTICS

5.1 Site Safety Compliance

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

The Main Contractor will comply with all relevant statutory requirements such as the *Safety Health and Welfare at Work Act 2005* ⁵, the *Safety, Health and Welfare at Work (Construction) Regulations 2013* (SI 291 of 2013) ⁶, and the *Safety, Health and Welfare at Work (General Application) Regulations 2007* (SI 299 of 2007) ⁷, together with any subsequent amendments or associated regulations.

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

5.2 Site Establishment and Security

The initial activity on site will involve the establishment of site facilities and security measures. Site establishment works are anticipated to take approximately four weeks.

The location of the site office and welfare facilities will be confirmed in advance of commencement of site works and agreed with KCC. Figure 3.1 indicates the proposed locations of the site compound and staff parking.

All of the sub-contractors, the Main Contractor, and project management personnel will occupy offices within the construction compound. Site parking for staff, contractors, and visitors will also be provided within this area. Carpooling and the use of public transport will be encouraged to reduce pressure on local parking.

5.3 Consents and Licenses

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

- ▶ Site notices;
- ▶ Construction commencement notices; and
- ▶ Licence to connect to existing utilities and mains sewers, where required.

5.4 Services and Utilities

Welfare facilities (canteens, toilets etc.) will be available within the construction compound, and this will remain in place for the construction phase of the Proposed Development. The offices and site amenities will initially need to have their own power supply (generator), water deliveries and foul water collection until connections are made to the mains networks.

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

The current electricity facilities on the site of the Proposed Development are supplied by the ESB through a ring network. All electrical works, including connection to the ESB network will be carried out by a suitably qualified contractor.

Water supply required for welfare facilities, dust suppression and general construction activities will be sourced from the existing public piped supplies running into the site.

Although before connections are established to the water supply it may need to be trucked onto site. As with electrical works, this will be carried out by a suitably qualified contractor. It will be necessary to service the site with a reliable and safe water supply.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The Main Contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site.

Foul water from the offices and welfare facilities on the site will be managed with best practice and relevant regulations. This may involve temporary collection by a licensed waste contractor or discharge to an available sewer connection.

5.5 Material Handling and Storage

Key materials will be ordered by specific order for the Proposed Development, a 'Just in Time' delivery system will operate to minimise storage of materials, the quantities of which are unknown at this stage.

Where it is possible it is proposed to source general construction materials from the Kildare area to minimise transportation distances.

Aggregate materials such as sand and gravel will be stored in clearly marked receptacles in the compound area within the site. Liquid materials will be stored within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006 ⁸⁾) to prevent spillage.

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

The majority of construction waste materials generated will be soil from excavation works. Material will be removed from site regularly to ensure there is minimal need for stockpiling.

5.6 Visitor Management

Visitors will only be allowed to enter the main site compound via the designated pedestrian access gate. A dedicated, secured footpath to the site office is established at the gate for registration and obtaining Personal Protective Equipment (PPE) prior to entering the site. A log will be maintained by security to control access to the site. Visitors will be required to attend a site-specific induction to allow access to the compound and/or construction site unless being accompanied by an inducted member of the site team.

Visitors will then be taken by an inducted member of the construction team to the required area of the site.

5.7 Site Working Hours

Site development and building works will only be carried out between the following times:

- ▶ Monday to Friday: 08:00 to 16:00;
- ▶ Saturdays: 08:00 to 14:00; and
- ▶ Sundays and Public Holidays: No works permitted.

No work is envisaged to be carried out on Sundays or public holidays. However, should there be a need to work on Sundays, public holidays or outside the specified normal working hours, a written submission, with compelling reasons for the proposed deviation, seeking authorisation will be made by the Main Contractor (once appointed) to KCC. The Main Contractor (once appointed) must give the times and dates of the proposed work, and the mitigation measures that are to be used to minimise noise/disturbance.

5.8 Employment and Management Workforce

It is estimated that there will initially be c. 30 – 40 staff on site on a typical day, however during peak construction periods this is expected to fluctuate up to c. 80 staff and contractors on site per day.

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

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

6. CONSTRUCTION TRAFFIC AND SITE ACCESS

A formal Construction Traffic Management Plan (CTMP) is not being submitted at this stage for the Proposed Development. However, traffic management measures will be implemented to ensure safe access to and from the site and to minimise disruption to the surrounding area. A full CTMP will be prepared prior to commencement and agreed with KCC.

Key principles include:

- ▶ Advanced warning signs will be placed at appropriate distances to clearly identify entry and exit points;
- ▶ Pedestrian safety will be prioritised, with marshals deployed as required during periods of high activity;
- ▶ Traffic management will comply at all times with the requirements of the following guidance:
 - Department of Transport Traffic Signs Manual 2010 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks ⁹;
 - Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010) ¹⁰;
 - Any additional requirements detailed in the Design Manual for Urban Roads & Streets (DMURS) ¹¹;
- ▶ All construction site warning signage will comply with the full requirements of the Department of Transport, Tourism and Sport (DTTAS) Traffic Signs Manual;
- ▶ Construction traffic is expected to operate during permitted working hours (e.g., 08:00 to 16:00 from Monday to Friday and 08:00 to 14:00 on Saturday) for the off-road construction. These times may vary to facilitate specific site requirements and/or construction activities associated with the site. Any variation will be discussed and agreed in advance with KCC;
- ▶ Heavy Goods Vehicles (HGV) movements will be minimised and scheduled to avoid peak traffic periods. Exact figures will be confirmed by the appointed Main Contractor;
- ▶ Construction vehicle routing will follow designated haul routes identified in the CTMP. Inbound and outbound HGV movements will utilize strategic routes to minimize interaction with residential streets, sensitive receptors and local schools. Specific routing will seek to avoid narrow sections of road and areas susceptible to congestion, and will be agreed in advance with KCC;
- ▶ Delivery times for plant, materials and waste collection will be managed to avoid sensitive periods, including morning and evening peak hours and school drop-off / pick-up times. Deliveries using large HGVs will not be permitted to arrive or depart between 08:00-09:30 and 14:30-15:30, unless otherwise agreed with KCC; and
- ▶ The CTMP will include site specific mitigation measures to minimize effects on the public road and footpath network, including banksmen deployment at access points, short-term temporary traffic management (e.g., Stop / Go temporary signals where required), localised parking restrictions for construction vehicles (where necessary), and clear separation of construction traffic from vulnerable road users (VRUs).

The impact of the construction phase will be temporary in nature. Any traffic mitigation measures required by KCC will be incorporated into the updated CEMP prior to commencement.

6.1 Traffic Queuing

Material deliveries and collections from site will be planned, scheduled and staggered to avoid any unnecessary build-up of construction works related traffic. Vehicles delivering large plant or materials will be required to pre-book arrival slots to avoid queuing on the public road network and to ensure that arrivals do not coincide with peak school or commuter periods.

Deliveries to site shall be booked in advance using a delivery schedule, so as to prevent lorry congestion on the road networks surrounding the site. Where necessary, banksmen may be deployed at key junctions during pre-agreed times to ensure HGV manoeuvres can be made safely without impacting VRUs or general traffic flow.

Alternative routeways shall be established for traffic and pedestrians where existing routeways have to be altered, removed or worked on during the Proposed Development.

6.2 Site Hoarding and Security Fencing

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

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

7. SAFETY, HEALTH AND ENVIRONMENTAL CONSIDERATIONS DURING CONSTRUCTION WORKS

The appointed Main Contractor will implement a Construction, Health and Safety Plan during the life of the Proposed Development, which contains health and safety measures covering the below items at a minimum:

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

7.1 Construction Lighting

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

7.2 Air Quality

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

- ▶ Department of Environment, Heritage and Local Government (DOEHLG), Quarries and Ancillary Activities, Guidelines for Planning Authorities (2004) ¹²;
- ▶ US Environment Protection Agency (USEPA), Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition (periodically updated) (1986) ¹³;
- ▶ The Scottish Office – Development Department, Planning Advice Note PAN50 Controlling the Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings (1996) ¹⁴; and
- ▶ Institute of Air Quality Management (IAQM), Guidance on the Assessment of Dust from Demolition and Construction (2024) ¹⁵.

7.2.1 Site Management

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

- ▶ Complaint registers will be kept detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out;
- ▶ Equipment and vehicles used on site will be in good condition such that emissions from diesel engines etc. are not excessive; and
- ▶ Pre-start checks will be carried out on equipment to ensure they are operating efficiently and that emission controls installed as part of the equipment are functional.

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

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

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

7.2.2 Dust Control Measures

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

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

The dust minimisation measures will be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust generation. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and procedures implemented to rectify the problem. Specific dust control measures to be employed are presented below.

Site Routes

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

- ▶ A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles or delivery vehicles within the vicinity of the site;
- ▶ Bowsters will be available during periods of dry weather throughout the construction period. Research shown found that the effect of surface watering is to reduce dust emissions by 50%. The bowster will operate during dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use; and
- ▶ Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced areas shall be restricted to essential site traffic only.

Excavation

Excavation works during periods of high winds and dry weather conditions can be a significant source of dust.

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

The movement of trucks containing materials with a potential for dust generation to an off-site location will be enclosed or covered.

Stockpiling

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

- ▶ Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible;
- ▶ Regular watering will take place during dry/windy periods to ensure the moisture content is high enough to increase the stability of the soil and suppress dust

Site Traffic on Public Roads

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

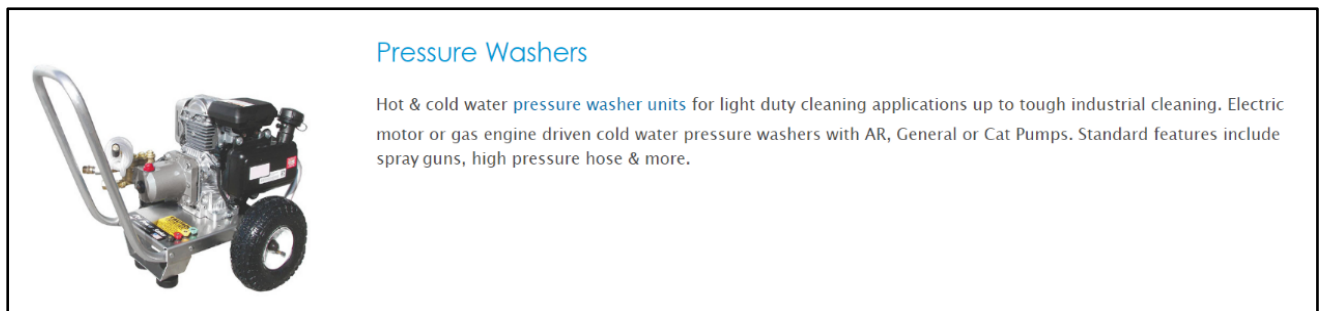


Figure 7.1 Example of Proposed Wheel Cleaning Equipment

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

General

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

7.3 Ecology

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

- ▶ All site clearance works will comply with current legislative requirements and best practice;
- ▶ Taking measures to limit the working area during the construction phase will reduce the impacts of the development on adjacent areas. The construction area will be clearly delimited by the site boundary and machinery should operate only within this allocated site area;
- ▶ All re-fuelling of plant, equipment and vehicles will be carried out at the construction site boundary. All fuels, chemicals, liquid and solid waste will be stored in areas bunded in accordance with established best practice guidelines at the construction compound also; and Provision of spill kits;
- ▶ Provision of a water and sediment management plan, providing for means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local water courses or drains;
- ▶ The measures outlined in Section 7.6 will ensure that silt run-off and potential flooding risks are minimised which will protect any ecological receptors associated with the site; and
- ▶ Construction lighting will be designed so as to be sensitive to the potential presence of bats and should adhere to the following guidance:
 - Bats & Lighting: Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Trust, 2010) ¹⁶;
 - Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011) ¹⁷;
 - Bats and Artificial Lighting in the UK – Bats and the Built Environment Series. Guidance Note 08/18 (Bat Conservation Trust UK, 2018) ¹⁸.

7.3.1 Additional Measures Based on Preliminary Ecological Site Survey Report

A Preliminary Ecological Site Survey Report has been prepared for the Proposed Development by RPS. The following additional measures will be implemented in accordance with the findings and recommendations of the report:

- ▶ Invasive Species Management
 - Evidence of an Invasive Alien Plant Species (IAPS) (Spanish bluebell or its hybrid) was recorded within the site boundary. An Invasive Species Management Plan (ISMP) will be prepared and implemented prior to site clearance to ensure compliance with relevant legislation and prevent spread;
- ▶ Bat Protection and Surveys
 - Dusk emergence survey (and internal inspection if access is possible and the state of the building allows) of the bungalow adjacent to the red line boundary in the southwest. These surveys should be undertaken during the active bat season between May and September; and
 - Nighttime bat walkover transect surveys of the hedgerows and tree lines: three transect surveys as per guidance, undertaken in July, August and September.

7.4 Noise and Vibration

7.4.1 Noise Criteria

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

Appropriate criteria relating to permissible construction noise levels for this development are taken from British Standard BS 5228 – 1: 2009 +A1 2014 ¹⁹: Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise. The approach adopted here calls for the designation of a noise sensitive location into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise.

In accordance with the standard, ambient measured noise levels representative of noise sensitive locations should be rounded to the nearest 5 dB and construction noise limits are then set according to the category definitions above. This then sets a threshold noise value that, if exceeded at this location, indicates a potential significant noise impact is associated with the construction activities depending on context. The approach is summarised in Table 7.1.

Table 7.1 Threshold of Potential Significant Effect at Dwellings (BS5228-1)

Assessment Category and Threshold Value Period	Threshold Value (dB)		
	Category A)	Category B)	Category C C)
Night Time (23:00-07:00)	45	50	55
Evenings and Weekends D)	55	60	65
Daytime (07:00-19:00) and Saturdays (07:00 – 13:00)	65	70	75

- A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
- B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
- C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.
- D) 19:00–23:00 weekdays, 13:00–23:00 Saturdays and 07:00–23:00 Sundays.

7.4.2 Vibration Criteria

Vibration criteria are taken from BS 5228-2:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites- Vibration. This document sets the following vibration limits for transient vibration. For buildings or structures that are structurally unsound, lower vibration magnitudes will apply, typically 50% of those for structurally sound buildings. Protected or historic buildings are not automatically assumed to be more vulnerable to vibration unless they have existing structural defects. The recommended transient vibration thresholds from BS5228-2 for the avoidance of cosmetic damage to light and heavy framed buildings are summarised in Table 7.2.

Table 7.2 Transient Vibration threshold values for buildings

Type of Building	Peak component particle velocity in frequency range of predominant pulse Note 1	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures. Industrial and heavy commercial buildings	50mm/s	
Unreinforced or light framed structures. Residential or light commercial buildings.	15 mm/s at 4 Hz Note 2 increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Note 1: Values referred to are at the base of the building.

Note 2: At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded.

7.4.3 General Noise and Vibration Mitigation

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to control noise and vibration impacts at the nearest noise sensitive

locations. All works on site shall comply with BS 5228 2009+ A1 2014 (Parts 1 & 2) which gives detailed guidance on the control of noise and vibration from construction activities. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- ▶ Selection of quiet plant;
- ▶ Noise control at source;
- ▶ Screening, and;
- ▶ Liaison with the Public.

The following key forms of noise control for the site are set out below:

- ▶ Site compounds will be located away from noise sensitive boundaries within the site constraints;
- ▶ For mobile plant items such as cranes, dump trucks, excavators and loaders, the installation of an acoustic exhaust and or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB. Mobile plant should be switched off when not in use and not left idling.
- ▶ For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system and avoid idling of engines when not in use.
- ▶ For percussive tools, a number of noise control measures include fitting a muffler or sound reducing equipment to the breaker 'tool' and ensure any leaks in the air lines are sealed. Erection of localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.
- ▶ The use of a high quality construction site hoarding will be included around all noise sensitive boundaries.
- ▶ For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- ▶ All items of plant should be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.
- ▶ All site staff shall be briefed on noise mitigation measures and the application of best practicable means to be employed to control noise.

Liaison with the Public

The designated environmental liaison officer will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

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

Monitoring

During the construction phase, spot check noise monitoring may be required where the construction noise thresholds have the potential to be exceeded at noise sensitive locations. The monitoring shall be carried out by the contractor and used to inform the requirement for any control measures on site to reduce construction noise levels.

Noise monitoring will be conducted in accordance with the International Standard ISO 1996-2:2017 - *Description, measurement and assessment of environmental noise - Part 2: Determination of sound pressure levels* (ISO 2017)²⁰.

Where required, or requested by the KCC, unattended external noise monitoring will be undertaken at locations on the site boundary closest to sensitive locations. It is considered that it will be appropriate to amend the monitoring program and location as the works progress. Accordingly, monitors may be added, removed or relocated as necessary.

The noise monitoring terminals should provide the following at minimum:

- ▶ Logging at hourly intervals; and
- ▶ Remote access for information download.

Where required (i.e. where there is potential for exceedance of the vibration thresholds for buildings in Table 7.2), or requested by the local authority, vibration monitoring will be installed at the site boundary to monitor Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with BS ISO 4866: 2010: *Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures*²¹.

The mounting of the transducer to the vibrating structure will need to comply with BS EN ISO 5348: 1998: *Mechanical vibration and shock – Mechanical mounting of accelerometers*²². In summary, the following ideal mounting conditions apply:

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

7.5 Resource and Waste Management

This section outlines the measures that will be undertaken to minimise the quantity of waste produced at the site and the measures to handle the waste in such a manner as to minimise the effects on the environment. A site-specific RWMP has been prepared by AWN Consulting Ltd (257501.0874WMR01) and will be employed to ensure sustainable and effective waste management throughout the excavation and construction phases of the Proposed Development.

The RWMP will be developed in compliance with the provisions of the *Waste Management Act 1996* as amended ²³, and associated Regulations, the *Litter Pollution Act of 1997* as amended ²⁴ and the *National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE) (2024)* ²⁵. The RWMP will identify and categorise all waste arising and set out proposals for minimisation, reuse and recycling.

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

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

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

7.5.1 Waste Minimisation

Waste minimisation measures proposed are summarised as follows (and will be detailed in the RWMP):

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

7.5.2 Waste Storage

The main waste storage area will be located in the site compound. A dedicated and secure area containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the Proposed Development.

Waste materials generated will be segregated at the site compound, where it is practical. Where the on-site segregation of certain waste types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the waste as receptacles are filled. There are numerous waste contractors in the Kildare Region that provide this service. The site Resource Manager (RM) will ensure that all staff are informed of the requirements for segregation of waste materials by means of clear signage

and verbal instruction. Appointed employees will be made responsible for ensuring good site housekeeping.

7.5.3 Pest Management

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

7.5.4 Responsibility

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

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

The Main Contractor, as part of regular site inspection audits, will determine the effectiveness of the waste management strategy and will assist the project manager in implementing the measures under the RWMP and in determining the best methods for waste minimisation, reduction, re-use, recycling and disposal as the construction phase progresses and waste materials are generated. Prior to commencement of the excavation and construction activity and removal of any waste off-site, details of the proposed destination of each waste stream will be provided to KCC, along with waste collection permit numbers.

7.6 Surface Water Management

A Surface Water Management Plan (SWMP) will be prepared for the construction phase prior to the commencement showing the site layout, drainage pathways, and any potential surface water and groundwater receptors, in accordance with Item 4(a) of the LRD Opinion. The SWMP will be developed and implemented in accordance with the Inland Fisheries (IFI) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* (2016) ²⁶ and all other relevant best practice guidance.

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

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

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

- ▶ *Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532)* ²⁷;
- ▶ *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016)*; and
- ▶ *Environmental Good Practice on Site (3rd edition) (C692)* ²⁸.

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

It is envisaged that a number of geotextile lined settling basins and temporary mounding and/or silt fences will be installed to ensure silts do not flow off site during the construction stage. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed. All inlets to the settling basins will be 'riprapped' to prevent scour and erosion in the vicinity of the inlet.

7.6.1 Pollution Control

Management of Suspended Solids in Run-Off

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

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

Concrete Run-off

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

Accidental Spills and Leaks

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

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

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

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

Monitoring

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

A site-specific surface water monitoring and inspection programme will be included within the SWMP, in accordance with item 4(c) of the LRD Opinion. Monitoring locations and frequency will be confirmed prior to commencement.

8. SUMMARY

This CEMP sets out the overall management strategy for the excavation and construction works for the Proposed Development. The CEMP aims to ensure the management of construction activity is carried out in a planned, structured and considerate manner that minimises potential impacts on the local environment, nearby residents, road users and commercial activities. Due to the nature of construction works, there may be unforeseen events which occur at the site and the Main Contractor and Project Team will actively manage such events and consult with the relevant authorities where required.

The CEMP is a live document and will be reviewed regularly and updated by the Main Contractor to account for any planning conditions issued, any updated guidance released and any changes in construction methodology or site circumstances as the Proposed Development progresses.

The Project Team are committed to ensuring that all construction activities are pro-actively managed and coordinated to minimise environmental effects, maintain high standards of environmental performance, and ensure regulatory compliance throughout the works.

9. REFERENCES

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APPENDIX A. SITE CONSTRUCTION COMPOUND LOCATION AND PHASING PLAN
