Construction Environmental Management Plan

Carmanhall Road Strategic Housing Development,
Sandyford Industrial Estate, Dublin 18

Prepared for:

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1.0 INTRODUCTION

Golder Associates Ireland Ltd (Golder) has been commissioned to prepare this Construction Environmental Management Plan (CEMP) on behalf of Atlas GP Ltd, as Developer and Applicant for the Carmanhall Road Strategic Housing Development (SHD; the 'Proposed Development), on lands located at the former Avid Technology International site on Carmanhall Road, Sandyford Industrial Estate, Dublin 18 ('the Site').

This CEMP has been prepared to communicate key planning and environmental obligations relating to the management of the construction phase of the Proposed Development. It comprises general measures and a series of discipline-specific measures that align with the proposed mitigation and monitoring measures described in the Environmental Impact Assessment Report (EIAR) for the Proposed Development.

This CEMP is a 'live' document, which shall be updated by the Developer and the appointed construction contractor (Main Contractor) as the project is progressed. In particular, the CEMP will be updated to ensure the requirements of all relevant planning conditions are incorporated.

1.1 Objectives

This CEMP outlines the approach to the management and minimisation of environmental impacts during the construction phase, with the primary aim of avoiding, reducing or offsetting any adverse impacts identified in the EIAR. The CEMP serves as a consistent point of reference for environmental considerations throughout the construction period for the Main Contractor, Sub Contractors, the Developer and Dún Laoghaire-Rathdown County Council (DLR).

This CEMP identifies the legislative, planning and policy framework within which the Proposed Development is being constructed, and how those requirements will be met. It also details the key roles and responsibilities for individuals involved in the construction of the Proposed Development, as well as the training requirements for all staff in relation to managing environmental considerations.

The Developer and the appointed Main Contractor are committed to undertaking the management and mitigation measures detailed in this CEMP.

1.2 Roles and Responsibilities

The anticipated roles and responsibilities of the key parties involved in the management of environmental issues during the construction works are set out in Table 1 below. However, it should be noted that all members of staff are responsible for ensuring the requirements of the CEMP and associated construction plans are followed.

Table 1: Roles and Responsibilities

Position	Name	Contact Details
Project Manager	TBC	TBC
Environmental Officer / Coordinator	TBC	TBC
Project Ecologist	TBC	TBC
Other Relevant Persons appointed by Main Contractor	TBC	TBC

Any changes in roles and responsibilities will be identified and clearly communicated to those affected.

The responsibilities of the Main Contractor's **Project Manager** will include:

- Implement the CEMP and all associated management procedures and mitigation;

- To be the overall accountable person for the environmental compliance of the operations during the construction phase, including to ensure works are conducted in accordance with the relevant environmental requirements of the application and consent documentation and any other regulatory and contractual requirements;
- To ensure that relevant staff have received appropriate environmental training; and
- Appoint suitably qualified and competent subcontractors.

The responsibilities of the Main Contractor's **Environmental Officer / Coordinator** will be:

- Manage the requirements of the CEMP during the course of the construction phase;
- Maintaining, inspecting and updating the CEMP and other relevant documents;
- Liaise with and provide advice to staff, sub-contractors and other relevant parties with regards to the environmental risks and controls for tasks;
- Monitor the performance of activities to ensure that identified risks and controls are implemented effectively;
- Undertake routine site inspections, initiate appropriate actions, and complete a weekly environmental inspection report;
- Management of the environmental monitoring programme including noise, dust, and provide status reports, as appropriate;
- Conduct environmental audits as required by the CEMP, to include audits of subcontractors and suppliers, as appropriate;
- Assist in the investigation and resolution of complaints and incidents;
- Documenting and maintain records of above audits, inspections and reports securely; and
- Notify the Project Manager or their appointed compliance representative of any deficiencies in the performance of the CEMP, so that necessary improvements can be implemented.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The Site is located on the south-western corner of the intersection of Carmanhall Road and Blackthorn Road in the Sandyford Industrial Estate, Dublin 18 (as shown in Figure 1). The Site is located approximately 8.8 km south of Dublin City Centre.

The northern and eastern boundaries of the Site are delineated by Carmanhall Road and Blackthorn Road, respectively, with the site immediately south occupied by a four-storey office building. The site immediately west is occupied by a double storey office building. Vehicular access is provided in the north-western corner of the site via a crossover to Carmanhall Road. The site slopes from south to north towards Carmanhall Road.

The Site measures approximately 1.03 hectares and is brownfield land. The Site was formerly occupied by Avid Technology International, however the previous building has now been demolished and the Site is vacant.

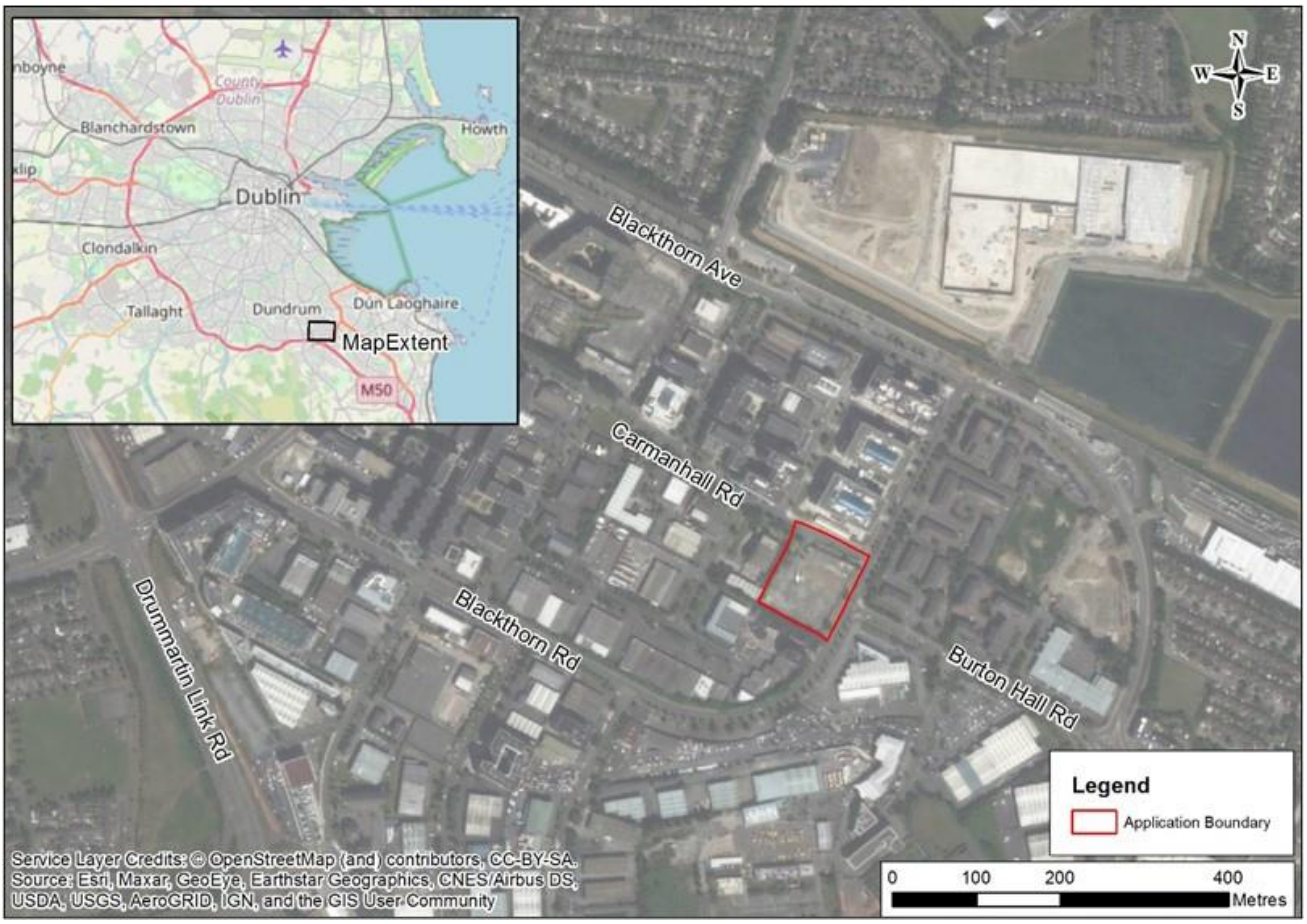

Figure 1: Location and Application Boundary of the Proposed Carmanhall Road SHD

2.2 Development Description

The Proposed Development consists of the following:

(i) construction of a Build-To-Rent residential development within a new part six, part eight, part nine, part eleven storey rising to a landmark seventeen storey over basement level apartment building (40,814sq.m) comprising 428 no. apartments (41 no. studio, 285 no. one-bedroom, 94 no. two-bedroom & 8 no. three-bedroom units) of which 413 no. apartments have access to private amenity space, in the form of a balcony or lawn/terrace, and 15 no. apartments have access to a shared private roof terrace (142sq.m) at ninth floor level;

(ii) all apartments have access to 2,600sq.m of communal amenity space, spread over a courtyard at first floor level and roof terraces at sixth, eighth and ninth floor levels, a 142sq.m resident's childcare facility at ground floor level, 392sq.m of resident's amenities, including concierge/meeting rooms, office/co-working space at ground floor level and a meeting/games room at first floor level, and 696sq.m of resident's amenities/community infrastructure inclusive of cinema, gym, yoga studio, laundry and café/lounge at ground floor level. The café/lounge will primarily serve the residents of the development and will be open for community use on a weekly/sessional basis;

(iii) provision of 145 no. vehicular parking spaces (including 8 no. mobility parking spaces, 2 no. club-car spaces and 44 no. electric charging spaces), 5 no. motorcycle parking spaces, bin stores, plant rooms, switch room and 2 no. ESB sub-stations all at ground floor level; provision of bicycle parking (752 no. spaces), plant and storage at basement level; permission is also sought for the removal of the existing

vehicular entrance and construction of a replacement vehicular entrance in the north-western corner of the site off Carmanhall Road;

(iv) provision of improvements to street frontages to adjoining public realm of Carmanhall Road & Blackthorn Road comprising an upgraded pedestrian footpath, new cycling infrastructure, an increased quantum of landscaping and street-planting, new street furniture inclusive of bins, benches and cycle parking facilities and the upgrading of the existing Carmanhall Road & Blackthorn Road junction through provision of a new uncontrolled pedestrian crossing; and,

(v) All ancillary works including provision of play equipment, boundary treatments, drainage works - including SuDS drainage, landscaping, lighting, rooftop telecommunications structure and all other associated site services, site infrastructure and site development works. The former Avid Technology International buildings were demolished on foot of Reg. Ref. D16A/0158 which also permitted a part-five rising to eight storey apartment building. The development approved under Reg. Ref. D16A/0158, and a subsequent part-seven rising to nine storey student accommodation development permitted under Reg. Ref. PL06D.303467, will be superseded by the proposed development.

3.0 LEGAL COMPLIANCE

In the construction of the Proposed Development and as part of the environmental management the appointed Main Contractor will adhere to all relevant Irish and EU environmental legislation, guidelines and best practice measures during the construction phase, including legislation relating to ecology and biodiversity; air; water and groundwater; and noise and vibration.

The Main Contractor shall have regard for the guidance and advice of the ISO14001 environmental management standard (ISO 14001:2015 Environmental management systems), and relevant Construction Industry Research and Information Association's (CIRIA) guidance including, C741 Environmental good practice on site guide (fourth edition).

The appointed Main Contractor, and any subcontractors, will comply with the CEMP and associated management plans in order to adhere to relevant legislation and to meet relevant best practice measures during the construction phase.

This CEMP will be regularly reviewed (every 6 months) and updated to ensure continued legal compliance.

4.0 GENERAL ENVIRONMENTAL MITIGATION MEASURES

A range of general environmental mitigation measures have been committed to that will help to avoid, reduce or offset potential impacts. Adherence to this CEMP is the primary general mitigation measure, but adherence to the following plans is also required:

- Construction Management Plan;
- Construction Traffic Management Plan;
- Construction and Demolition Waste Management Plan; and
- Construction Stage Health and Safety Plan.

Consideration will be given to the inclusion of drought and water tolerant species in the perimeter planting mixes to provide climate resilience and any dead or defective plants will be replaced.

In order to protect material assets, pre-construction consultation will be undertaken and authorisation achieved for all relevant infrastructure connections with the relevant infrastructure or utility provider, (e.g. Irish Water, and Gas Networks Ireland). The project engineer and the Main Contractor will identify and incorporate defined water

efficiency measures throughout the engineering design and construction phase. These measures will be identified in the updated CEMP and managed by the Main Contractor.

Any works required to material assets on or around the Site will be carried out in conjunction with the relevant provider to ensure minimal disruption to existing users. Any such works will be carried out strictly in accordance with the relevant provider's Code of Practices.

4.1 Corrective Action

Where monitoring identifies an impact on the receiving environment, the Environmental Officer shall be notified immediately. The Environmental Officer will conduct an inspection of the location and the surrounds to identify the source of the impact and will review recent Site activities in that area.

If the source of the impact is identified as an emission from the Site, the Environmental Officer is responsible for undertaking corrective action to isolate and minimise the effects of the emission. If required, environmental monitoring may be required to determine the extent of the impact. The number and location of any monitoring points will be established in consultation with the monitoring personnel and noted on a site plan so that inspection of such monitoring points can be completed if required by external agencies.

The Environmental Officer is required to monitor implementation of any corrective actions to ensure that they are carried out and are effective.

Where the cause of emissions is identified to be the result of the design of the Proposed Development, the Main Contractor and Developer shall ensure that the design deficiencies are rectified to avoid recurrence.

5.0 RECORD KEEPING AND REPORTING

5.1 Records to be Maintained

The Environmental Officer / Coordinator will be accountable for overseeing the implementation of this CEMP and associated management plans and will be responsible for maintaining a register of monitoring, which will be made available for auditing and inspection.

An up-to-date copy of the CEMP will be maintained at the Site. Associated records will be held in the Main Contractor's files.

The Environmental Officer / Coordinator will be responsible for all record keeping of all environmental monitoring and compliance documentation. This will include:

- Relevant management plans;
- Weekly environmental inspection reports;
- Periodic environmental reporting, as required by the Developer (and DLR, if required);
- All environmental monitoring data and consultant reports;
- Waste and chemical inventories; and
- Register of environmental complaints, and corrective action reports.

These documents will be made available to the Developer (or their representative) and the relevant authorities if required.

5.2 Reporting

The Main Contractor will be required to provide periodic reporting to the Developer (or their representative). Monthly reporting will be carried out to provide a regular update on environmental performance and progress at the Site. This reporting will include:

- A summary of environmental non-conformance at the Site and compliance with the provisions of the CEMP;
- The interpretation of the results of any ongoing environmental monitoring;
- Records of environmental incidents and/or complaints, and details of corrective actions undertaken; and
- Records of environmental training carried out.

5.3 Complaints Management

The Environmental Officer / Coordinator is responsible for responding to complaints or queries from other stakeholders and must ensure that:

- All complaints are investigated and dealt with appropriately;
- Any corrective actions required are implemented;
- A record is made of all complaints, along with any response and/or actions taken; and
- The complaints record is periodically reviewed to identify any trends and appropriate corrective actions are taken.

The following information is recorded for all complaints received:

- Stakeholder name;
- Stakeholder address;
- Stakeholder contact details (if required for follow up, as appropriate);
- Complaint category type (e.g., noise, vibration, dust, waste, traffic);
- Details of the complaint;
- Timing and duration of nuisance or pollution; and
- Additional information.

When investigating a complaint, the Environmental Officer is expected to confirm if the relevant mitigation measures detailed in this CEMP were implemented and, if not, ensure corrective action is taken.

6.0 AUDITING AND REVIEW

Audits of the CEMP will be undertaken by the Environmental Officer, with feedback provided to the Project Manager. The audit will check that all necessary current documentation is held in both electronic and hard copy as needed. Visual monitoring and complaints records will be audited to ensure that full records are kept and all necessary information is recorded. An audit schedule will be arranged but will include an annual audit, as a minimum requirement.

To ensure the CEMP remains ‘fit for purpose’ for the duration of the project it will be regularly reviewed and updated to facilitate efficient and effective delivery of the project legal and environmental commitments, (See Section 11.0). A log will be kept including a summary of the update and a record of the review.

Reviews of the CEMP will be undertaken and recorded by the Environmental Officer with the findings of the reviews reported to the Project Manager and other staff members as required.

7.0 DISTRIBUTION

Copies of the CEMP and associated construction plans identified in Section 4.0 will be retained by the Developer and the appointed Main Contractor. Additional copies will be distributed to those individuals defined in Table 1.

8.0 STAFF TRAINING

Environmental training will be delivered and assessed throughout the construction period, to ensure the relevant aspects of the CEMP and associated construction plans are communicated to the project team and front-line staff (including relevant sub-contractors).

The Main Contractor will ensure that the training is appropriate for the level of works being undertaken by the staff and sub-contractors. The training will be provided as appropriate in the below format:

- Site Environmental Inductions;
- Daily Pre-Start Meetings;
- Environmental Toolbox Talks;
- Incident and Near Miss bulletins; and
- Sub-contractor kick-off meetings.

Only suitably qualified and trained personnel will conduct certain tasks, including refuelling of plant, management of any chemical stores, conducting specialised environmental monitoring and the management of waste stores.

The Main Contractor will ensure that:

- All staff and sub-contractors receive instruction, information and training appropriate to the role and works they are conducting;
- All staff are aware of the reporting procedures surrounding environmental incidents, and that all such incidents are required to be reported immediately; and
- All staff are aware of the environmental sensitivities of the area surrounding the Proposed Development and how certain works can cause impact and effects.

9.0 ENVIRONMENTAL SITE MANAGEMENT

The Main Contractor and Environment Officer / Coordinator will refer to the good practice provision in the Construction Industry Research and Information Association's (CIRIA) C741 Environmental good practice on site guide (fourth edition).

Mitigation measures as identified in the Environmental Impact Assessment Report during the planning phase have been provided in Appendix A. Following the consent for the Proposed Development the Main Contractor will be responsible for reviewing and updating these measures in accordance with consultation responses and final planning conditions.

9.1 Housekeeping

The Main Contractor will emphasise the importance of good housekeeping during the construction phase. Housekeeping is an important part of good environmental practice and it helps everyone to maintain a more

efficient and safer site. The site should be tidy, secure, and have clear access routes that are well signposted. The appearance of a tidy, well managed site can reduce the likelihood of theft, vandalism or complaints.

The Main Contractor and Environmental Officer / Coordinator will ensure that they:

- Adequately plan the site with designated area of materials and waste storage;
- Segregate different types of waste as it is produced and arrange frequent removal;
- Keep the Site and external areas clean and tidy;
- Ensure no wind blown litter or debris leaves the Site;
- Use covered skips and bins;
- Ensure that materials and plant storage areas are properly managed. Lightweight materials to be covered with sheeting and secured as required;
- Keep hoardings tidy and repair as necessary;
- Frequently brush and clean wheel washing facilities;
- Maintain haul routes in a clean and tidy condition;
- Ensure adequate space is given for the safe refuelling of site vehicles with appropriate protections in place for refuelling operations;
- Keep roads free from mud using a road sweeper; and
- Ensure the Site is secure.

9.2 Working Hours

In accordance with the DLR County Development Plan 2016-2022, the proposed typical working hours would be:

- 08:00hrs to 19:00 hours Monday – Friday; and
- 08:00hrs to 14:00 hours Saturday.

No work will be carried out on Sundays or bank holidays and the Site will remain secure when construction is not taking place. No work, or other activity that could reasonably be expected to cause annoyance to residents in the vicinity (including deliveries), will take place on site between 19:00 hours and 08:00 hours.

9.3 Construction Site Lighting

Lighting can be an important deterrent to vandals and thieves, but it can annoy the local residents and disturb ecology. The Main Contractor will keep any site lighting at the minimum brightness necessary for adequate security and safety.

Directional lighting will be used so that it does not intrude on nearby properties.

9.4 Construction Site Security

Contractors can be held liable for environmental damage even when it is caused by vandals. Site security is an important component of good environmental management. Often, vandals cause damage that harms the environment by:

- Opening taps on tanks containing fuel, or cutting fuel lines;

- Tipping out other liquids from drums and containers;
- Damaging/stealing raw materials;
- Playing on plant – damaging it and using it to cause damage;
- Spraying graffiti or fly posting on site hoardings;
- Destroying works in progress; and
- Setting materials/waste on fire.

The Main Contractor will ensure:

- The Site boundary is secured using perimeter hoarding with high quality locks on gates and access points;
- Close Circuit Television Cameras are in place to monitoring the Site;
- Materials are not stacked against the boundaries so that opportunities to scale hoarding are prevented; and
- Position fuels, or hazardous/flammable materials away from boundaries to avoid the potential for theft and arson.

9.5 Incident Preparedness and Response

Emergency Response Contacts and Procedure

A list of emergency contacts is presented in Table 2. A copy of these contacts will be included in the Construction Health and Safety Management Plan, and in appropriate locations throughout the Site, including site offices, noticeboards and the various site welfare facilities. Further details of appropriate contacts should be included by the Main Contractor in the table below: which may include:

- Spill clean-up contractors;
- Waste contractors; and
- Public and neighbouring business that could be affected.

Table 2: Emergency Contact

Contact	Telephone Number
Emergency services	999 / 112
Site Project Manager	TBC
Site Environmental Officer / Coordinator	TBC
Site Health and Safety Co-ordinator	TBC
Project Supervisor Construction Stage (PSCS)	TBC
Project Supervisor Design Stage (PSDS)	TBC
ESB Emergency Services	1850 372 999
Bord Gáis Emergency	1850 20 50 50
Irish Water Emergency	1850 278 278
Dundrum Garda Station	01 666 5600

Contact	Telephone Number
DLR County Offices	01 205 4700
DLR Environmental Health Officer	TBC
EPA	053 9160600
Health and Safety Authority	01 614 7000

Emergency Response

In the event of an incident the Construction Project Manager and Environmental Officer / Coordinator will be notified immediately. The Construction Project Manager will be responsible for identifying the appropriate responsible persons for coordinating the response procedure. Upon the commencement of the construction phase the Construction Manager will be responsible for defining a chain of command for situations where they may be unavailable to deal with an incident.

Emergency response procedures and an overall response plan will be devised by the Main Contractor in conjunction with their Construction Health and Safety Management Plan. The final procedures will be agreed and updated in this document or as a stand-alone and accessible appendix.

The Emergency Response Plan will address and cover the following key items:

- Roles and responsibilities;
- Initial emergency steps and notifications;
- Provisions for appropriate drills and scenario training for staff and sub-contractors, appropriate to the level of risk; and
- Emergency communication procedures.

Environmental Risks and Pollution

The likelihood of an incident can be minimised by effective planning through development of a site pollution incident response plan. The Environmental Officer / Coordinator shall assess the environmental risk prior to the commencement of each activity, and the appropriate controls will be put in place. The Main Contractors and sub-contractors risk assessments and method statements will include provisions for environmental risk and mitigation.

The Environmental Officer / Coordinator will identify substance to be used during the works and will ensure that the below are available for the activities:

- Copies of the material safety data sheets of the substances being used:
- Details of environmental and health and safety storage, handling and transportation controls for the substance;
- The emergency response equipment and locations in the event of an incident; and
- Appropriate Personal Protective Equipment (PPE) for the tasks.

Suitable equipment, such as spill kits, oil booms and absorbent material, should be held at appropriate locations on site and clearly marked.

Upon the commencement of the construction phase the Main Contractor will assess the number of spill-kits required and the appropriate deployment areas across the Site. These areas will be in or directly adjacent to

where they will be needed. The Environmental Officer / Coordinator will manage and maintain these kits accordingly. Spill-kits will be obtained from a reputable supplier and are to be specific to the oils and chemicals that are on site. The contents of a spill-kit will depend on the area of use, but are likely to include:

- Absorbent granules, pads, booms and socks;
- PPE; including gloves, goggles and overalls. The Main Contractor will review this provision of PPE with the Construction Health and Safety Manager for the Site and in accordance with the Construction Health and Safety Management Plan. The PPE required will be depended on the substances and the requirement in the substances' Safety Data Sheet and the risk assessments and method statements for use;
- Drain covers/blockers; and
- Polythene sheeting and bags.

Appropriate waste areas will be maintained in the event that used kits are required to be disposed.

It may be necessary to quarantine an area of the site following an environmental incident such as an accidental loss to prevent cross contamination of impacted and unimpacted areas of the site. This quarantine response should be coordinated with site H&S personal and the Construction Project Manager.

9.6 Ecology and Biodiversity

Potential impacts to ecology and biodiversity will be managed through a combination management and mitigation measures. Mitigation measures which related to the protection of water and are detailed in Section 9.7, below. Management measures such as Site lighting during the construction phase will be in accordance with Section 9.3 to reduce the potential for light overspill off site and the disturbance of nocturnal species.

Other management measures to protect ecology and biodiversity will include:

- Trees which are to be retained will be protected in accordance with best practice guidance (BS 5837:2012, Trees in relation to design, demolition and construction. Recommendations);
- Removal of any trees will be done outside of the bird nesting season on a precautionary basis. The nesting season is considered to be between March and August inclusive. If trees are required to be felled within the nesting season the project ecologist will first check to ensure that the trees do not support nests. In the unlikely event that nests are discovered and in use the trees will not be permitted to be felled until the young have fledged.
- Maintain safe distances from retained trees and hedgerows during works;
- No invasive species were identified during site visits at the application stage of the Proposed Development. However, in advance of Site works, invasive plant species surveys will be undertaken at the Site as a precautionary approach. Measures will be implemented throughout the construction works to safeguard against the spread of any invasive non-native species (such as Japanese knotweed or cotoneaster). The Main Contractor will ensure that all materials imported or exported from the Site are not contaminated and monitoring will take place post-construction (by the Project Ecologist) to ensure that invasive species have not colonised the Site during construction. The Project Ecologist will report to the Main Contractor. This invasive species monitoring will be carried out over two years following the completion of the construction phase.

9.7 Water, Land, Soils and Geology

Potential impacts to the water environment (surface water and groundwater), soils, land and geology during the construction period will be managed through a combination of mitigation measures and design features

embedded into the design of the Proposed Development of the Proposed Development. Features of the design include:

- All water required during construction will be taken from the mains and the completed development will be connected to mains water (i.e., there will be no new groundwater or surface water abstractions). Wastewater will be connected to foul sewer. A Pre-Connection Enquiry was submitted to Irish Water (Reference No: CDS20000844) for the Proposed Development and the Confirmation of Feasibility was issued by Irish Water on the 14th August 2020;
- The proposed basement depth was optimised to keep the excavations required to a minimum, and hence this will reduce the amount of material to be exported off-site and reduce the carbon footprint of the construction phase of the project. It is proposed that where materials are to be exported off-site, a local, appropriately permitted/licenced disposal facility will be chosen where feasible to minimise the carbon footprint associated with the off-site transport and handling of the material.

Standard and commonly undertaken good practice measures will be taken on-site, including:

- Reusing material already on site where possible, with no soil or backfill material anticipated to be needed to be imported for construction purposes. Should any material need to be imported, it will be of a suitable quality that will not lead to ground contamination. Any imported material will come from a suitable source where the suitability of the material for use will have been confirmed prior to acceptance;
- The removal of soils from the Site will be carried out in accordance with the Construction Demolition Waste Management Plan (CDWMP). Soils for removal may be suitable for re-use, recovery or disposal subject to further analysis and assessment. Further in-situ testing of these soils will be required and will be conducted by a suitably qualified consultant and overseen by the Main Contractor.
- Any waste removal will be managed and undertaken according to best practice by a competent contractor appointed by the Main Contractor and disposed of accordingly by a licensed waste disposal contractor.
- There will be no septic tanks during construction or after-use that could result in leaks to ground and the water environment. Welfare facilities for construction workers will include portable toilets. Waste from these will be disposed of off-site;
- There will be no on-site concrete batching;
- There will be a wheel washing system to reduce the deposition of material on the surrounding road network that could impact the water environment;
- There are no planned discharges to ground during construction, which will reduce the potential for impacts to land and water quality;
- Excavations will be left open and exposed for as little time as possible, which will be used to control sediments in run-off, and reduce the potential for leaving pathways open for contamination between the surface and groundwater;
- Stockpiles will be evaluated and monitored by the Main Contractor to minimise erosion and input of suspended solids to the water environment;
- Refuelling and the addition of hydraulic oils or lubricants to vehicles or generators will take place on-site using a mobile bowser fuelling plant (i.e. no bulk fuel storage tanks will be used). This will only take place in designated areas. The designated areas will have impermeable surfaces, any fuel/oils that enter the drains will be intercepted, and the refuelling areas will be equipped with easily accessible spills kits that staff have been trained to use. Any flexible pipe, pump, tap or valve will be fitted with a lock and will be

secured when not in use. Portable generators or similar fuel containing equipment will be placed on suitable drip trays;

- All construction works will be conducted in accordance with the appropriate site rules;
- Appropriate Personal Protection Equipment (PPE) will be used by all construction workers. Selection of PPE will depend on the quality of the land being worked and the method by which any contamination present could impact workers (e.g. ingestion, dermal contact, inhalation) as determined in the health and safety plan;
- Hazardous materials will be labelled clearly, transported with care by competent and trained persons, and stored in dedicated areas in appropriately bunded containers. Any liquid accumulating within the bunds, or secondary containment systems, will be disposed of at a suitably authorised facility;
- Maintenance checks and procedures will be completed to reduce the potential for leaks and spills from plant and substance storage. These will include plans for inspections, maintenance and actions should a spill occur. Best practice measures for avoiding and responding to leaks and spills will be implemented, including storing all materials in a bunded container (secondary containment) and using drip trays/absorbent mats ('nappies') for mobile plant. Spills in drip trays will be cleaned up immediately using a spill kit (see Section 9.5) and will be kept free of rainwater at all times.
- Method statements will be prepared and followed for the management, storage, testing and disposal of waste (including excavated materials);
- Water (from run-off, rainfall and groundwater seepage) will be managed during construction to enable the construction of the Proposed Development, maintain stability, and to protect construction workers from unstable excavations, as well as to reduce suspended solid generation;
- Pollution management measures will be implemented to prevent contamination of the water environment (either directly or via the ground) by silt or from machinery pollutants, such as fuels, oils and lubricants during construction and operation activities. These measures will be informed by guidance provided in relevant documents, such as the CIRIA guides to environmental good practice on site referenced above.

A number of additional mitigation measures will be implemented for potential impact avoidance on the water environment, soil, land or geology and associated human users identified in the EIAR. These comprise:

- A pre-construction water feature survey to obtain current information on any potential non recorded local water users and the source of their water (note that given the urban location it is considered highly unlikely that there are any non-recorded water users). If such users are identified, an assessment to be made of how/if the Proposed Development (including construction activities) could affect these water users. This CEMP will be updated to include any further mitigation that may be required if impacts are predicted (although it is considered highly likely that existing mitigation measures will be sufficient).;
- If evidence of previously unidentified potential contamination (either visual or olfactory) is identified during construction works, construction good practice and management procedures will be followed that may include investigation and assessment works. If contamination is suspected, the following protocol will be implemented:

1) Stop work immediately;
2) Report suspected contamination to the Environmental Officer. Environmental Officer to seek expert advice and contact the EPA, if appropriate;
3) Isolate the area and contain any spread of contaminants;

4) Clear the affected area, ensuring no sources of ignition are present;

5) Characterise the contamination and develop a suitable remediation strategy.

- Any sludge collected from wheel wash used during construction will be tested and disposed of to an appropriate waste disposal facility. No used water or settled solids will be disposed of to land or water without prior consent of the relevant authority. Should any discharges to ground or surface water be proposed during construction, the relevant responsible authority will be consulted to determine if the discharges require authorisation. Local authorities are responsible for the issuing of effluent discharge licences for effluents discharged to waters, and Irish Water are responsible for effluent discharges to sewers. If authorisation is required, the discharger will make the relevant application(s). Discharges will be monitored as per the licence/consent and appropriate treatment will be undertaken so that discharges meet the relevant environmental standards;
- Any piling activities will be undertaken using good practice methods that reduce the potential for creating new pathways between the surface and sub-surface, particularly to groundwater within the bedrock aquifer.

9.8 Air Quality

Dust and emissions arising from construction activities can cause health risks to receptors and nuisance and annoyance to local residents and businesses. Construction dust can originate from numerous sources during the construction phase. The level of dust emitted will be dependent on the activity undertaken, the location of the activity on Site, and the nature of the dust. The generation and dispersion of the dust will be influenced by other meteorological factors such as wind speed and direction and/or, periods of dry weather. Construction traffic movements have potential to generate dust emissions as vehicles travel along the public road routes away from the Site.

Following the completion of a detailed construction programme the appointed Main Contractor will incorporate a Dust Management Plan (DMP) into their updated CEMP. Once the construction methods are identified the DMP identify measures appropriate to the level of anticipated dust risk from the construction activities.

Table 3 identifies mandatory mitigation measures and recommended best practice.

Table 3: Required Site-Specific Mitigation Measures

Activity	Mitigation Measure	Implementation Level
Communication	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	Mandatory
	Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary.	Mandatory
	Display the head or regional office contact information.	Mandatory
	Develop and implement a DMP appropriate to the level of anticipated dust risk and detailing mitigation measures during construction activities.	Mandatory
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce	Mandatory

Activity	Mitigation Measure	Implementation Level
	emissions in a timely manner and record the measures taken.	
	Make the complaints log available to the Dún Laoghaire Rathdown County Council when asked.	Mandatory
	Record any exceptional incidents that cause dust and/or air emissions, either on-or off-site, and the action taken to resolve the situation in the log book.	Mandatory
Monitoring	Undertake daily on and offsite inspection, where receptors are nearby, to monitor dust, record inspection results and make the log available to the Dún Laoghaire Rathdown County Council when asked. This could include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of the boundary, with cleaning to be provided if necessary.	Recommended
	Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to Dún Laoghaire Rathdown County Council if requested.	Mandatory
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	Mandatory
	If required by the DMP, agree any dust deposition monitoring locations with Dún Laoghaire Rathdown County Council. As required, where possible commence baseline monitoring at least three months before work commences. There are a number of methods to measure dust deposition but only the German TA Luft Air Quality Standards (TA Luft, 1986) specify a method of measuring dust deposition – the Bergerhoff Method (German Standard VDI 2119, 1972) – with dust nuisance. On this basis, a dust deposition limit value of 350 mg/m^2/day is applied (when averaged over a 30-day period).	Mandatory
Preparing and maintaining the Site	Plan site layout so that machinery and dust causing activities including stockpiling are located away from receptors, as far as is possible.	Mandatory
	Erect solid screens or barriers around dusty activities or the site boundary which are at least as high as any stockpiles on site.	Mandatory

Activity	Mitigation Measure	Implementation Level
	Fully enclose site or specific operations, where possible, when there is a high potential for dust production.	Mandatory
	Avoid site runoff of water or mud.	Mandatory
	Keep site fencing, barriers and scaffolding clean using wet methods.	Mandatory
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on-site.	Mandatory
	Cover seed or fence stockpiles to prevent wind shipping.	Mandatory
Operating vehicle/ machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.	Mandatory
	Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	Mandatory
	Impose and signpost a maximum speed limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.	Recommended
Construction Activities	Use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems.	Mandatory
	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	Mandatory
	Use enclosed chutes and conveyors and covered skips.	Mandatory
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	Mandatory
	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.	Mandatory
Waste Management	Avoid bonfires and burning of waste materials.	Mandatory

Activity	Mitigation Measure	Implementation Level
Earthworks	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	Recommended
	Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	Recommended
	Only remove the cover in small areas during work and not all at once.	Recommended
General Construction	Avoid Scabbling (roughening of concrete surfaces)	Recommended
	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.	Mandatory
	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.	Recommended
	For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	Recommended
Trackout	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.	Recommended
	Avoid dry sweeping of large areas.	Recommended
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	Recommended
	Record all inspections of haul routes and any subsequent action in a site log book.	Recommended
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	Recommended

9.9 Noise

The operation of plant and machinery, and general construction site activities are potential sources of noise that will require management across the Site.

Effective planning of on-site activities will significantly reduce the likelihood of impacts to off-site receptors. Understanding, adopting, communicating and integrating Best Practice Measures to minimise noise and vibration at all times and all locations, is the best way to indicate to the local authorities, local residents and construction workers that noise and vibration is being managed satisfactorily on site.

Specified Mitigation Measures Identified in the EIAR:

- Noise during the construction phase will be managed in accordance with the provisions in this plan to ensure that noise levels are in accordance with BS5228, (British Standard 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites, Parts 1 and 2). The baseline derived (refer to Chapter 9 of the EIAR) threshold noise levels for off-site NSRs are as follows:
  - Weekday daytimes (07:00 – 19:00) and Saturday mornings (07:00 – 13:00): 65 $dBL_{Aeq,1hr}$
  - Evenings (19:00 – 23:00) and weekends (13:00-23:00 Saturday, 07:00 – 23:00 Sundays): 55 $dBL_{Aeq,1hr}$; and
  - Night-time (23:00 – 07:00): 45 $dBL_{Aeq,1hr.}$
- Following the completion of a detailed construction programme by the appointed Main Contractor, and once any requirements for out-of-hours activities have been identified, the Main Contractor will conduct a detailed noise prediction for these activities in order to determine any specific mitigation measures required such that the noise thresholds are met at NSRs. If there is no alternative but to undertake the works out of hours or with noisy equipment, (because there is no quieter means or equipment that exists to do the work), then in advance it should be identified to the DLR Environmental Health Officer and also any local receptors who may be affected.

Best Practice Noise Management

Best practice noise measures should always consider: 1) the proximity of the works to receptors, 2) the duration of the works, and 3) the time of the day the works will be carried out.

Standard and commonly undertaken good practice measures to control noise on-site will include:

- Specification and substitution:
  - Be cognisant of noise when choosing plant and activities to be employed on site; and
  - If noise problems arise during construction of the proposed development, where reasonably practicable, replace noisy plant or activities with quieter alternatives.
- Modification of plant and equipment:
  - Seek to modify existing plant and equipment or apply improved sound reduction methods, to reduce noise generated;
  - Consult the original equipment manufacturer and a specialist in noise reduction techniques when undertaking any modifications;
  - Fit all pneumatic tools with silencers or mufflers;
  - Use rubber linings in chutes and dumpers;
  - Noise from diesel engines can be reduced by fitting a more effective exhaust silencer system or by designing an acoustic canopy to replace the normal engine cover;
  - If necessary, reduce noise caused by resonance of body panels and cover plates by stiffening with additional ribs or by increasing the damping effect with a surface coating of special resonance damping material; and
  - Minimise direct metal-to-metal contact.
- Timing of operations:

- Move plant onto and around the site within core construction working hours; and
- Ensure that any plant and equipment required for operation at night (23:00 - 07:00) is mains electric powered where practicable, or suitably silenced and shielded.

- Noise enclosures:
  - Where practicable and necessary, contain fixed plant and equipment (e.g. compressors and generators) within suitable acoustic enclosures or behind acoustic screens; and
  - Ensure that a reflecting surface, such as a parked lorry, is not located opposite the open side of noise enclosures. Any openings in complete enclosures (e.g. for ventilation) should be effectively sound-reduced. The effectiveness of partial noise enclosures and screens is reduced if they are used incorrectly.
- Location of plant and equipment:
  - Position noisy plant and equipment away from noise-sensitive areas; and
  - Wherever practicable, orientate plant so that the noise generated is directed away from noise-sensitive areas.
  - Loading and unloading of materials:
  - Take care when loading and unloading vehicles to minimise noise;
  - Lower rather than drop materials whenever practicable. If it is necessary to drop materials, minimize the drop height; and
  - Cover surfaces on to which materials are being moved with resilient material.
- Engine noise reduction:
  - Prohibit unnecessary idling of construction traffic within the site boundary or at the site access points;
  - Switch plant off when not in use (including during breaks and down times of more than 30 minutes);
  - Avoid operating plant simultaneously or close together to avoid cumulative noise impacts;
  - Avoid unnecessary revving of engines;
  - Keep internal haul routes well maintained and avoid steep gradients; and
  - Close engine acoustic covers when engines are in use and idling.
  - Maintenance of plant and equipment:
  - Ensure that trained personnel regularly maintain equipment and plant, as increases in noise are often indicative of future mechanical failure;
  - Frictional noise from the cutting action of tools and saws can be reduced if the tools are kept sharp;
  - Noises caused by friction in conveyor rollers, trolleys and other machines can be reduced by proper lubrication; and
  - Noise caused by vibrating machinery having rotating parts can be reduced by attention to proper balancing.

Noise monitoring will be undertaken during the construction phase of the Proposed Development, this will be carried out by an appropriately qualified person. Monitoring will be used to assess compliance with the construction noise criteria set out above.

The method and duration of monitoring will be agreed with DLR Environmental Health prior to commencement of works on site, however, an example schedule is as follows:

- Quarterly monitoring for up to 4 hours per monitoring location. The monitoring locations will be agreed with Environmental Health prior to commencement of the survey and will be representative of the closest noise-sensitive properties;
- Additional monitoring will be undertaken in the event of a complaint, at a location representative of the complainant's property; and
- Additional monitoring during out-of-hours works. Should potentially noisy out-of-hours works be required, noise levels will be predicted at noise-sensitive receptors in accordance with BS5228 in advance of the works being undertaken. Where predicted levels exceed the relevant threshold level appropriate mitigation will be specified, and monitoring will be undertaken to confirm that threshold levels are being met. Should noise levels due to the works be determined by monitoring to meet the threshold level, monitoring may be discontinued for the duration of a specific activity, unless a complaint is received.

Monitoring will be undertaken by an appropriately-qualified person, using equipment which meets the minimum requirements provided in BS5228.

The method, locations and duration of monitoring will be detailed within a revised CEMP and agreed with the DLR Environmental Health Officer prior to commencement of works on site. All monitoring locations will be marked on a site plan and be accessible at all times.

9.10 Cultural Heritage - Archaeology

Chapter 10.0 of the EIAR considers impacts to cultural heritage, including archaeology. No known archaeological assets are recorded within the Site. There is considered to be limited potential, however, for undiscovered archaeological remains to survive, particularly within deeper deposits, beneath the surface. To mitigate for this potential impact, initial soil stripping activities at the Site, prior to the excavation of the basement or foundations, will be undertaken under licensed archaeological supervision.

The Main Contractor is required to appoint a suitably qualified and licensed specialist archaeological contractor to undertake these works and ensure these works are accommodated within the construction programme.

The appointed archaeological contractor will be required to prepare an archaeological method statement for the proposed works, which will be agreed and approved by the National Monuments Service (NMS). The appointed archaeological contractor will also be required to obtain the relevant licences to undertake the works.

9.11 Material Assets

Material assets comprise the physical resources in the environment, which may be of human or natural origin. Material assets in the vicinity of the Site comprise of built services and infrastructure such as surface water drainage, telecommunications, electricity, gas, water supply infrastructure and sewerage.

To mitigate potential impacts on these services and infrastructure the Main Contractor will be required to implement the below measures. These are identified in Chapter 14 of the EIAR, (Material Assets; Section 14.9):

- Prior to the commencement of works the Main Contractor will conduct a survey to locate existing infrastructure and services surrounding the Site. These services will then be either isolated and decommissioned or, identified for their protection;

- Efficiencies in water usage will be identified and incorporated into the construction phase of the Proposed Development;
- Pre-development consultation and authorisation will be undertaken and achieved for all of the relevant infrastructure connections;
- Any works required to material assets on or around the Site will be carried out in conjunction with the relevant provider to ensure minimal disruption to existing users; and
- Any works required to material assets on or around the Site will be carried out strictly in accordance with the relevant provider's Code of Practices.

10.0 LESSONS LEARNT

Procedures will be put in place to record and learn from the construction works. Where relevant, any learnings that improve efficiency, quality of the works or increased protection of the environment will be incorporated into future works at the Site.

Details of the recording/feedback procedures will be finalised as the project progresses and will be presented in this CEMP and associated MPs. The agreed procedures will be in place prior to construction commencing.

11.0 CEMP REVIEW AND VERSION UPDATES

As noted, this CEMP is a 'live' document, which shall be updated by the Developer and the appointed construction contractor (Main Contractor) as the project is progressed.

The initial version of the CEMP has been submitted with the SHD Application for the consent of the Proposed Development. Following consent and during the construction phase this CEMP will be reviewed and updated by the Environmental Officer / Coordinator. Details of the review dates and version updates are provided in Table 4.

The CEMP will be updated to include:

- Relevant details of the SHD consent, including all appropriate conditions, mitigations measures, and monitoring requirements. The Environmental Officer / Coordinator will ensure that Appendix A (Mitigation and Monitoring Measures) has also been updated accordingly.
- Appropriate environmental performance criteria and relevant compliance thresholds;
- A register of all applicable legislation and guidance, relevant to the Main Contractors management and methods; and
- The Main Contractors relevant procedures, method statements and work instructions.

Updates to the CEMP will be made no less than every 6 months during the construction phase, or when:

- There is an identified need to update to improve management or performance;
- There is an update in relevant legislation, guidelines or codes of practice; and
- A need has been identified in an incident or complaint.

Table 4: Construction Environmental Management Plan Review and Version Updates

Version	Review Date	Review Comments and Changes Made to CEMP	Date of Next Review

12.0 CONCLUSION AND APPROVAL

This CEMP shall be further developed by the appointed Main Contractor upon the grant of consent and appointment. Environmental provisions will be refined further and elaborated once as more information on the construction methods and program become available. These details will all be incorporated in the CEMP by the Main Contractor prior to the commencement of construction at the Proposed Development.

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