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PRELIMINARY CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN FOR PROPOSED RESIDENTIAL APARTMENT DEVELOPMENT AT RIVERSIDE KILGOBBIN STEPASIDE DUBLIN

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1 Introduction

This Preliminary Construction & Demolition Waste Management Plan should be read in conjunction with all other planning documents submitted by the design team.

The subject parcel of land is comprised of approximately 12,194m^2 (c. 3.01 acres) of land located at Riverside, Kilgobbin, Stepaside, Dublin 18.

The intention of this planning application is to obtain approval for the construction of two new apartment blocks, 4 to 6 storeys in height, with total 120 apartment units and associated amenities.

The proposed development site is outlined below, with the red line indicating the planning application boundary and the blue line marking the ownership boundary. To the north, the site is bordered by the Sandyford Hall residential estate and Kilgobbin House. The eastern boundary has a small frontage onto Kilgobbin Road. Riverside House, also in the ownership of the applicant, is located at the north eastern corner of the site. To the south, the site adjoins Castle Lodge residential estate and the grounds of Kilgobbin Castle. The grounds adjacent to Gaelscoil Thaobh na Coille form the western boundary of the site. The proposed access to the site will be via Belarmine Vale at the south western corner of the site.

Site location with indicative site outline shown in red

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This Preliminary Construction & Demolition Waste Management Plan has been developed in respect of the abovementioned residential apartment development in accordance with the requirements of the Dun Laoghaire Rathdown County Council Development Plan (2022-2028) and will be subject to periodic review prior to the appointment of a main building contractor.

This Preliminary Construction & Demolition Waste Management Plan should be considered as a working document and therefore subject to change based on the following:

- Compliance requirements from Dun Laoghaire Rathdown County Council
- Requirements from other statutory bodies including An Bord Pleanála (ABP)
- Concerns raised by local property owners and any other persons affected by the proposed works

The final Construction & Demolition Waste Management Plan prepared for the development will be subject to periodic review as part of the management of the construction process and will be subject to agreement with Dun Laoghaire Rathdown County Council.

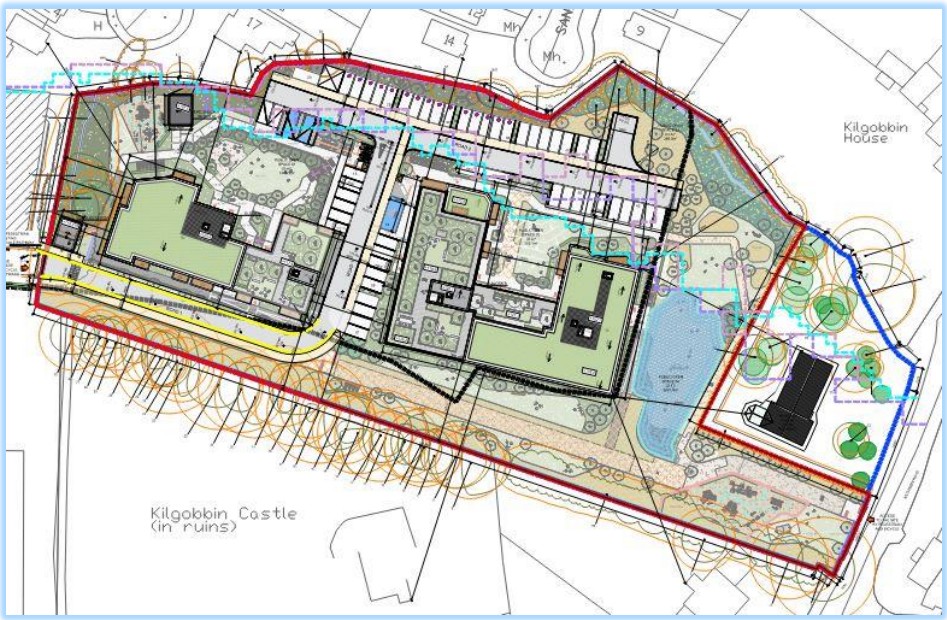
2 Site Location & Proposed Development Overview

Our client, Kavco Group, intend to apply for planning permission for a residential apartment development at this site of c.3.01 acres (1.21 hectares) at Riverside, Kilgobbin, Stepaside, Dublin 18. The proposed development will consist of two apartment blocks, 4 to 6 storeys in height, with 120 apartment units and associated amenities. The Gross Floor Area is approx. 10,499 m^2. The approximate footprint of the building is 2,169 m^2. The overall proposed scheme will comprise of the following:-

Summary Schedule of Accommodation

	Total
1 Bed Units (2P)	67 Units
2 Bed Units (3P)	25 Units
2 Bed Units (4P)	17 Units
3 Bed Units (5P)	11 Units
Total	**120 Units**

The proposed development will provide 54 car parking spaces, which includes accessible parking and Electric Vehicle parking, with 273 resident bicycle parking spaces. There will also be associated ancillary hard and soft landscaping, boundary treatments, engineering infrastructure and site development works.



Plan view of the proposed residential apartment development

3. Phasing

There is no phasing required on this project.

4. Working Hours

It is envisaged that working hours during the course of the construction process will be primarily standard working hours for the construction industry and working hours normally permitted by Dun Laoghaire Rathdown County Council.

- 7.00 – 19.00 Monday to Friday
- 8.00 – 14.00 Saturdays

No works are envisaged to be carried out on Sundays, should the need to work Sundays be required a written submission will be made to Dun Laoghaire Rathdown County Council for permission to do so. Work is not permitted on public or bank holidays.

5. Noise and Dust Control

A Construction Noise Management Plan (CNMP) and Dust Management Plan (DMP) will be put in place for the construction process, a third-party consultant will be engaged to prepare these plans and monitor noise and dust levels generated.

5.1. Noise Sensitive Locations

The site is bounded on two sides by well-established residential areas where the majority of properties are in private ownership. Steps will be taken to ensure that any noise arising will be adequately mitigated. As part of design development due consideration will be given to the issue of noise, and operational measures will be proposed in order to mitigate potential noise impacts associated with the site.

5.2 Baseline Noise Survey

A baseline noise monitoring programme will be completed prior to construction works commencing. Attended noise monitoring will be carried out at a number of locations yet to be determined. Survey details, procedures and results of this aspect of the baseline noise monitoring programme will be generally in accordance with ISO 1996: Part 2: 2007.

5.3 Assessment of Noise Effects

Consideration will also be given to advice in relation to establishing significant construction noise effects as set out in British Standard BS 5228. During the construction and demolition phases, the development shall comply with British Standard BS 5228-1:2009, Code of Practice for Noise and Vibration Control on Construction and Open Sites, Part 1 -Noise. Code of practice for basic information and procedures for noise control.

5.4 Best Practice Guidelines for the Control of Construction Noise

BS 5228-1:2009 include guidance on the various aspects of construction site noise mitigation, including, but not limited to:

- Liaison with neighbours
- Noise monitoring
- Hours of works

- Selection of quiet plant
- Control of noise sources and screening

5.5 The Introduction of New Noise Sources onto the Development Lands

The potential of any item of plant to generate noise will be assessed prior to the item being brought onto the site.

- Consideration of alternatives
- Information to be submitted by the contractor
- In-situ noise measurement

5.6 Noise Control Audits

Noise control audits will be conducted at regular intervals through the construction phase of the development. In the first instance it is envisaged that such audits will take place on a monthly basis. This is subject to review and the frequency of audits may be increased if deemed necessary.

The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration will be given to issues such as the following:

- Hours of operation being correctly observed
- Opportunities for noise control 'at source'
- Optimum siting of plant items
- Avoiding plant items being left to run unnecessarily
- Correct use of proprietary noise control measures
- Materials handling
- Poor maintenance
- Correct use of screening provided and opportunities for provision of additional screening

5.7 Dust Management Plan Overview

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK and the USA.

Effective site management regarding dust emissions will be ensured by the formulation of a Dust Management Plan (DMP) for the site.

The key features of the DMP are:

- the specification of a site policy on dust
- the identification of the site management responsibilities for dust
- the development of documented systems for managing site practices and implementing management controls
- the development of means by which the performance of the dust management plan can be assessed

5.8 Dust Management on Site

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the planning stage, the siting of construction activities and storage piles 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 shall be on site and available to monitor dust control methods as appropriate
- Complaint registers will be kept on site detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein
- At all times, the procedures put in place will be strictly monitored and assessed

The dust minimisation measures shall 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 through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are highlighted below. Note that not all of the dust control measures highlighted below will be applicable to this particular site but have been included here for information purposes nevertheless.

5.9 Dust Control – Site Roads

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. However, effective control measures can easily be enforced. The most effective means of suppressing dust

emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles
- Bowsers will be available during periods of dry weather throughout the construction period. Research has found that the effect of watering is to reduce dust emissions by 50%. The bowser 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
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only

5.10 Dust Control - Land Clearing / Earth Moving

Land clearing / earth-moving 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, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress the likelihood of dust becoming airborne.

5.11 Dust Control – Storage Piles

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

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

The regular watering of stockpiles has been found to have an 80% control efficiency.

5.12 Dust Control – Public Roads

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

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust
- Public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris
- If practicable, a wheel wash facility will be employed at the exit of the site so that traffic leaving the site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain

5.13 Dust Management Summary

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the achievement of no dust nuisance occurring during the construction phase. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues
- The development of a documented system for managing site practices with regard to dust control
- The development of a means by which the performance of the dust minimisation plan can be monitored and assessed
- The specification of the measures to be taken to control dust emissions before it occurs and effective measures to deal with any complaints received

6 Roads

The primary means for all access and egress to and from the development site will be from the Kilgobbin Road at the eastern side of the side boundary. A secondary access route will become available at the western side of the site as the projects develops.

7 Liaison

Dun Laoghaire Rathdown County Council's relevant departments will be contacted and liaised with prior to commencement. Where necessary, Road Opening Licence applications will be submitted for approval by Dun Laoghaire Rathdown County Council. It is acknowledged that many parties will have an interest in this project throughout the duration of the contract. The main contractor's presence during the construction phase will have a direct impact on the local environment, particularly concerning the following:

- Local residents and property owners
- Tenants and residents' associations
- The local planning authority
- Other statutory bodies
- Building Control
- Environmental agencies
- Utilities providers

The project manager appointed by the main contractor will be responsible for project strategic liaison whilst the construction manager appointed by the main contractor will be responsible for day-to-day liaison and logistics for all the construction related activities.

Both will be permanently based on site with the construction manager as the first point of contact for all concerns, issues and complaints. A display board will be erected outside the site, which as a minimum, will identify key personnel contact addresses and telephone numbers.

Workshops and forums will be held on a regular basis to maintain open relationships and keep stakeholders up to date on construction progress and its impact on all third parties.

Newsletters, liaison meetings, progress photos, organised site visits are all methods by which the main contractor will communicate how they intend to carry out the works and keep stakeholders informed.

8 Traffic Management Plans (TMP's)

Traffic Management Plans will be put in place for the construction of any new entrances and service connections as part of Road Opening Licence applications to Dun Laoghaire Rathdown County Council. The main contractor, when appointed, will

provide specific details on how construction traffic will be safely controlled exiting and entering the site. A design process of traffic management plan will be carried out by traffic consultants separately.

9 Complaints

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

10 Vehicle Movement and Deliveries

Access routes to and from the site, delivery times and off-loading proposals will be formally agreed with the local authority. In developing construction and logistics plans, the main contractor will fully include representatives of the local authority, and other interested parties in a consultation process to ensure that their intentions are properly communicated and agreed, and do not unduly affect the surrounding properties.

All deliveries of materials, plant and machinery to the site and removals of waste or other material, will take place within the permitted hours of work. Vehicle movements will be planned to ensure arrival and departure times are maintained inside the permitted working hours. No day time or night time parking of vehicles will be permitted outside of agreed areas. Logistics plans will indicate the site access routes at each stage of the project, initially utilising existing access routes and subsequently the new permanent access routes to the development.

In particular;

- Vehicles delivering concrete, reinforcement and other building materials
- Vehicles delivering large materials (example precast floor and wall slabs)

If applicable, all fire escape routes for nearby adjacent buildings will be maintained and protected for the duration of the development works as required.

11 Delivery System

The key to efficient material / plant deliveries will be the effective management and co-ordination / timing of all deliveries. Deliveries will be co-ordinated to prevent queuing of vehicles adversely affecting traffic flow and to minimise disruption to local traffic. They will be timed and coordinated to avoid conflict with collection of waste, other deliveries (particularly to adjoining property owners) and rush hour traffic. Large deliveries will be scheduled outside peak hours to minimise disruption. Out of hours deliveries and collections will also be considered to facilitate the smooth continuation of works and minimise disruption.

During the project procurement phase, a schedule of deliveries will be produced, adopting a 'just in time' approach to avoid potential conflicts and unnecessary storage and handling.

12 Emergency Work

The project team appreciates that occasionally incidents arise whereby it is impossible or impractical to comply with all of the requirements. In these emergency situations, as much notice as possible about the works will be given to the appropriate authorities and other stakeholders, including neighbours. Examples of such works are crane and hoist erection / removal or special crane lifts.

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

Once the situation has been rectified, full details about the incident and remedial actions undertaken will be provided to the relevant authorities and recorded in the site environmental register.

13 Site Security

The development site has existing boundaries that prevent general access and egress. Site hoarding will be erected as required to emphasise and reinforce the security of these boundaries as required. The development will be monitored by CCTV

cameras. A site compound with welfare facilities will be set up before any construction work commences on site.

The construction area will be isolated during construction with hoardings / temporary fencing to clearly delineate between all site works areas and public areas located adjacent to the development. The exact location of the site compound will be determined by the main contractor when appointed.

Security of the site is an important issue with respect to restricting site entry to personnel solely involved in the construction process during working hours and preventing unauthorised access to the site out of hours. Site access for all personnel and visitors will be strictly controlled and all visitors will report to the site offices prior to entering the construction area.

Regular inspections of the hoarding will be undertaken to ensure that the safety of any vehicles or pedestrians is not compromised. All hoardings will be in accordance with the temporary works design. Site accommodation including offices and welfare facilities will be provided in the existing site area within the construction site boundary.

There will be limited onsite provisions for parking for key site staff and visitors to the site. This will encourage the use of existing public transport links and local parking.

14 Site Storage

Due to the site restrictions, storage of materials will be minimal. No large materials will be stored on site until such time as they are required. Glazing and cladding systems will be delivered with a view to only keeping one week's worth of installation on site at any one time. Such materials will be loaded out evenly on the required floors. At no given time during the project will materials or other items be placed outside the hoarding line.

15 Cranes, Lifting of Equipment and Road Closures

A tower crane and concrete placing boom may be provided to install the structural concrete frame. A combination of a goods hoists and a telehandler will offload and distribute materials for the finishing trades.

All lifting equipment and appliances will carry current test certificates and be inspected prior to use. Trained banksmen will attend the lifting equipment and appliances at all times.

Permits and approval for road restrictions will be applied for with Dun Laoghaire Rathdown County Council and all parties involved kept informed on progress. Approval will be obtained from the Environmental Health Department and Planning to ensure that what is planned is actually feasible within the times agreed.

Following approval, details of the works proposed including dates, times, mobile number of the supervisor and copies of letter drops etc. will be forwarded.

16 Delivery of Materials

All operations will take place inside the site boundary where possible.

17 Road Safety

The construction site will be organised so that vehicles and pedestrians are kept separate. A gateman will ensure that the interface between deliveries and road traffic will be controlled at the delivery gates.

The key message is that incidents involving construction site vehicles can and should be prevented by the effective management of transport operations throughout the construction process. By creating a crane off-loading area within the site boundary all offloading will be possible within the site boundary which will minimise any risk to the public. The gateman will assist in all entry and exit manoeuvres in to and out of the site.

Key issues in dealing with traffic management on site are:

- Keeping pedestrians and vehicles apart
- Minimising vehicle movements with banksman directing manoeuvres
- Turning / reversing vehicles with audible alarm warnings
- Visibility, clear sight lines and safe unambiguous traffic routes
- People on site, personal protective equipment is essential for all site personnel
- Clear pictorial signs and instructions that don't rely on written text (language)

Accidents occur from groundwork excavations to finishing work. Managers, site workers, site visitors and members of the public can all be at risk. Inadequate planning and control are at the root of many construction vehicle accidents. Keeping pedestrians and vehicles apart is key, as most construction transport accidents result from the inadequate separation of pedestrians and vehicles. This will be avoided by careful planning, particularly at the design stage, and by controlling vehicle operations during the construction stage.

The following actions will help to keep pedestrians and vehicles apart:

- Entrances and exits - Separate entry and exit gateways for pedestrians and vehicles will be provided with a gateman in attendance to interface with the traffic and public to facilitate safe access and egress of construction vehicles.
- Walkways - Firm, level, well-drained pedestrian walkways will be provided.
- Barriers - A barrier will be installed between the roadway and walkway.

Wherever possible;

- Crossings - Where walkways cross roadways, a clearly signed and lit crossing point will be provided where drivers and pedestrians can see each other clearly
- Visibility - Drivers driving out onto public roads will be assisted by a gateman to ensure that they can see both ways along the footpath before they move onto it
- Obstructions – Walkways will not be blocked so that pedestrians do not have to step around obstructions into the vehicle routes / roadways

Systems will be established on site to make sure that all workers on site are fit and competent to operate the vehicles, machines, and attachments they use on site. These systems will include checks when recruiting drivers / operators or when hiring contractors as well as training drivers and operators, and managing the activities of visiting drivers.

People who direct vehicle movements will be trained and authorised to do so. Accidents can also occur when untrained or inexperienced workers drive construction vehicles without authority. Access to vehicles will be managed and people alerted to the risk.

The main contractor will provide:

- Aids for drivers - Mirrors, CCTV cameras or reversing alarms will be provided that can help drivers can see movement all-round the vehicle
- Gatemen – Gatemen will be appointed to control manoeuvres and who are trained in the task
- Lighting – The site will be properly lit so that drivers and pedestrians on shared routes can see each other easily. Lighting may be needed after sunset or in bad weather conditions
- Clothing - Personnel on site will wear high visibility clothing (PPE).
- Signs and instructions - All drivers and pedestrians will understand the routes and traffic rules on site. Standard universally understood road signs will be used wherever possible or appropriate

Induction training will be provided for drivers, workers, and visitors. Instructions will be sent out to visitors before their visit. All drivers and supply chain personnel will be competent and have all relevant training and certification appropriate.

18 Waste Management

The document sets out a basic structure for a Site Waste Management Plan and how best to use it to improve and manage operations at all stages of site construction activity. The appointed main contractor will commit to compliance with all relevant environmental standards.

Waste will be minimised on site by the following good practice on site;

<u>Buying and Storing Materials</u>

- Ordering the amount of materials as needed, as accurately as possible
- Arranging for 'just in time' deliveries to reduce storage and material losses
- Considering the source of materials (is the company certified with environmental standards? Quality materials and recycled materials may prove cheaper)
- Consider the packaging used for materials delivered to the site - can this be reduced or recycled?
- Ensuring that deliveries are rejected if damaged or incomplete
- Making sure that storage areas are safe, secure and weatherproof (as required)
- Storing liquids away from drains and in bunded areas to prevent pollution

Site activities

- Ensuring that options for the use of reclaimed and recycled construction materials that meet the materials specification are considered.
- Recycle surplus construction material arising from the works on site to avoid the need to transport materials.
- Keep the site tidy to reduce material losses and waste.

Training and awareness

The main contractor will nominate from within their construction team a designated Waste Manager to ensure commitment, operational efficiency and accountability during the construction and demolition phases of the project.

Waste Manager training and responsibilities

The nominated Waste Manager will be given responsibility and the authority to select a waste team if required, i.e., members of the site crew that will aid him / her in the organisation, operation and recording of the waste management system implemented on site.

The Waste Manager will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the Waste Manager to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and salvage.

The Waste Manager will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site.

The Waste Manager will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement the Site Waste Management Plan.

Site crew training

Training of site crew is the responsibility of the Waste Manager and, as such, a waste training program will be organised to set out The Site Waste Management Plan. A basic awareness course will be held for all site crew to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the waste storage areas. A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained to promote good practice awareness as part of health and safety induction training for workers on site.

Waste Segregation

Different types of waste will be segregated as they are generated using different skips where possible (given the space available). At a minimum, there will be skips for wood, inert and mixed materials, although a separate skip for metals may generate some income.

Staying on the right side of the law

The main contractor will ensure that;

- Waste transfer notes are be completed before any waste leaves the site
- All waste carriers have a valid waste carrier's registration certificate
- All wastes are disposed of at a correctly licensed site

It will be the subcontractor's responsibility to place their waste in the correct bins; the main contractor's management team will continuously undertake checks to ensure compliance. The bins will be transferred to ground level when the respective waste compactors are called to site, emptied and returned to their respective floors/areas. Waste removal by the compactor will be undertaken outside of normal working hours.

18.1 Demolition and Construction Waste Generation

Demolition Waste Generation

There are no significant buildings currently on the proposed development site to be demolished so any demolition waste generated will be minimal or nil.

Construction Waste Generation

There will be soil excavated to facilitate the construction of the building foundations, and the installation of underground services.

Actual construction waste production figures will be calculated prior to work commencing based on detailed assessments of the proposed building structures from the architectural and engineering design drawings (construction stage).

It should be noted that until final materials and methods of construction have been decided, it is not possible to predict with any level of accuracy the volume of construction waste that will be generated at this stage.

18.2 Proposed Waste Management Options

Waste materials generated will be segregated on site where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. The appointed waste contractor will collect and transfer the waste as receptacles are filled. There are numerous waste contractors in the Leinster Region that provide this service. Some possible waste recovery facilities as listed below.

Waste Type	Receiving Facility	Permit No.
Timber	Greenstar,Greenogue Rathcoole, Co. Dublin	CP 735/5
Broken Concrete/Brick/Precast	CRH	WFP-DS-11-0005-1
General Rubbish (Skips)	Greenstar, Greenogue Rathcoole, Co. Dublin	CP735/5
Asbestos	Rilta Environmental Ltd. 402 Grants Drive Greenouge Business Park Rathcoole, Co. Dublin	WCP-DC-08-1124-1
All metals/Steel	Hammond Lne Pigeon House Road Ringsend, Dublin 4	WP 98067
Plasterboard	Greenstar, Greenogue Rathcoole, Co. Dublin	WCP 735/5
Fluorescent Tubes	Irish Lamp Recycling Athy, Kildare	WCP-DC-08-1115-01

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit and will be transferred to a facility holding the appropriate certificate of registration, permit or licence, as required.

Written records will be maintained by the contractor(s) detailing the waste arising throughout the construction and demolition phases, the classification of each waste type, the contact details and waste collection permit number of all waste contactors who collect waste from the site and the end destination and waste facility permit or licence number for all waste removed and disposed off-site.

Dedicated bunded storage containers will be provided for hazardous wastes such as batteries, paints, oils, chemicals etc., if required.

The management of the main waste streams are detailed as follows:

The Waste Management Hierarchy states that the most preferred option for waste management is prevention and minimisation of waste, followed by reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal.

The second preferred option (beneficial reuse) may be possible for some and potentially all, of the inert natural material (Category A1) that may arise. This material could be used as fill material either on site or in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end-use (e.g. in respect of sulphate content, pyrites etc.).

Any nearby sites requiring clean fill / capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011. Article 27 requires that certain conditions are met and that by-product decisions are made to the EPA, via their online notification form.

If the material is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Acts 1996 - 2008, the Waste Management (Collection Permit) Regulations 2007 and Amendments and the Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments. The volume of waste removed will dictate whether a Certificate of Registration (COR), permit or licence is required by the receiving facility.

Similarly, if any soils / stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27.

Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered. The

option of disposal of inert natural material to landfill will only be considered once all available reuse options have been explored and where void capacity cannot be secured at appropriately permitted / licensed facilities for recycling or recovery purposes.

Any soil / subsoil that is deemed to be contaminated will be stored separately to the clean and inert soil / subsoil. The material will be appropriately tested and classified as either non-hazardous or hazardous in accordance with the EPA publication 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' using the HazWasteOnline application (or similar approved classification method). The material will then need to classified as clean, inert, non-hazardous or hazardous in accordance with the EC Council Decision 2003/33/EC.

Concrete, Bricks, Tiles & Ceramics

The majority of concrete, bricks, tiles and ceramics waste generated as part of both demolition and construction works is expected to be clean, inert material and should be recycled, where possible.

Hard Plastic

Hard plastic is a highly recyclable material and the majority of the plastic generated will be from new material off-cuts. It will be diverted from landfill and recycled, where possible. All recyclable plastic will be segregated, where suitable, to improve its recovery quality.

Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues etc., will be segregated and stored in skips.

Metal

Metals will be segregated into mixed ferrous, cladding, aluminium, high grade stainless steel, low grade stainless steel etc., where practical. Metal is highly recyclable and there are numerous companies that will accept these materials. Metals will be segregated and stored in skips.

Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the construction phase will be stored in a separate skip, pending collection for recycling. The site manager and project engineers will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

Glass

Glass materials will be segregated for recycling, where possible.

Organic (Food) Waste

Where a site canteen is provided in which food is prepared for the workers, organic waste will be segregated for separate collection. Segregation at source and separate collection of organic waste is required in accordance with the *Waste Management (Food Waste) Regulations 2009* (if food is prepared on the site).

Waste Electrical and Electronic Equipment (WEEE)

WEEE will be stored in dedicated covered cages / receptacles / pallets pending collection for recycling. There may be some old equipment removed from the existing buildings as part of clearing works during the demolition phase. Where suitable, this material will be segregated to dispose of metal parts separately.

Other Recyclables

Where any other recyclable wastes such as cardboard, soft plastic are generated in sufficient quantities, these will be segregated at source into dedicated skips or other receptacles.

Non-Recyclable Waste

Construction and demolition waste which is not suitable for reuse or recovery will be placed in separate skips or other receptacles. This will include polystyrene, some cardboard and plastic which are deemed unsuitable for recycling. Prior to removal from site, the non-recyclable waste skip / receptacle will be examined by a member of the waste team to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. contaminated soil, if encountered and / or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered wherever possible and, failing this, disposed of appropriately.

Waste Category	Classification Criteria	Potential Outlets
Category A Unified Soil Recovery Facilities	Soil and Stone only which are free from[7] anthropogenic materials such as concrete, brick, timber. Soil must be free from "contamination" e.g. PAHs, Hydrocarbons[8].	Soil Recovery Facilities, Waste Facility Permitted Sites, COR Sites or potential by-product if deemed not to be a waste and complying with requirements under Article 27 of European Waste Directive Regulations (2011).[9]
Category B1 Inert Landfill	Reported concentrations within inert waste limits, which are set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). Results also found to be non-hazardous using the HWOL application.	Integrated Materials Solutions Limited Partnership (IMS), Naul, County Dublin W0129-02 Walshestown Landfill Walshestown, Blackhall, Tipperkevin & Bawnoge, Naas, County Kildare W0254-01
Category B2 Inert Landfill	Reported concentrations greater than Category B1 criteria but less than IMS Hollywood Landfill acceptance criteria, as set out in their Waste Licence W0129-02. Results also found to be non-hazardous using the HWOL application.	Integrated Materials Solutions Limited Partnership (IMS), Naul, County Dublin W0129-02 Walshestown Landfill Walshestown, Blackhall, Tipperkevin & Bawnoge, Naas, County Kildare W0254-01[10]
Category C Non-Haz Landfill	Reported concentrations greater than Category B2 criteria but within non-haz landfill waste acceptance limits set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). Results also found to be non-hazardous using the HWOL application.	Walshestown Landfill Walshestown, Blackhall, Tipperkevin & Bawnoge, Naas, County Kildare W0254-01[11] Ballynagran Landfill, Co. Wicklow. W165-02 Drehid Landfill, Co. Kildare. W0201-01 East Galway Landfill, Co. Galway. W0178-02 Knockharley Landfill, Co. Meath. W0146-02
Category C 1 Non-Haz Landfill	As Category C but containing < 0.001% w/w asbestos fibres.	RILTA Environmental LTD. W0192-03
		Enva Portlaoise. W0184-02
Category C 2 Non-Haz Landfill	As Category C but containing >0.001% and <0.01% w/w asbestos fibres.	RILTA Environmental LTD. W0192-03 Enva Portlaoise. W0184-02
Category C 3 Non-Haz Landfill	As Category C but containing >0.01% and <0.1% w/w asbestos fibres.	RILTA Environmental LTD. W0192-03 Enva Portlaoise. W0184-02
Category D Hazardous Treatment	Results found to be hazardous using HWOL Application.	RILTA Environmental LTD. W0192-03 Enva Portlaoise. W0184-02
Category D 1 Hazardous Treatment	Results found to be hazardous due to the presence of asbestos (>0.1%).	RILTA Environmental LTD. W0192-03

[7] Free from equates to less than 2%.
[8] Total BTEX 0.05mg/kg, Mineral Oil 50mg/kg, Total PAHs 1mg/kg, Total PCBs 0.05mg/kg and Asbestos No Asbestos Detected – EPA Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities, 2020.
[9] S.I. No. 126/2011 - European Communities (Waste Directive) Regulations 2011 (Article 27).
[10] Licenced to accept Category B2 material for recovery.
[11] Licenced to accept Category C material for recovery.

18.3 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the main contractor.

All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Acts 1996 – 2008 (as amended)*, *Waste Management (Collection Permit) Regulations 2007 (as amended)* and *Waste Management (Facility Permit & Registration) Regulations 2007 (as amended)*. This includes the requirement for all waste contractors to have a waste collection permit issued by the National Waste Collection Permit Office (NWCPO). The nominated project Waste Manager will maintain a copy of all waste collection permits.

If the waste is being transported to another site, a copy of the Local Authority COR, waste permit or EPA IED (Industrial Emissions Directive) or Waste Licence for that site will be provided to the nominated project Waste Manager. If the waste is being shipped abroad, a copy of the Trans Frontier Shipping (TFS) document will be obtained from Dublin City Council (as the relevant authority on behalf of all local authorities in Ireland) and be kept on-site along with details of the final destination (permits, licences etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

If any surplus soil is being removed from the site for reuse on another construction site as a by-product, this will need to be done in accordance with Article 27 of the EC (Waste Directive) Regulations, 2011 (S.I. No. 126 of 2011). Similarly, if any soils (peat) are imported onto the site from another construction site as a by-product, this will be also be done in accordance with Article 27.

All information will be entered into a waste management recording system to be established and maintained on site.

19 Demolition Procedures

It is noted that there are no significant existing structures to be demolished on the proposed development site, however, this section is included for completeness should the need for any demolitions arise for whatever reason. The following sequence of works should be followed during any demolition activities:

19.1 Check for Hazards

Prior to commencing works, any existing structures to be demolished will be checked for any likely hazards including Asbestos Containing Materials (ACM), electric power lines or cables, gas reticulation systems, telecommunications, unsafe structures, and fire and explosion hazards, e.g. combustible dust.

19.2 Removal of Components

All components that can be salvaged will be removed first. This will primarily include steel metal however will also include structural timbers, appliances, galvanised piping, wiring and metal ducting etc.

19.3 Removal of Roofing

Steel roof supports, beams etc. will be dismantled and taken away for recycling/salvage.

19.4 Excavation of Services, Demolition of Walls and Concrete

Services will be removed from the ground and the breakdown of walls will be carried out once all salvageable or reusable materials have been taken from the buildings. Finally, any existing foundations will be excavated and removed from the site as waste.

20 Record Keeping

Records will be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the construction waste arisings on site.

A copy of the Waste Collection Permits, Certificates of Registration, Waste Facility Permits and IED or Waste Licences will be maintained on site at all times.

The nominated Waste Manager or delegate will record the following;

- Waste taken for reuse off-site
- Waste taken for recycling
- Waste taken for disposal
- Reclaimed waste materials brought on-site for reuse

For each movement of waste on or off-site, a signed docket will be obtained by the nominated Waste Manager from the sub-contractor, detailing the weight and type of the material and the source and destination of the material.

This will be carried out for each material type. This system will also be linked with the delivery records. In this way, the percentage of construction and demolition waste generated for each material can be determined.

The system will allow the comparison of these figures with the targets established for the recovery, reuse and recycling of construction and demolition waste and to highlight the successes or failures against these targets.

21 Outline Waste Management Procedure

21.1 Responsibility for Waste Audit

The nominated Waste Manager will be responsible for conducting a waste audit at the site during the construction and demolition phase of the development.

21.2 Review of Records and Identification of Corrective Actions

A review of all the records for the waste generated and transported on or off-site should be undertaken mid-way through the project. If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained.

The waste records will be compared with the established recovery / reuse / recycling targets for the site.

Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Waste management costs will also be reviewed.

Upon completion of the construction and demolition phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling / reuse / recovery figures for the development.

22 Discharge and Site Drainage

Appropriate storage and settlement facilities will be provided on site. Areas of high risk will be identified early in the process. Areas of high risk include;

- Fuel and chemical storage

- Refuelling areas
- Vehicle and equipment washing areas
- Site compound

Fuel, oils and chemicals will be stored on an impervious base with a bund. Under LEED there will be a strategy put in place to prevent pollution of any local watercourses. In most cases this will involve collecting the run-off and routing it to treatment by filtration, settlement or specialist techniques as well as treatment immediately prior to discharge. Water can be treated at source and en-route to the discharge point, though this does not necessarily negate the need for further treatment before discharge. Widely used techniques include, silt traps and surface drainage protection. Concrete lorry's will not be permitted to wash out on site with the exception of cleaning the chute into a container which is then emptied immediately into a waste skip.

23 Pest Control

All necessary steps will be taken to ensure that pests, rodents, birds, insects and plants are controlled at all times. Control measures will be undertaken prior to commencement of any works on the site. Poison where used, will comply with any relevant Health and Safety requirements which will eliminate any danger to children, household pets and any other local wild life.

Old and discussed service pipes and voids will be removed or filled to avoid the potential pest to infest the site.

24 New Build

24.1 Sub-Structure

At time of writing, a detailed site-specific ground investigation has been completed by Site Investigations Limited on the subject site (Ref. No. 6400). Environmental testing of the soil down to foundation formation level has also been carried out as part of the ground investigation and a Waste Classification Report has been produced. The ground investigation has confirmed the subsoil conditions to allow detailed foundation design to be completed. At this stage, the preferred foundation solution is strip foundations in conjunction with isolated pad foundations.

24.2 Superstructure

Method statements will be agreed in advance to ensure that safe working practices are in place including edge protection, access platforms, fall arrest systems and safety netting during superstructure works. The structural load bearing walls will generally be comprised of reinforced concrete construction. The floors will generally be comprised of either reinforced concrete or precast concrete slabs. The reinforced concrete stair and lift cores will provide stability to the overall structure. The stairs and landings will likely to be comprised of precast concrete units.

24.3 Envelope

The external walls of the building are to be constructed off the foundations. Walls will be formed in reinforced concrete with façade elements comprised of brick / block / stone, with curtain walling / windows as shown on the architectural drawings. Any large areas of facade glazing are proposed to be constructed using a modular glazing system that is supported between the main structural elements. Any internal block walls will be erected within the perimeter envelope on a floor-by-floor basis. The roof will be a warm roof system insulated externally and supporting a green blue roof.

As each section of the works is made weather tight, working upwards from the ground floor, the internal fitting out will commence including first fix services installations. The ceilings will then be installed in conjunction with the second fix services followed by joinery, floor finishes and decoration. Inspections and snagging will then be carried out, final testing and commissioning completed and a final clean prior to handover and completion of the ICT installations.

The external works adjacent to the new buildings will generally be carried out when the roof and envelope to the new building has been completed and access scaffolding has been removed.

24.4 Protection of the Works

Protection and maintenance strategies will be developed, implemented, and monitored. This takes the form of a protection plan, which will be developed following contract award and will identify where protection measures are required, the level of protection and the responsibility for its provision and removal. This will include protection to staircases, all doors and frames, fixed furniture and protective coverings to floors on designated access routes. Towards the end of the project, controls will be put into place to control entry into each part of the building including permit to enter systems for completed areas.

As part of the quality control procedures protection of offsite materials during storage and transport will also be agreed and monitored to minimise damage prior to onsite installation.

25 End