



CONSTRUCTION & ENVIRONMENTAL MANAGEMENT PLAN

Phase 1 Development- Former Magee Barracks

July 2019

GARLAND
Concepts Realised

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Description of change	Originator	Rev	Approval	Date
Initial Release	CR	1st	CR	31/06/2019

1. INTRODUCTION

It is proposed to construct 375 residential units, comprising of duplexes, apartments and houses, along with a neighbourhood centre and ancillary works at the former Magee Barracks, Kildare Town. In order to facilitate the development, 16 buildings and various hardstanding will need to be demolished. This plan discusses demolition aspects of the site and the generated waste quantities.

This plan includes a description of the proposed works and how it is envisaged these works will be managed for the duration of the works on site. This plan will be managed and updated in advance of and throughout the construction phase as required by the appointed Main Contractor. It is intended that the revisions to this document will be circulated and agreed with Kildare County Council and An Bord Pleanála as additional details are incorporated. This plan needs to be read in conjunction with EIAR prepared for the development and the Invasive Species Management Plan prepared by RHL.

2. POLICY AND LEGISLATION

The Department of the Environment Heritage and Local Government published “Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects” in July 2006. The Guidelines encourage the diversion of waste from landfill and give advice on the planning for construction and demolition waste management. The Guidelines outline that a waste management plan should be prepared where “demolition / renovations / refurbishment projects generating in excess of 100m³ in volume, C & D waste”.

To comply with these Guidelines, a Construction and Demolition Waste Management Plan will be written and implemented by the Project Construction Contractor. The implementation of this plan will ensure that the proposed development exceeds the National Recycling Target of between 50% and 85% as outlined in the Government policy document “Changing our Ways – a Policy Statement” published by the Department of Environment Heritage and Local Government 1998.

3. WORKS PROPOSAL

3.1. Access

The site is currently accessed via Hospital Street. For the duration of the demolition of Phase 1 development, all construction traffic shall enter and leave the site using the Hospital Street entrance.

3.2. Invasive Species Management Plan

An Invasive Species Management Plan has been prepared for the site and accompanies this application. The initial stages of the plan have been begun to be implemented. Control measures to prevent the spread of non-native invasive species have been put in place and the initial herbicide treatment has been conducted. Depending on construction, start date, which can only be estimated at this moment in time; the plan allows for the conclusion of the plan in a time frame between March/Sept 2019; which would be in advance of a possible grant of planning permission.

3.3. Integrated Pest Management (IPM)

An Integrated Pest Management (IPM) to be established in accordance with best practice within the guidelines for the campaign for responsible rodenticide use (CRRU Ireland – Wildlife Aware).

Rodent pest control technicians will have completed their training and have been included on the register of 'pest management trained professional users' (PMUs) maintained by the Department of Agriculture Food and the Marine are fully equipped to implement best practice in the delivery of rodent pest management services, based upon consideration of the risk hierarchy and implementation of an Integrated Pest Management (IPM) approach.

Records of the conclusions and decisions reached by PMUs and by professional users on site will be maintained for management purposes and to facilitate auditing and compliance inspections by regulatory authorities.

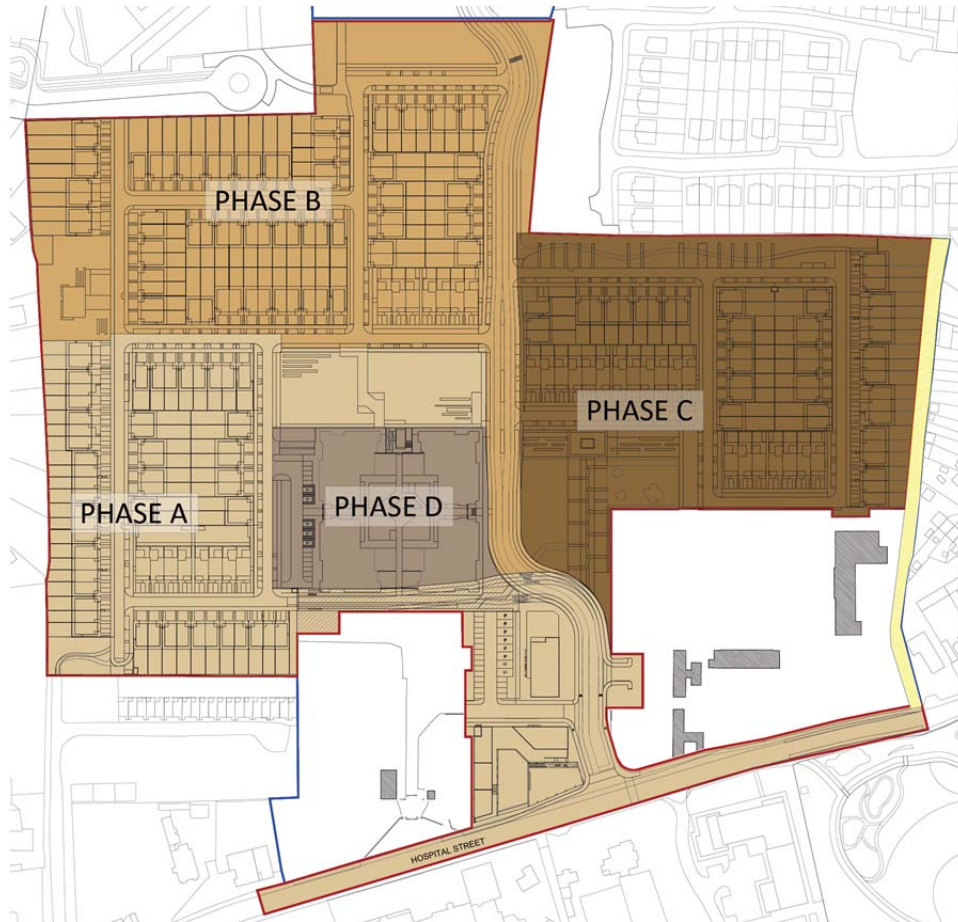
3.4. Demolition

The construction of the Phase 1 development will involve the demolition of sixteen buildings and removal of hard surfacing. Demolition works are likely to proceed as follows:

- Works to form construction entrance. The works to Hospital Street may occur in a different sequence as the site entrance and connection to public services are shared with other proposed developments. These other developments will be subject to separate planning permissions.
- Environmental clean of all known hazards.
- Demolition of buildings contained within red-line boundary; crushing to commence and spoil to begin to be removed from site; material to be recycled and stockpiled on site and covered.
- Demolition of existing hard-standings; crushing to commence and spoil to begin to be removed from site

3.5. Excavation and Construction Phase

The construction of the Phase 1 will likely to proceed as per the below phasing drawing:



- **PHASE A (3.91 Ha):**

- Site Entrance (Hospital Street)
- Neighbourhood centre and crèche first with ancillary drainage connections
- Spine Road as far as future Parade Park
- Temporary roadway to access housing within Phase A
- Housing & duplex residential mix (73 units)
- Magee Gardens
- Pedestrian connection to Magee Terrace (up to site boundary only)

- **Phase B (3.59 Ha):**
 - Continuation of Spine Road (up to boundary with Phase 2)
 - Housing & duplex residential mix (92 units)
 - Coolmoney Gardens
 - Henry Howard Gardens
 - Connection to School
 - Pedestrian connection to Runbeg (up to site boundary only)
 - Decommissioning and removal of Temporary Phase A roadway

- **Phase C (2.94 Ha):**
 - Housing & duplex residential mix (88 units)
 - Linear Park
 - Parade Park

- **Phase D (1.66 Ha):**
 - 4 No. apartment blocks, including undercroft car parking space (122 units)
 - Camera Gardens
 - Landscaping of area previously used for Phase A temporary roadway

Note: Excavation and disposal of same will form initial phase of the construction works.

3.6. Likely Foundation Solutions

3.6.1. Ground Conditions Encountered for Phase 1 Development Area

The proposed Phase 1 development site is underlain by made ground overlying natural granular and cohesive glacial tills. The granular till comprises sands and gravels and the cohesive soils comprise sandy gravelly clays becoming firmer to stiff or stiff with depth. The made ground comprises a combination of a shallow layer of tarmac and stone fill (where present) and brown slightly sandy gravelly clay with frequent cobbles containing occasional fragments of concrete, red brick, glass and plastic. The made ground was detected in over 60% of investigation locations and is attributed to historical Construction and Demolition (C&D) material from previous activities across the site. The underlying bedrock comprises Carboniferous limestone of the Rickardstown formation. Bedrock was not detected within any investigation location to-date, i.e. up to 15 metres below ground. Groundwater was not encountered within any of the site investigation locations and is expected to be present at a depth greater than 7 metres below ground level.

3.6.2. Housing Areas

The anticipated bearing capacities encountered for the majority of the site where trial pits were conducted in April / May 2017 showed anticipated bearing capacity of 75kN/m² to 135kN/m². Foundations are to be constructed on a formation of uniform material and therefore all man-ground is to be removed where it is encountered. Notwithstanding the made ground, it is anticipated that the housing units will be founded on relatively shallow strip foundations.

3.6.3. Neighbourhood Centre and Crèche

The site investigation prepared by Site investigation Ltd. shows good bearing capacity results were received for BH01 and BH07 (general variance) and ultimate bearing capacities are expected of 175-250kN/m².

Foundations are to be constructed on a formation of uniform material and therefore all made ground is to be removed where it is encountered. Notwithstanding the made ground, it is anticipated that the crèche will be founded on strips foundations running between pads on grid. The retail units are to be founded on a stepped strip foundation. The coffee shop with gallery is to be founded on strip foundations.

Other features, such as retaining wall and boundary walls, will generally be able to find bearing at a shallow depth.

3.6.4. Apartment Blocks

The site investigation prepared by Site investigation Ltd. shows good bearing capacity results were received for BH04, the closest borehole to the proposed 4 no. apartment blocks, identify ultimate bearing capacities of 200kN/m².

Foundations are to be constructed on a formation of uniform material and therefore all made ground is to be removed where is it is encountered. Notwithstanding the made ground, the depth required to foundation formation level is approximately 2.8m. This has afforded the opportunity to utilise this space for an undercroft under the footprint of the apartment blocks to accommodate car parking spaces and storage space associated with apartment. It is anticipated that the foundations will consist of pad foundations, supporting column locations with strip footings around the perimeter supporting the perimeter walls.

4. TRAFFIC MANAGEMENT

A Construction Traffic Management Plan will be put in place to ensure that all deliveries to site are co-ordinated to avoid multiple deliveries arriving on site at the same time. All orders placed with suppliers will refer to this Construction Traffic Management Plan and identify the preferred route to the drop off point.

All construction activities will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed with Kildare County Council prior to the commencement of construction activities on site.

4.1. Site Access

As outlined previously, the construction site will be accessed via Hospital Street. The temporary parking of delivery vehicles will not be permitted on the public road network. We believe the site to be large enough to accommodate all construction staff traffic and necessary machinery. The site access is approximately 9m in width and all construction vehicles shall forward move into and out of the site without the requirement of any reversing maneuvers onto the public road.

4.2. Construction Parking

Limited construction parking will be available on the construction site for the demolition and construction phase to cater for key staff and visitors. These will be provided on a temporary surface within the site hoarding. There will be no requirement for any construction vehicles to park on the public road.

4.3. On-site Construction Vehicle Staging Area

Construction traffic will be managed and scheduled in such a way that construction vehicles do not queue on Hospital Street. An on-site vehicle staging area will be provided to facilitate awaiting vehicles.

4.4. Estimation of Vehicle Movements during Demolition

Approximately 32,201 tonnes of demolition material will be removed off-site for reuse and/or recovery at an authorised facility in accordance with the waste hierarchy and relevant waste legislation. Transportation of the material will be by licensed haulers over an approximate four month period.

4.5. Estimation of Vehicle Movements during Demolition

The excavation of the below ground material will only commence and be phased appropriate to the planned construction of the new buildings. This will ensure that there is not excessive soil erosion, as ground will only be exposed for the shortest necessary time.

Following the completion of the excavation works, the level of HGV traffic will significantly reduce.

The remaining concentration of truck movements will occur during the pouring of concrete foundations.

5. MITIGATION MEASURES

5.1. Soils

1. During the excavation of the site to the required formation levels, a significant proportion of material excavated will be reused onsite for landscaping works. This will reduce the amount of material for removal off-site. There is adequate storage on-site to stockpile and test the soil. Every attempt to reuse surplus site-generated subsoils will be made. Any topsoil that is removed shall be used for regrading at a later stage.
2. A waste soil sampling exercise shall be undertaken in relation to areas where soils are to be excavated for off-site disposal. The soils shall be appropriately tested and classified in accordance with best practice and waste management legislation. Excavated material shall be visually assessed as it is being excavated for signs of contamination. Should material appear to be contaminated or potentially contaminated, soil samples shall be analysed by an appropriate testing laboratory.
3. Top-soiling and landscaping of the works shall be undertaken as soon as finished levels are achieved, in order to reduce weathering and erosion and to retain soil properties. Existing topsoil shall be retained on site to be used for the proposed development.
4. Topsoil shall be stored in an appropriate manner on site for the duration of the construction works and protected for re-use on completion of the main site works.

5.2. Sediment and Water Pollution Control

All works carried out as part of these infrastructure works will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will cooperate in full with the Environmental Section of Kildare County Council.

All works are to be conducted with recognition of the Hydrogeology Report prepared by Bluerock Environmental and Environmental Impact Assessment Report.

Site investigations were conducted in 2016, 2017 and 2018 are available with this application. They have informed into this report and overall design and will be made available at tender stage to all competing contractors.

Site investigations Reports that were conducted:

- | | |
|--|----------------|
| 1. Contractor: Ground Investigations Ireland | Date: Aug 2016 |
| 2. Contractor: Site Investigations Ltd. | Date: May 2017 |
| 3. Contractor: Site Investigations Ltd. | Date: Feb 2018 |

As part of the overall construction methodology, the following issues will be addressed and have been identified as being of particular risk and/or concern to pollution:

1. Monitoring prior to, during and post construction works of groundwater quality shall be undertaken to ensure minimum disturbance of water quality in the general vicinity of the site. During the construction phase, the monitoring programme shall include daily checks, weekly inspections and monthly audits.
2. Sediment & Erosion – groundwater needs to be protected from sedimentation and erosion during the demolition / construction phases. To prevent this from occurring, surface water discharge from the site will be managed and controlled for the duration of the construction works, until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction.
3. Discharge Licences – It will not be permitted to discharge into any newly constructed storm water systems or watercourse without the grant of a discharge licence from Kildare county Council and adherence to the conditions of this licence and agreeing same with the Site Manager and Local Authority Area Engineer.
4. All waste material (both soils and other) generated will be temporarily stored in secure bunded areas thereby preventing the migration of leachate or contaminating substances from impacting on the surrounding environment.
5. Over Ground Oil / Diesel Storage – Only approved storage system for oil / diesel within the site will be permitted, (i.e. all oil / diesel storage to be located within a designated area placed furthest away from contained within constructed bunded areas e.g. placed on 150mm concrete slab with the perimeter constructed with 225mm solid blockwork rendered internally). The bunded area will accommodate the relevant oil / diesel storage capacity in

case of accidental spillage. Any accidental spillages will be dealt with immediately on site, however minor by containment/removal from site.

6. Concrete Washout – The washing out of concrete trucks on site will not be permitted, as they are a potential source of high alkalinity in watercourses. Consequently it is a requirement that all concrete truck washout takes place back in the ready-mix depot. On review, there are six ready mix concrete plants within 25min drive of the subject site.
7. Former uses - ‘Lock Hospital’ 1869-1887 *There is no associated burial ground documented for the Lock Hospital, however, there is precedent for the use of unofficial burial sites at 19th century institutions.’ – Extract from Chapter 4. Archaeological monitoring will be undertaken at the site as described in Chapter 4 of the EIAR.*
8. Former Uses - Magee Military Barracks was in use during 1900 - 1998; the barracks was occupied by military personal and artillery; the following applies:
 - a) **Buried ammunitions-** A geophysical survey of individual areas of the site where buried ordnances may have been deposited shall be undertaken in an attempt to identify this material, if present. This survey will be undertaken prior to the site development works and any possible detections identified will be followed by an environmental site investigation, risk assessment and the implementation of a remedial program. The works will be undertaken with approval from Kildare County Council and validation of any remedial works provided to the Council prior to the commencement of the redevelopment of the site. Should suspicious devices be identified, the Department of Defence shall be notified.
 - b) **Existing well-** According to Crawford (2005), *‘the water supply system consisted of a well sunk sixty-two feet to the ground water level, the shaft of which was supported by a brick lined wall.’* The well located on-site shall be capped and sealed prior to any demolition activity.
 - c) **Existing drainage system-**The existing site is a disused army barracks in Kildare town centre consisting of a number of hard-standing parade grounds surrounded by numerous buildings and open space. A CCTV investigation of the existing surface water drains on site was undertaken by McBreen Environmental. The investigation showed that the existing drains on site are combined drains (combining foul water and surface water) and

discharge southwards into the existing public combined sewer. This combined sewer takes flow from the upstream catchment (refer to existing services drawings attached to this application) and is being diverted through the development as part of the development proposals. Any hardstanding areas on the Magee Barracks site that are not draining to the combined system simply infiltrate storm water to ground, with no watercourses draining the site. A further CCTV camera survey is to be conducted prior to construction to assess if any deterioration has recently occurred. It is proposed that existing underground services be isolated from main run lines, in a phased basis to match the demolition/construction programme. All pipes are to be flushed and cleaned prior to being excavated. The former pump / sewage tank associated with the hospital is to be de-sludged by a licenced contractor.

- d) **The Gravel Pit-** During excavation, archaeological monitoring will also be undertaken at the site of the former gravel pit associated with the hospital.

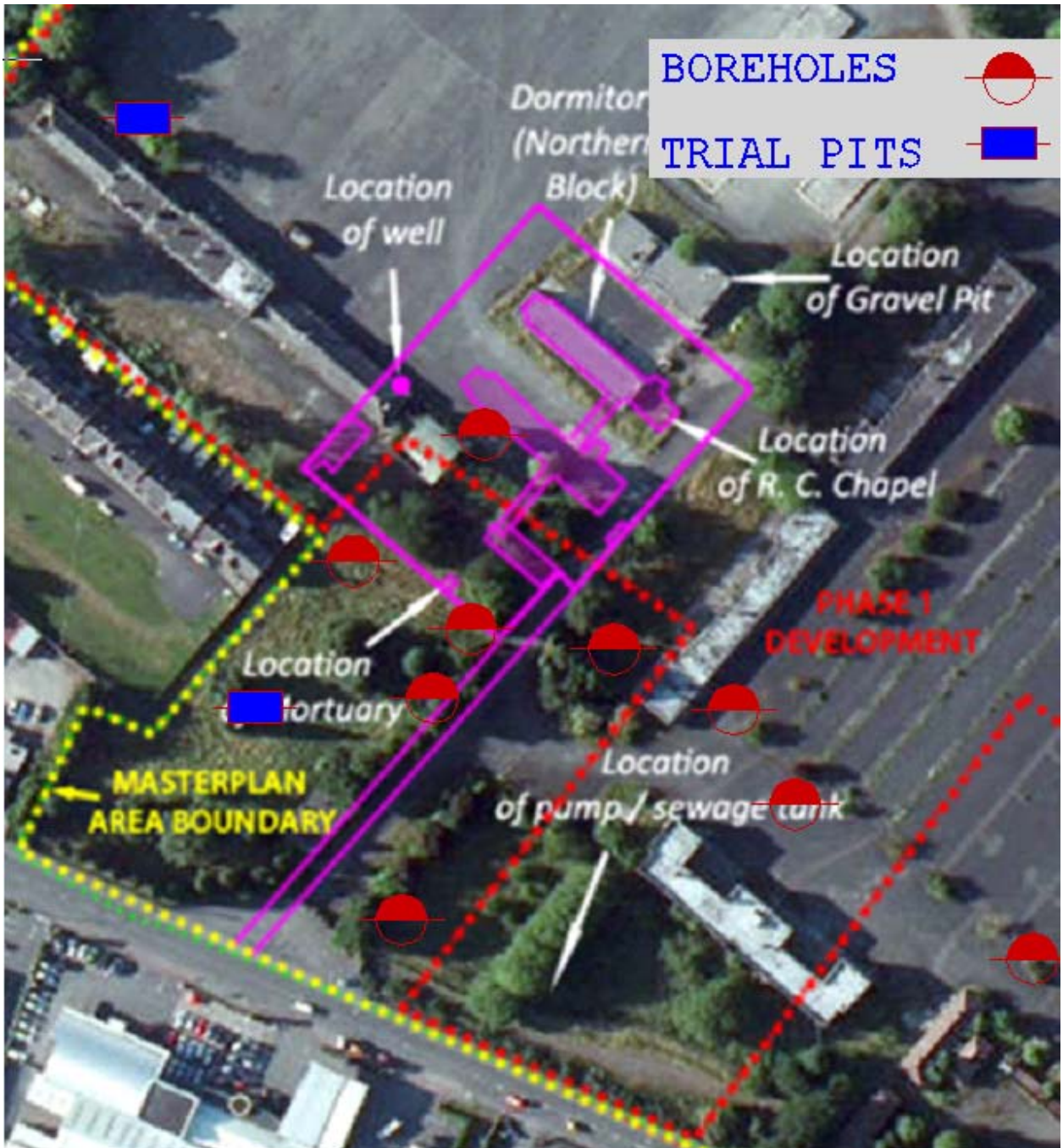


Plate 1: The above extract is taken from Chapter 4 Cultural Heritage and Archaeology; approximate previous site investigation locations are now imposed for reference

5.3. Dust

It is probable that the demolition and construction activities on site will generate some dust emissions which would be in addition to any dust generated naturally by the urban activity in the vicinity, including traffic flows. The extent of dust generation under construction activities been carried out is dependent on environmental factors such as rainfall, wind speed and wind direction.

The most likely sources of dust generation include demolition, soil stripping and excavation of foundations. It is anticipated that the dust that will be generated during the construction phase will be at its peak during periods of dry weather.

5.4. Dust Control Measures

1. Perimeter hoarding will be provided around the perimeter of the site. This acts as a dust barrier to a height of approximately 2.4m.
2. Soil is not to be uncovered until such time that a replacing capping layer is almost ready to be placed. This is to ensure that soil is left exposed for the minimum amount of time possible.
3. The contractor will spray water on the surface of all roads in the vicinity of the development in order to minimise dust generation from the construction activities. Water spray will increase in frequency during dry weather in order to maximise dust suppression.
4. The wheels of all vehicles leaving the construction site will be washed to ensure that dirt and dust is not transferred unto the public roadway.
5. Restrict vehicle speeds to 20kph as high vehicle speeds rise dust.
6. Tarpaulin covers are to be provided over stockpiles when high wind and dry weather are encountered.
7. Locate stockpiles away from site perimeters, in areas which are sheltered from the winds.

8. Tree and hedgerow protection measures will be provided for all trees and hedgerows to be retained in accordance with BS: 5837:2012: Trees in relation to design, demolition and construction. A specific Arboricultural Method Statement shall be prepared for any works required within the root protection area of any tree or hedgerow to be retained. All such measures shall be drafted, erected and maintained in consultation with a qualified Arborist, who shall also supervise any works for which an Arboricultural Method Statement is required

5.5. Noise & Vibration

The demolition and the construction of the project will involve the use of noise generating construction plant and will also result in vibrations. There will also be an increase in noise relating to delivery of materials to site. It is intended that noise from the construction phase of the development will be kept to a minimum in accordance with “5228: Code of Practice for Noise and Vibration Control On Construction and Open Sites”. Construction work will not be performed at night and will usually be limited to the hours indicated on the planning permission.

It is also proposed that communications be maintained between the Developer, the Local Authority and Local Residents throughout the construction phase of the works to ensure that noise emission are maintained at a low level and that any possible complaints can be rectified speedily.

5.6. Noise Control Measures:

It is proposed that the following noise control measures be put in place:

1. The selection of construction plant with low potential for generating noise.
2. The siting of noisy construction plant as far from residential properties as possible.
3. The erection of temporary barriers around items such as generators or compressors if required.

5.7. Minimise Demolition/ Construction Vehicle Movements

Construction vehicle movements shall be minimised through:

1. On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will generally depart after 18:00. It should be noted that a large proportion of construction workers would arrive in shared transport. Deliveries would arrive at a steady rate during the course of the day. It is estimated that peak delivery rates would be in the region of 3-4 per hour throughout the day.
2. Consolidation of delivery loads to/from the site and the restriction of large deliveries on site to off-peak times.
3. Use of precast/prefabricated materials where possible
4. 'Cut' materials generated by the construction works shall be reused on-site where possible

5.8. Compound Facilities / Parking

On-site facilities will consist of:

- Adequate materials drop-off and storage areas
- Internal turning areas for trucks
- Limited dedicated staff and visitor parking within the confines of the site hoarding
- Site offices, Staff welfare facilities, toilets, etc.
- It is not foreseen that cooking facilities will be available on site. The subject site is in close proximity to the town center, which contains delicatessens, super-markets, cafes and restaurants.
- Wheel wash facilities shall be provided
- All potentially hazardous materials shall be securely stored on site.
- Spill kits shall be kept in these areas in the event of spillages.
- All waste containers (including all ancillary equipment such as vent pipes and refuelling hoses) shall be stored within a secondary containment system (e.g. a bund for static tanks or a drip tray for mobile stores and drums). The bunds shall be capable of storing

110% of the tank capacity. Where more than one tank is stored, the bund shall be capable of holding 110% of the largest tank of 25% of the aggregate capacity (whichever is greater). Drip trays used for drum storage shall be capable of holding at least 25% of the drum capacity. Where more than one drum is stored, the drip tray shall be capable of holding 25% of the aggregate capacity of the drums stored.

- Waste fuels and materials shall be stored in designated areas that are isolated from surface water drains or open waters (e.g. excavations). Skips shall be closed or covered to prevent materials being blown or washed away and to reduce the likelihood of contaminated water leakage. Hazardous wastes such as waste oil, chemicals and preservatives, shall be stored in sealed containers and kept separate from other waste materials while awaiting collection by a registered waste carrier. Fuelling, lubrication and storage areas and site offices shall not be located within 25m of drainage ditches, surface waters or open excavations. Fuel interceptor tanks shall be installed on the site to treat any runoff.
- The site shall be secured with adequate level of security fencing.

5.9. Construction Materials

All imported soils and unbound granular fills shall be sourced from a licenced/permitted facility with suitable documentation to confirm the material is inert and fit for purpose. The contractor shall satisfy themselves that the material is fit for use before importing to the site.

6. DETAILED WASTE MANAGEMENT PLAN

Prior to the commencement of this development, the appointed contractor will submit the council for agreement in writing a site specific waste management plan for the recovery/disposal of all wastes arising from the demolition, refurbishment and construction related activities of this development.

The waste management plan will include:

- A list of proposed authorised waste collection permit holders to be employed
- A list of the proposed waste License permitted sites at which the wastes may be recovered or disposed of.
- Estimates of the proposed tonnages of construction and demolition (C&D) wastes by type e.g. soil and stone, rubble, wood, metal and plastic.
- A detailed list of the collectors and the waste recovery sites including estimated tonnages shall be submitted.

7. WORKING HOURS

Construction operations on site will generally be between the hours of 7am and 6pm, Monday to Friday, and 8am to 2pm on Saturdays, subject to planning authority limitations. However, it may be necessary for some construction operations to be undertaken outside these times, for example; connections to public service systems or utilities. Such works will be agreed in advance with Kildare County Council.

Similarly, deliveries of materials to site will be generated between the hours of 7am and 6pm, Monday to Friday, and 8am to 2pm on Saturdays, subject to planning authority limitations.

The construction times will ensure construction traffic will have limited impact on the traditional peak periods of 08:00-09:00 in the morning and 17:00-18:00 in the evening.

8. CONCLUSIONS

The appointed contractor will prepare a detailed Construction and Demolition Waste Management Plan which shall be in full compliance with the “Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects” published by the Department of the Environment Heritage and Local Government. The implementation of this Demolition and Waste Management Plan will comply with the Waste Management Requirements of Kildare County Council. They also comply with the Best Practice Recommendations for Sustainable Waste Management both nationally and internationally. A preliminary Construction and Demolition Waste Management Plan accompanies this application.

Soil removal during the construction phase of the project will be an unavoidable consequence of the development. Where possible, the soils shall be reused on site. Chemical analysis will be carried out to assess whether the backfill material is inert or presents a risk to human and/or environmental receptors. Suitable disposal routes and waste soil receiving facilities are to be identified by the contractor and included in the development of this plan.

The implementation of this plan will minimise waste delivered to land fill and will result in a high level of re-cycling, and the recovery of waste from this development shall ensure the national recycling targets of construction and demolition waste are achieved.

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