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## Outline Construction and Environmental Management Plan

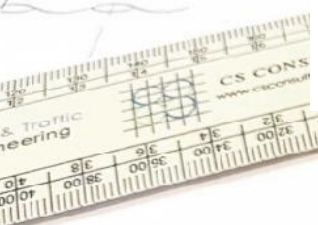
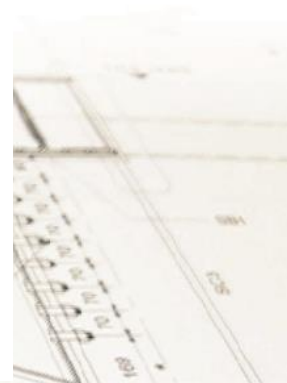
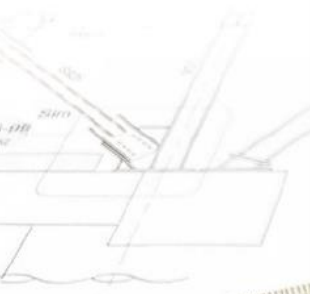
### Strategic Housing Development

### Frankfort Castle, Old Frankfort, Dundrum, Dublin 14

Client: Pembroke Partnership Ltd

Job No. H081

August 2021





## OUTLINE CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN

### STRATEGIC HOUSING DEVELOPMENT

### FRANKFORT CASTLE, OLD FRANKFORT, DUNDRUM, DUBLIN 14

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## 1.0 INTRODUCTION

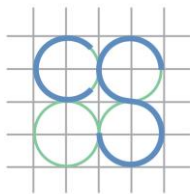
Cronin & Sutton Consulting (CS Consulting) have been commissioned by Pembroke Partnership Limited to prepare an Outline Construction and Environmental Management Plan (OCEMP) to accompany a planning application for a proposed strategic housing development at Frankfort Castle, Old Frankfort, Dundrum, Dublin 14.

The OCEMP is a preliminary plan. This provides a framework within which all final construction processes, site management arrangements, and environmental protection measures employed during construction are to be specified. Construction of the proposed development will be under the control of a lead contractor, who will be appointed following a grant of planning permission. Upon appointment, once familiar with the site and having developed a final detailed methodology for construction, the lead contractor will expand upon the OCEMP to produce a detailed Construction Management Plan (CMP). The content of the contractor's CMP will be agreed with Dún Laoghaire-Rathdown County Council (DLRCC) prior to commencement of works.

The contractor's detailed Construction Management Plan will give greater detail of construction management arrangements and processes, while adhering to the stipulations of this OCEMP. It will also incorporate the following:

- an Operational Health & Safety (OH&S) Management Plan;
- an Environmental Management Plan (including a Waste Management Plan); and
- a Construction Traffic Management Plan (including a Pedestrian Management Plan).

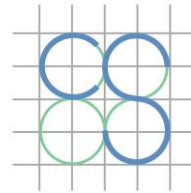
The contractor's Construction Management Plan will be strictly adhered to throughout the development's construction stage, to ensure the following:



- That all site activities are effectively managed to minimise the generation of waste and to maximise the opportunities for on-site reuse and recycling of waste materials.
- To ensure that all waste materials generated by site activities, which cannot be reused on site, are removed from site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved licensed facilities in compliance with the Waste Management Act 1996, the Waste Management (Amendment) Act 2001, and the Protection of the Environment Act 2003.
- To manage and control any environmental impacts (noise, vibration, dust, water) that construction activities may have on the local receiving environment, in particular on receptors and properties adjacent to the construction site.
- To comply with all planning conditions and requirements imposed in relation to waste management.

The OCEMP demonstrates how the appointed contractor and the appointed Project Supervisors (Site Manager, Health & Safety Officer, and Project Ecologist) will comply with the following relevant legislation and best practice guidelines:

- Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013)
- Integrated Pollution Prevention and Control Directive (1996/61/EC)
- The Waste Framework Directive (Directive 2008/98/EC)
- Environmental Protection Agency Act 1992
- Waste Management Act 1996, the Waste Management (Amendment) Act 2001 and the Protection of the Environment Act 2003
- Waste Management (Collection Permit) (Amendment)(No.2) Regulations 2016
- Waste Management (Permit) Regulations 1998 (SI No. 165 of 1998)



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- Department of the Environment, Heritage and Local Government – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects – June 2006
  - Local Government Water Pollution Act 1977
  - Environmental Protection Agency (EPA) – Draft Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects – April 2021

## 2.0 SITE LOCATION

The site of the proposed development lies immediately west of Dundrum Road, approximately 750m to the north of Dundrum village centre in Dublin 14. The site has a total area of approximately 0.9ha and is located in the administrative jurisdiction of Dún Laoghaire-Rathdown County Council.

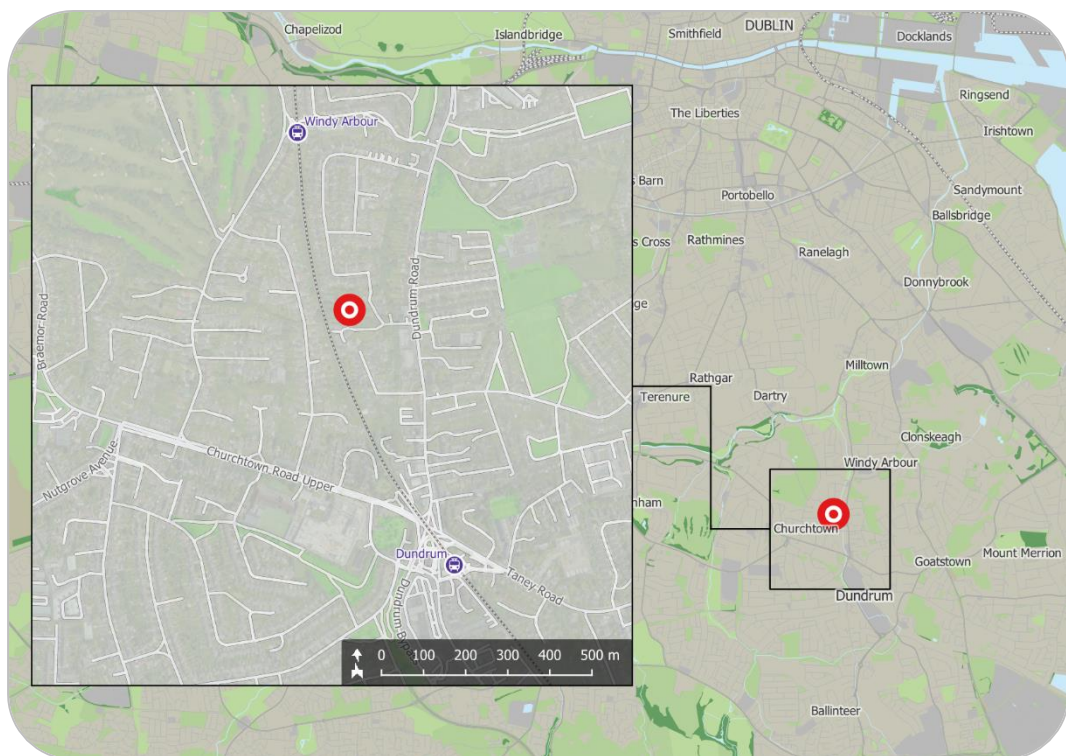


Figure 1 – Location of proposed development site  
(map data and imagery: EPA, NTA, OSM Contributors, Google)

The location of the proposed development site is shown in Figure 1 above; the indicative extents of the development site, as well as relevant elements of the surrounding road network, are shown in more detail in Figure 2.

The site is bounded to the north, south and east by existing residential properties, and to the west by the Luas Green Line. The site has extensive street frontage on Frankfort at its eastern boundary, and on Frankfort Court at its southern boundary.



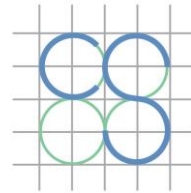
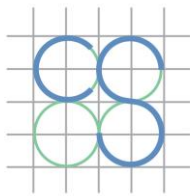


Figure 2 – Site extents and environs  
(map data and imagery: NTA, OSM Contributors, Google)

## 2.1 Existing Land Use

The site of the proposed development is brownfield and comprises the existing properties of 97A Highfield Park, Dundrum, Dublin 14, D14 P710; 1 Frankfort Castle, Old Frankfort, Dublin 14, D14 HY03; 2 Frankfort Castle, Old Frankfort, Dublin 14, D14 DE72; and Frankfort Lodge, Old Frankfort, Dublin 14, D14 C9P2.



### **3.0 DEVELOPMENT DESCRIPTION**

The proposed development will consist of 115no. residential units comprising 45no. one-bed units and 70no. two-bed units. The proposed units will be accommodated in the partially retained Frankfort Castle building and in 3no. blocks with a maximum height of 5 storeys. The subject proposal also includes for the demolition of the existing 97A Highfield Park residence (192.5sqm) and for the demolition of annexe buildings associated with Frankfort Castle including Frankfort Lodge (368sqm).

Additional works proposed include the provision of a childcare facility (80sqm), car and cycle parking at surface and basement level, hard and soft landscaping, surface water drainage infrastructure and attenuation tank, and all associated site development and infrastructure works.

## **4.0 SITE MANAGEMENT**

### **4.1 Construction Programme and Phasing**

Subject to a successful grant of planning, it is intended for the works to commence in Q3 2021. The proposed development is anticipated to be constructed over an 18-month period.

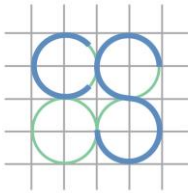
The development is proposed to be constructed on the following basis

- Set up site perimeter hoarding, maintaining existing pedestrian and traffic routes around the site
- Site Clearance
- Reduced Level excavations
- Site services installations (drainage, power, water)
- Construct Building Frame and Envelope
- Finish Interior and Exterior Landscaping

### **4.2 Vehicular Access to Site**

The subject site is currently accessed from Frankfort Court, at its southern boundary. The existing vehicular access will be omitted to suit the development layout as part of the development works. It is anticipated that for the duration of the works all access and egress for deliveries will be via the proposed vehicle access from Old Frankfort (at the site's eastern boundary). It may also be beneficial to install a pedestrian only entrance to the site to segregate vehicular and pedestrian movements to and from site.

Security personnel will be present at the entrance/exit of the site to ensure all egressing traffic will do so safely. A wheel wash will be installed at the exit from the site to prevent any dirt being carried out into the public road. A road sweeper will be employed as required to keep the public road around the site clean.



#### **4.3 Protection of Public Areas from Construction Activity**

Perimeter hoarding will be provided around the site to provide a barrier against unauthorized access from the public areas. Controlled access points to the site, in the form of gates or doors, will be kept locked at any time that these areas are not monitored (e.g., outside working hours).

The hoarding will be well-maintained and will be painted. Any hoardings may contain graphics portraying project information.

#### **4.4 Site Security**

The site will be secured with a hoarding. This will be branded using the appointed Contractors' logos. Some marketing images or information boards may also be placed on the hoarding. Access to site will be controlled and monitored outside of site working hours. 24-hour site monitoring by on-site personnel and CCTV will be implemented (subject to the final provisions to be put in place by the contractor).

#### **4.5 Material Hoisting and Movement Throughout the Site**

Hoists and teleporters may be utilised as required during the project to facilitate material movement into the structures and waste movements out. Hoists and teleporters will be used to the greatest extent possible in order to minimise the use of cranes, which would be more affected by inclement weather conditions. With the commencement of the fit-out activities, strategically positioned hoists will play a key role.

#### **4.6 Deliveries and Storage Facilities**

It is proposed that unloading bays are provided for deliveries to the site within the hoarding perimeter. They should be accessible by forklifts. Appropriately demarcated storage zones will be used to separate and segregate materials.

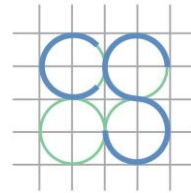
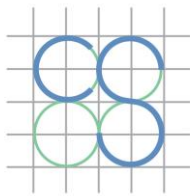


Figure 3 shows indicative potential locations for site accommodation, materials storage, and delivery areas. The definitive locations for these facilities will however be determined by the appointed lead Contractor and agreed with DLRCC. Refer to sub-section 5.5 for details of measures to prevent material storage and construction activities affecting the Slang River watercourse.



Figure 3 – Indicative construction compound/storage locations  
(map data and imagery: EPA, Google)

All deliveries to site will be scheduled to ensure their timely arrival and avoid need for storing large quantities of materials on site. Deliveries will be scheduled outside of background peak traffic hours (within the permitted site working hours) to avoid disturbance to pedestrian and vehicular traffic in the vicinity of the site.



#### **4.7 Site Accommodation**

On-site facilities will consist of:

- Materials storage area
- Site office & meeting room
- Staff welfare facilities including but not limited to toilets, drying room, canteen.

Electricity will be provided to the site via the national grid, subject to the restrictions and requirements of ESB Networks.

Water supply to the site will be provided by means of a temporary connection to the public watermain. Similarly, a temporary connection for foul water drainage will be made to the public network. The locations and sizes of these temporary connections will be determined through consultation with Irish Water and DLRCC, and shall be subject to any restrictions and requirements they may impose.

#### **4.8 Site Parking**

There will be sufficient on-site parking for staff and visitors. Construction staff will also be encouraged to use public transport in accordance with the guidance provided by the Health Service Executive and local transportation services. Refer to sub-section 8.4 for further details.

#### **4.9 Site Working Hours**

Construction operations on site will generally be subject to a planning permission and conditions. However, it may be necessary for some construction operations to be undertaken outside these times, for example, service diversions and connections, concrete finishing and fit-out works.

Deliveries of materials to site will generally be between the hours of 07:00 and 19:00, Monday to Friday, and 08:00 to 14:00 on Saturdays. There may be occasions where it is necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times. Any such deliveries will be made with the advance agreement of DLRCC.

#### **4.10 Staff Training and Certification**

The lead Contractor appointed to the project will be responsible for ensuring that all personnel working on site have a valid Safe Pass card, as well as the requisite certification(s) pertaining to the specific tasks that they will perform on site. The Contractor will also be responsible for monitoring staff compliance with all site protocols and taking corrective action in response to any breaches.

The Contractor, in consultation with the Project Supervisor Construction Stage (PSCS), will provide initial site-specific induction training to all construction operatives (including sub-contractors) and will organise regular 'tool-box talks', refresher training, and task-specific training as necessary throughout demolition and construction works.

#### **4.11 Record Keeping**

Records shall be kept by the Contractor and/or by the PSCS (as appropriate) to satisfy the applicable legislation and best practice guidelines in relation to all activity on site. These records will be made available for review and audit as required by DLRCC, the Health & Safety Authority (HSA), the Environmental Protection Agency (EPA), and any other entities with a legitimate interest.

These records must include (but may not be limited to):

- Records of all personnel working on site (including dates present).
- Records of all visitors attending site.
- Records of all training sessions conducted.



- Records of all plant and machinery used on site (including dates of arrival, dates of operation, and dates of removal).
- Records of all deliveries made to site.
- Records of all potentially hazardous materials stored on site.
- Records of all potentially hazardous materials encountered on site.
- Records of all waste material leaving the site (whether for reuse, recycling, recovery, or disposal).
- Records of any accidents or spills occurring on site.
- Records of engagement with the Project Ecologist, Project Archaeologist, and Site Engineer.
- Records of any site protocol breaches by construction personnel.
- Records of all noise level, vibration level, and air quality monitoring.

Please refer to the Construction and Demolition Waste Management Plan prepared by CS Consulting (included under separate cover with this planning application) for more detail of waste management record-keeping procedures.

#### **4.12 Complaints Procedure**

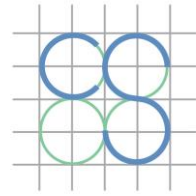
A Complaints Procedure System shall be drawn up by the Contractor. Records of all complaints shall be logged (date and time, items raised, etc.), to include:

- nature of the complaint;
- actions to be carried out in response; and
- details of complaint resolution.

#### **4.13 Designated Community Liaison Officer**

The Contractor will employ a Designated Community Liaison Officer (DCLO) prior to commencement of the works. The DCLO's role shall be to liaise and coordinate with neighbours and businesses. The DCLO shall also co-ordinate



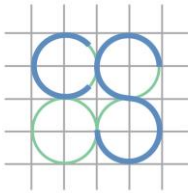


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with DLRCC to action and close out any complaints made in relation to demolition and construction works.



## 5.0 ENVIRONMENTAL ISSUES

### 5.1 Noise

The Contractor shall implement measures to eliminate and reduce noise levels where possible. Potential sources of noise due to works on site include:

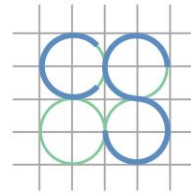
- Operation of plant and machinery
- Vehicle movements
- Demolition of existing structures
- Construction of new structures
- Loading, unloading, and distribution of materials

All construction activities shall be carried out in compliance with the recommendations of BS 5228 (Noise Control on Construction and Open Sites – Part 1) and comply with BS 6187 (Code of Practice for Demolition).

The following is an outline of the noise control measures to be implemented by the Contractor. These are to be expanded upon in the Contractor's detailed Construction Management Plan (CMP) and agreed with Dún Laoghaire-Rathdown County Council (DLRCC) prior to commencement of works.

#### 5.1.1 General considerations

- All site staff shall be briefed on noise control measures and best practice methodologies to control noise.
- Site hoarding will be erected to minimise noise transmission beyond the site boundary.
- The Contractor will employ a Dedicated Community Liaison Officer (DCLO) to engage with neighbours on a weekly basis, keep them apprised of the pending works on site and address any concerns raised.



- Internal haul routes shall be maintained, and steep gradients shall be avoided where possible.
- Material and plant loading and unloading shall only take place during normal working hours unless the requirement for extended hours for traffic management (i.e. road closure) or health and safety reasons has been granted (application must be made to the Council a minimum of 4 days prior to proposed works).
- The opening and shutting of gates will be minimised through good coordination of deliveries and vehicle movements.

#### 5.1.2 Plant

- The Contractor will ensure that each item of plant and equipment complies with the noise limits quoted in the relevant EC Directive 2000/14/EC.
- All plant and equipment shall be fitted with appropriate mufflers or silencers of the type recommended by the manufacturer.
- All plant and equipment shall be used only for the tasks for which it has been designed.
- All plant and equipment in intermittent use shall be shut down in the intervening periods between work, or throttled down to a minimum.
- Plant shall be powered by mains electricity wherever possible, rather than by generators.
- Partial or full enclosures shall be provided around fixed plant where possible.
- Movable plant shall be located away from noise sensitive receptors where possible.
- All plant operators are to be qualified in their specific piece of plant.
- Compressors and generators shall be sited in areas least likely to give rise to nuisance.

- Regular and effective maintenance by trained personnel shall be carried out to reduce noise and/or vibration from plant and machinery.

#### 5.1.3 Vehicle activity

- All vehicle movement on site will occur within permitted working hours, unless permission to the contrary has been granted.
- Loading and unloading shall occur within designated loading areas, as far from noise receptors as possible.
- Deliveries and vehicle movements shall be planned so that vehicles are not waiting or queuing on the adjacent road network.
- The site layout shall be planned to ensure that reversing of vehicles is kept to a minimum.

## 5.2 **Air Quality and Dust Monitoring**

Dust prevention measures shall be included for control of any site airborne particulate pollution. The Contractor shall continuously monitor levels of dust and airborne particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) in the vicinity of the site throughout demolition and construction works, in accordance with planning conditions, and records shall be kept of such monitoring for review by the Planning Authority.

There are currently no national or European Union standards of air quality with which levels of dust deposition can be compared. The minimum criteria to be maintained shall be in accordance with the *German Standard Method for determination of dust deposition rate, VDI 2129*, which is a maximum deposition of 350mg/m<sup>2</sup>/day as measured using Bergerhoff type dust deposit gauges.

The most significant potential sources of dust and airborne particulate matter due to works on site are:

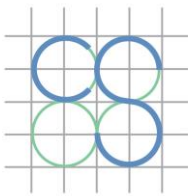
- Demolition of existing structures

- Vehicle movements
- Loading, unloading, and distribution of materials

Appropriate water-based dust suppression methods (e.g. a 'Dust Boss' spray cannon machine) will be employed by the Contractor to contain dust on site and ensure that the maximum permissible dust deposition threshold is not exceeded. These systems will be closely monitored by site management personnel, particularly during extended dry periods when dust dispersal risk is higher.

The following additional measures are to be taken to reduce the generation of dust during works on site:

- Demolition and construction techniques with reduced dust generation potential shall be preferred.
- Tools and machinery generating dust (e.g. drills) shall be fitted with dust-collection systems where possible.
- Any internal site road that has the potential to give rise to fugitive dust will be regularly watered during dry and/or windy conditions.
- Unbound internal site roads will be restricted to essential site traffic.
- Vehicles using unbound internal site roads will have their speed limited to a maximum of 20km/h, and this speed restriction will be rigidly enforced.
- Vehicles delivering or removing material with dust potential (soil, aggregates, etc.) will be enclosed or covered with tarpaulin at all times, to restrict the escape of dust.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.



### 5.3 Migrating Dust and Dirt Pollution

The Contractor will ensure that all construction vehicles that exit the site onto the public roads will not transport dust and dirt to pollute the external roadways. This will be achieved through a combination of the following measures:

- Ensuring construction vehicles have a clean surface to travel on within the site (i.e. haul road).
- Providing a full body self-contained wheel wash system, constructed and located within the site confines.
- Ensuring an appropriate secondary wheel or road washing facility is provided as and when required throughout the various stages of construction on site. If conditions require it then a manned power washer shall be put in place to assist the wheel wash system.

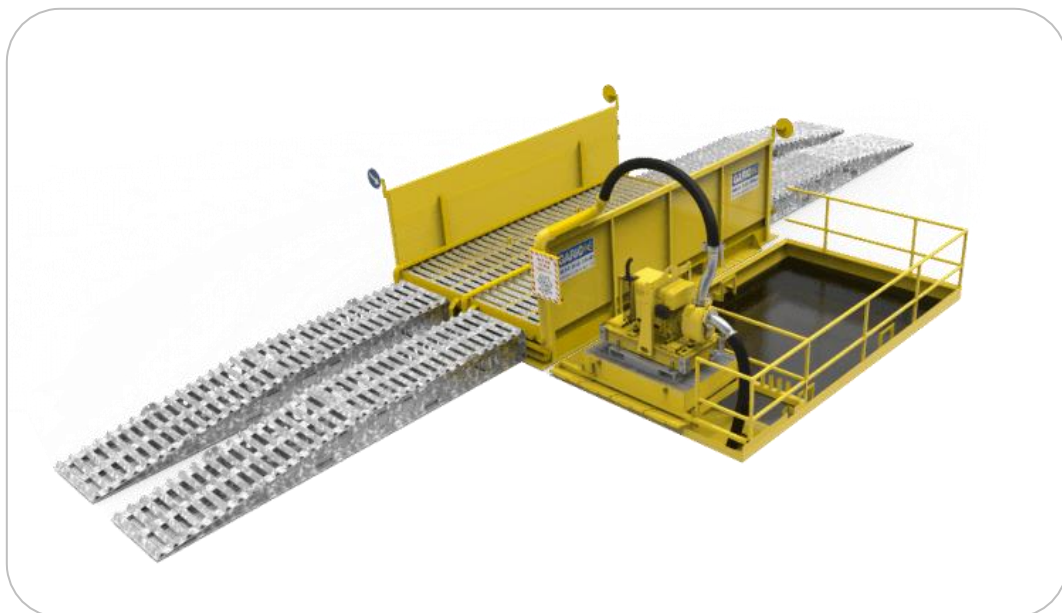


Figure 4 – Example of a self-contained wheel wash system  
(source: [garic.co.uk](http://garic.co.uk))

Self-contained vehicle wheel wash systems (see Figure 4 for an example) are equipped with automated high-pressure hoses directed onto vehicle wheels,

chassis and undersides. Side baffles prevent the dispersal of washed dirt, and an inbuilt reservoir collects all runoff from the wheel wash system. Water is filtered and recirculated within the system, reducing water usage. All washed solids are segregated by settlement and are either reused on site or removed and disposed of in the same manner as other spoil material.

## **5.4 Harmful Materials**

Harmful material will be stored on site for use in connection with the construction works only. These materials will be stored in a controlled manner. Where on-site storage facilities are used, there will be a bunded filling area using double bunded steel tank at a minimum.

### **5.4.1 Contaminated soil**

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

### **5.4.2 Fuels/oils**

As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.



#### 5.4.3 Other known hazardous substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor. In addition, WEEE (containing Construction and Demolition Waste Management Plan 11 hazardous components), printer toner/cartridges, batteries (Lead, Ni-Cd or Mercury) and/or fluorescent tubes and other mercury containing waste may be generated during construction activities. These wastes (if encountered) will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

In the event that hazardous soil, or historically deposited hazardous waste is encountered during the work, the Contractor must notify Dún Laoghaire–Rathdown County Council's Environmental Enforcement Section, and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant control measures, destination for authorised disposal/treatment, in addition to information on the authorised waste collectors.

Please refer to the accompanying Construction and Demolition Waste Management Plan (CDWMP) for further detail of waste materials expected to be generated during demolition and construction, as well as for details of the disposal of these.

### **5.5 Protection of Watercourses**

The development site is situated in proximity to the Slang River. However, no works are to be undertaken at the river or its riparian zone. Nevertheless, the River Slang is a part of the River Dodder system and this is important for fisheries and aquatic biodiversity. Pollution will be prevented from occurring through



best site management practice. The following measures will be employed to protect surface water in the receiving environment during demolition and construction, and to prevent its contamination by direct run-off or by infiltration from the development site. These have been developed in accordance with best practice guidance from Inland Fisheries Ireland (2016).

#### 5.5.1 Emergency Response Plan

An Emergency Response Plan shall be prepared, which details the procedures to be followed in the event of flooding, a spill of chemical, fuel or other hazardous wastes, a fire, or non-compliance incident.

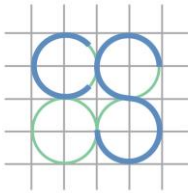
All site staff shall be trained in the implementation of the Emergency Response Plan and the use of any spill control equipment, as necessary.

#### 5.5.2 Discharge licences

It will not be permitted to discharge into any newly constructed storm water systems or existing watercourse without adhering to the conditions of the discharge licence and agreeing the same with the Design Team, Site Manager and Local Authority Area Engineer. Any discharge will first pass through an appropriately-designed silt trap so that only silt-free water leaves the site.

#### 5.5.3 Over ground oil/diesel storage

Only approved storage systems 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 adjacent watercourses and 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. Fuel storage tanks shall be bunded to a capacity at least 110% of the volume of the storage tank (plus an allowance of 30mm for rainwater ingress). Any accidental



spillages – however minor – will be dealt with immediately on site by containment/removal from site.

Emergency procedures and spillage kits shall be available and construction staff shall be familiar with emergency procedures.

#### 5.5.4 Refuelling

Refuelling operations will be restricted to a designated bunded area adjacent to the storage area and remote from watercourses.

#### 5.5.5 Concrete preparation, placement, and washout

Pumped concrete shall be monitored to ensure no accidental discharge. Mixer washings and excess concrete shall not be discharged to surface water. Concrete washout areas shall be located remote from any surface water drainage features to avoid accidental discharge to watercourses. All concrete truck washout is to take place back in the ready-mix depot. Discharge water generated during the placement of concrete shall be removed off site for treatment and disposal.

If pouring of cementitious materials is required for the works adjacent to a pond, surface water drainage features, or drainage features connected to same, this shall be carried out in the dry.

#### 5.5.6 Soil movement

The contractor shall avoid work involving moving of soil during heavy rainfall to minimise potential for entrainment of silt. Where forecasts indicate heavy rainfall events, works should be rescheduled accordingly. Temporary construction surface drainage and sediment control measures will be in place before earthworks commence. As per sub-section 5.5.2, only silt-free water will be permitted to leave the site.

#### 5.5.7 Groundwater management

Contaminated groundwater, if encountered on site, could result in contaminated waters being discharged from the construction site. Any such contaminated waters shall be treated using best practice and appropriate measures/controls dependent on the nature of the contamination, prior to discharge to the surface water network. There shall be no direct pumping of contaminated water from the works to the surface water drainage/stream network at any time.

If dewatering is required, water shall be treated prior to discharge to the existing sewer or watercourse. This shall include treatment via petrol interceptor and treatment for silt removal either via silt trap, settlement tanks or ponds.

#### 5.5.8 Disposal of wastewater off site

Foul drainage from site offices and compounds, where not directed to the existing wastewater network, shall be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations, to prevent the pollution of watercourses.

The Site Management Team will maintain a record of all receipts for the removal of toilet or interceptor waste off site to insure its disposal in a traceable manner. These will be available for inspection by the Environment Section of DLRCC at all times.

#### 5.5.9 Road sweepers/cleaning

The cleaning of public roads in and around the subject site will be undertaken to reduce environmental impacts and care will be taken to prevent any pollution of watercourses from this activity.

### 5.5.10 Maintenance of existing gullies

Gullies on all existing roads used for site access will be maintained and cleaned as required to ensure their continued effective operation.

Figure 5 shows indicative potential locations for site accommodation, car parking, materials storage, and delivery areas. The definitive locations for these facilities will however be determined by the appointed lead Contractor and agreed with DLRCC.

Also shown is a 50-metre exclusion buffer around the Slang River. No refuelling operations, no vehicle parking, and no storage of hydrocarbons or other potential contaminants, is to be permitted within this exclusion zone.



Figure 5 – Indicative construction compound/storage locations  
(map data and imagery: EPA, Google)

## 5.6 Vibration

The Contractor will be required to carry out their works such that the effect of vibration on the adjacent buildings and surroundings is minimised, and that no damage to these results from construction activity on site. Potential sources of significant vibration include:

- Demolition of existing structures on site.
- Construction of piled basement walls.
- Other construction activities on site involving the use of heavy machinery.

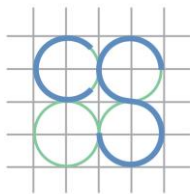
The Contractor will be required to comply with the requirements of the planning permission for any vibration limits for the works. In the absence of any Local Authority requirements, the following table shall set the limitations.

Table 1 - Trigger values for vibration

Trigger Level	Peak Particle Velocity (PPV)	
	50Hz and below	Above 50Hz
1	10 mm/s	10 mm/s
2	10 mm/s	12 mm/s
3	10 mm/s	15mm/s

The Administrator, Engineer, Client, and/or Contractor are to establish background vibration levels prior to the commencement of works.

A vibration monitoring system is to be put in place prior to any works taking place and will be maintained in continuous operation throughout demolition and construction works on site. This system is to raise an alarm if an agreed limit is exceeded, at which time the working methods are to be adjusted so as to reduce the vibration generated. Monitoring locations will be selected within the site, close to its boundaries, such that the recorded vibration levels shall always be higher than those experienced outside the site.



## 5.7 Asbestos

A Refurbishment/Demolition Asbestos Survey shall be carried out prior to the commencement of the demolition works. All extant buildings on site will be surveyed for the purpose of detecting and recording incidences of asbestos containing materials (ACMs). A report shall then be prepared which will contain a register showing the location and type of asbestos, if encountered, and the risks and recommendations in relation to the material identified.

ACMs identified by the Asbestos survey will be required to be removed by suitably trained and competent persons, removed from site by a suitably permitted waste contractor, and transported to a suitably licenced disposal facility. The Contractor shall handle ACMs in accordance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006, as amended and associated approved Codes of Practice. The Contractor shall be responsible for preparing specified Risk Assessment and Method Statements for the identification and removal of all ACMs on site.

## **6.0 ECOLOGY AND BIODIVERSITY PROTECTION**

### **6.1 Project Ecologist**

The Project Ecologist (PE) appointed to the proposed development project is:

Pádraic Fogarty MSc MIEMA  
OPENFIELD Ecological Services  
12 Maple Avenue  
Castleknock, Dublin 15  
([www.openfield.ie](http://www.openfield.ie))

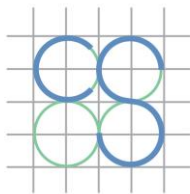
This OCEMP report has been prepared in consultation with the Project Ecologist and with reference to the following documents prepared by the PE (both of which are submitted separately with this planning application):

- Ecological Impact Statement (EcIS)
- Environmental Impact Assessment (EIA) Screening Assessment
- Screening Report for Appropriate Assessment (AA Screening)

The lead contractor appointed for construction of the proposed development will also consult with the Project Ecologist when preparing their detailed Construction Environmental Management Plan, as well as throughout construction of the development.

During the demolition and construction phases of the development, the primary responsibilities of the PE shall be to:

- Act as the primary on-site ecological contact and advisor for the Project Coordinator (PC) and Site Manager (SM) regarding implementation of the EcIS.
- Ensure compliance with all recommendations of the EcIS during regular site inspections.



- Request relevant records and documentation from the SM where necessary.
- Attend routine meetings with the SM.
- Keep detailed records of any ecological incidents and report these to the PC.
- Keep records of any variations to construction methods or design brief and modify EclS recommendations in consultation with the PC.

Produce staged monitoring reports on flora and fauna if required by any planning conditions or relevant legislation.

## **6.2 Ecological Impact Statement**

An Ecological Impact Statement (EclS) in respect of the proposed development has been prepared by the Project Ecologist and is submitted under separate cover with this planning application.

This notes that the subject development site “*can be considered to have minimal ecological value*”. It further notes that:

- There are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants.
- Habitats on the development site are of low local or negligible biodiversity value, while the River Slang is of high biodiversity value in a local context.
- There are no species listed as alien invasive as per SI 477 of 2011 or as ‘most unwanted’ by Invasive Species Ireland.

## **6.3 Procedures for Dealing with Invasive Species**

Site surveys conducted by the Project Ecologist on the 19<sup>th</sup> of September 2019, the 12<sup>th</sup> of March 2021, the 21<sup>st</sup> of June 2021, and the 28<sup>th</sup> of June 2021 did not record the presence on site of any plant species listed as alien invasive under Schedule 3 of SI No 477 of 2011. Accordingly, no specific measures are

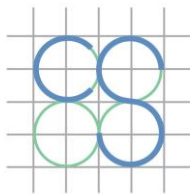


expected to be required for dealing with invasive species. If any such species are nevertheless discovered on the site during demolition or construction, these will be treated, removed, and disposed of by a licensed specialist contractor, under the direction of the Project Ecologist and in compliance with the applicable legislation.

#### **6.4 Retention and Protection of Vegetation During Construction**

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

- All trees along the proposed development boundary that are to be retained, both within and adjacent to the proposed development boundary (where the root protection area of the tree extends into the proposed development boundary), shall be fenced off at the outset of works and for the duration of construction to avoid structural damage to the trunk, branches or root systems of the trees. Temporary fencing shall be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree. The RPA shall be defined based upon the recommendation of a qualified arborist.
- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow shall be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it.
- The area within the RPA shall not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas shall not be undertaken within 10m of any retained trees, hedgerows and treelines.



- A qualified arborist shall assess the condition of, and advise on any repair works necessary to, any trees which are to be retained or that lie outside of the proposed development boundary but whose RPA is impacted by the works. Any remedial works required shall be carried out by a qualified arborist.
- A buffer zone of at least 5m shall be maintained between construction works and retained hedgerows to ensure that the root protection areas are not damaged.
- Dust suppression methods (as described in sub-section 5.2) shall be employed to protect retained vegetation from excessive dust.

## **6.5 Protection of Bird Nesting Sites**

Unless explicitly permitted by the Project Ecologist, no onsite vegetation (i.e. hedgerows, trees, or scrub) shall be removed or significantly disturbed between the 1<sup>st</sup> of March and the 31<sup>st</sup> of August, to avoid direct impacts on nesting birds.

Should the construction programme not allow this seasonal restriction to be observed, then these areas shall be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests shall be cleared within 3 days of the nest survey, otherwise repeat surveys shall be required. Should nesting birds be encountered during surveys, the removal of vegetation shall be required to be delayed until after the nesting season (1<sup>st</sup> March to 31<sup>st</sup> August inclusive), unless permitted by a derogation licence from the National Parks and Wildlife Service (NPWS).

## **6.6 Protection of Bats**

A specialist Bat Assessment of the development site has been conducted by Brian Keeley B.Sc.; this involved onsite examinations of bat activity on three separate occasions in August 2019, November 2019, and June 2021. The

findings and recommendations of this assessment are reflected in the Project Ecologist's Ecological Impact Statement (EclS).

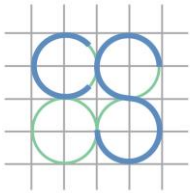
These reports note the presence on site of three bat species (Common Pipistrelle, Soprano Pipistrelle, and Leisler's Bat), as well as evidence of an active bat roost within the extant structure of 97A Highfield Park. A derogation has been acquired from the NPWS, permitting removal of the bat roost, and an updated derogation will be required prior to any work on the building that would affect bats. The derogation includes the following measures:

- Bat survey of the existing building prior to demolition.
- Exclusion of bats by a bat specialist licensed to capture and handle bats.
- Provision of alternative roost options.
- Monitoring of alternative roost success.

The Bat Assessment and EclS also stipulate that *"97A Highfield Park must not be demolished in the period May to the end of August unless it has been proven to be devoid of bats"*.

All extant buildings on the site will be examined for the presence of bats by a licensed bat specialist in advance of demolition works. Bats shall be excluded using one-way valves if required or, if bats are inactive, the bat specialist shall remove bats by hand and keep them safely until demolition is complete.

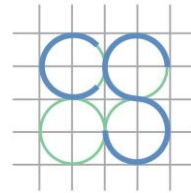
During demolition and construction works, any light spill affecting bat use of habitats outside of the proposed development boundary shall be avoided. Light levels during demolition and construction in these areas shall be maintained at baseline levels. If baseline light level surveys are not undertaken, baseline levels are considered to be 0.1 lux to 1 lux to account for varying



weather conditions (i.e. typical moonlight/cloudy sky being 0.1lux and clear night with full moon being 1lux<sup>1</sup>).

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<sup>1</sup> Institute of Lighting Professionals (2018). *Guidance Note 8: Bats and Artificial Lighting*. Available online at <https://cdn.bats.org.uk/pdf/Resources/ilp-guidance-note-8-bats-and-artificial-lighting-compressed.pdf?mtime=20181113114229>



CS CONSULTING

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## **7.0 WASTE MANAGEMENT**

An Outline Construction & Demolition Waste Management Plan (OCDWMP) has been prepared by CS Consulting as part of this application. Refer to this report for details of waste management during the demolition and construction phases of the proposed development.

## 8.0 TRAFFIC MANAGEMENT

### 8.1 Works-Specific Construction Traffic Management Plan (CTMP)

Prior to works commencing on site, the lead Contractor appointed to the project will be required to develop a detailed works-specific Construction Traffic Management Plan (CTMP), reflecting the specifics of their final site management and construction methodologies. This plan shall be prepared in consultation with the Design Team, with Dún Laoghaire-Rathdown County Council (DLRCC), and with An Garda Síochána, and shall be updated as required throughout the project.

The principal objective of the CTMP is to proactively manage the impacts of all construction traffic related to the proposed development, upon both the public (off-site) and internal (on-site) environments. It shall aim to ensure that the safety of the public and of construction workers is maintained at all times, that disruptions are minimised, and that all operations are undertaken within a risk-controlled environment. It is noted that the impact of the construction works on the surrounding road network will be temporary in nature.

The final CTMP will be prepared in accordance with the principles outlined below and shall always comply with:

- Chapter 8 of the Department of the Environment Traffic Signs Manual, current edition, published by The Stationery Office and available from the Government Publications Office, Sun Alliance House, Molesworth Street, Dublin 2;
- the *Guidance for the Control and Management of Traffic at Road Works* (June 2010) prepared by the Local Government Management Services Board;
- the *Construction Site Traffic Management Plan (CSTMP) Guidance* prepared by the Health and Safety Authority; and

- any additional requirements detailed in TII standards or in the *Design Manual for Urban Roads and Streets (DMURS)*.

Issues addressed in the CTMP shall include:

- Public safety
- Construction traffic routes
- Deliveries schedule
- Special deliveries (wide and long loads)
- Traffic flows
- Signage and lighting
- Road opening requirements
- Road closures
- Lighting

A liaison officer will be appointed as a point of contact with local residents, DLRCC, and An Garda Síochána.

Among the traffic management measures to be included in the CTMP are:

- Securely fencing off the site from adjacent properties, public footpaths and roads during the pre-construction phase.
- Providing signage on the surrounding road network to define the access and egress routes for the development.
- Strictly controlling the traffic generated by the construction phase of the development in order to minimise the impact of this traffic on the surrounding road network.
- Adequately signposting and enclosing all road works to ensure the safety of all road users and construction personnel.
- Accommodating all unavoidable personnel and visitor vehicle parking demands on-site or within designated off-site parking areas.
- Implementing a programme of street cleaning as required.



- Making arrangements to facilitate the delivery of abnormal loads to the site.
- Implementing measures to avoid queuing of construction traffic on the adjoining road network.

The following specific traffic control and marshalling measures are to be included in the CTMP, to minimise the potential for obstruction of surrounding streets:

- At no time will construction associated vehicles be stopped or parked along haulage routes.
- Haulage vehicles will not travel in convoys of greater than two vehicles at any time.
- Haulage vehicles will be spaced by a minimum of 250m at all times.
- At no time will haulage vehicles be parked or stopped at the entrance to the site.
- All loading of excess material will occur within the site boundary.
- All off-loading of deliveries will take place within the site, away from the public road and will access via the construction site access.

## **8.2 Vehicular Access to Site**

Construction traffic will access the site from the adjoining street network. Frankfort is connected to Dundrum Road which provides easy access to the M50 via a network of local distributor roads for deliveries and extraction to and from the site.

Security personnel will be present at the entrance/exit of the site to ensure all exiting traffic will do so safely. A self-contained wheel wash system (see sub-section 5.3) will be installed at the exit from the site, to minimise dirt being carried out into the public road, and a road sweeper will be employed as required to keep public roads around the site clean.



The vehicular access to the construction site shall include the following design elements:

- Sufficient entrance width to permit two rigid body vehicles to pass one another (i.e. one can enter while another waits to leave).
- An entrance gate set back a minimum of 18m from the public road edge, to ensure that vehicles may leave the road completely before having to stop.
- Appropriate sight lines for vehicles exiting onto the public road, to be ensured by removing existing visual obstructions and by appropriate design of perimeter hoarding.
- Directional signage for site traffic and advance warning signage for all other road users.

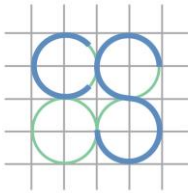
Revised access measures may be developed further as part of the final Construction Traffic Management Plan (CTMP) to be prepared by the Contractor.

### **8.3 Construction Traffic Routes**

Heavy Goods Vehicle (HGV) traffic to and from the site will follow a designated route to/from the south along Dundrum Road and the Dundrum Bypass, which ultimately connects to the M50 motorway, ensuring that heavy construction vehicles avoid residential streets to the greatest extent possible. The precise designated route will be determined by the Contractor at a later stage and agreed with DLRCC as part of the final Construction Traffic Management Plan (CTMP).

### **8.4 Onsite Car Parking**

Sufficient car parking will be provided within the development site to cater for construction personnel and visitors driving to site, thereby minimising the risk of overspill parking on surrounding streets. The quantum of onsite car parking to



be provided will be determined by the Contractor and will reflect staffing levels and available alternative transport options.

It is nevertheless intended that onsite car parking be used primarily by construction staff and visitors for whom a car or van is the only practical means of travel to site (either by reason of journey origin or the need to transport specialist equipment). All construction personnel shall therefore be encouraged to use public transport or to cycle when travelling to site, and all contractors shall be required to make reasonable provision for shared transport of workers to site (e.g. charter buses or car sharing arrangements), within the limitations of public health guidelines.

## **8.5 Vehicle Movements During Construction**

The major construction items include demolition, excavation, construction, and fit out. Heavy Goods Vehicle (HGV) construction traffic to and from the site shall reach a peak during preliminary earthworks, which may require the removal of spoil from the site and/or the importation of soil and aggregate. The final programming and scheduling of any such material transfer shall be determined by the lead Contractor appointed to the project. Under a 'worst-case' scenario, however, it is possible that up to 4no. such HGV trips may be made to the site each hour (one HGV arrival and one HGV departure every 15 minutes). This would equate to total traffic movements of 18 Passenger Car Units (PCU) in each of the background peak hours.

In addition to HGV traffic, periodic deliveries of materials to site shall be made by Light Goods Vehicles. To the extent possible, these shall be scheduled to take place outside of the background peak traffic hours. Such trips are also unlikely to occur frequently during the stages of construction that require bulk excavation or the importation of fill material; LGV trips are therefore unlikely to occur in significant numbers at the same time as HGV trips take place. For the purposes of estimating a worst-case construction traffic generation scenario,

however, 5no. LGV arrivals and 5no. LGV departures (total traffic movements of 10 PCU) are assumed in each of the background peak hours.

As car parking for construction personnel will be provided on site during construction works; some vehicular trips shall be made to and from the site each day by construction personnel commuting to and from work. The majority of these trips are expected to fall outside the background traffic peak hours. In the worst-case scenario, it is assumed that 10no. such light vehicle trips may be made to the site during the AM peak hour, and 10no. such trips may be made from the site during the PM peak hour.

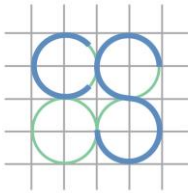
The anticipated worst-case scenario vehicular trip generation of the subject site during construction is summarised in Table 2.

Table 2 – Maximum Peak Hour Construction Traffic Generation

Time Period	Heavy Goods Vehicles	Light Vehicles	TOTAL (PCU) <sup>2</sup>
Arrivals			
AM Peak	4	15	24
PM Peak	4	5	14
Departures			
AM Peak	4	5	14
PM Peak	4	15	24
Total Trips			
AM Peak	8	20	38
PM Peak	8	20	38

A supplementary assessment of nearby junction performance during the development's demolition and construction stages is provided in sub-section 5.7 of the accompanying Traffic and Transport Assessment report. This shows that increases in traffic resulting from these works will be minor and can be

<sup>2</sup> 1 Light Vehicle (car or LGV) = 1 PCU; 1 HGV = 2.3 PCU



readily accommodated within the existing road network. The site is however located in a residential area where restricted road and junction space is shared with vulnerable road users and the flow of construction traffic will need to be marshalled and regulated to ensure that potential conflicts are avoided as much as possible.

## **8.6 Minimisation of Construction Vehicle Movements**

Construction vehicle movements will be minimised through:

- Consolidation of delivery loads to/from the site and management of large deliveries on site to occur outside of peak periods.
- Use of precast/prefabricated materials where possible.
- Reuse on site of 'cut' material generated by the construction works, where possible, through various accommodation works.
- Provision of adequate storage space on site.
- Development of a strategy to minimise construction material quantities as much as possible.

## **8.7 Minimisation of Staff Vehicle Movements**

Construction staff vehicle movements to and from the site shall be minimised by promoting more sustainable means of transport among construction personnel. The following headings identify some of the measures to be adopted in this regard.

### **8.7.1 Cycling**

Cycle parking spaces will be provided on the site for construction staff. In addition, lockers will be provided to allow cyclists to store their clothes.

### **8.7.2 Public Transport**

Construction staff will be encouraged to use public transport for travel to and from the site. An information leaflet will be provided to all staff as

part of their induction on site highlighting the location of the various public transport services in the vicinity of the construction site.

### 8.7.3 Car Sharing

The Contractor will provide organisational support and encouragement for car sharing amongst staff (if permitted by public health guidelines), particularly those for whom end-to-end public transport journeys are impractical. To the extent possible, the Contractor will endeavour to arrange staff shift patterns to facilitate shared journeys by staff who would drive similar routes.

## 8.8 Deliveries and Storage Facilities

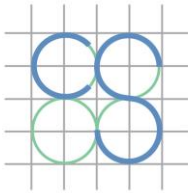
It is proposed that unloading bays be provided for deliveries to the site within the hoarding perimeter. These should be accessible by crane and teleporters. Appropriately demarcated storage zones will be used to separate materials.

All deliveries to site will be scheduled to ensure their timely arrival and avoid need for storing large quantities of materials on site. Deliveries will be scheduled outside of peak traffic hours, to avoid disturbance to pedestrian and vehicular traffic in the vicinity of the site.

## 8.9 Monitoring and Maintenance of Public Roads

A Visual Condition Survey (VCS) will be carried out of all surrounding streets prior to any site works commencing. The lead Contractor will liaise with DLRCC to agree any changes to load restrictions and construction access routes for the site. Measures will be put in place as required to facilitate construction traffic whilst simultaneously protecting the built environment.

All site entrances and temporary roads will be continuously maintained for emergency vehicle access. The following measures will be taken to ensure that the site, public roads, and surroundings are kept clean and tidy:



- A regular program of site tidying will be established to ensure a safe and orderly site.
- Scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind.
- Food waste will be strictly controlled on all parts of the site.
- Mud spillages on roads and footpaths outside the site will be cleaned regularly and will not be allowed to accumulate.
- Wheel wash facilities will be provided for vehicles exiting the site.

## **9.0 PROVISIONS FOR CONSTRUCTION**

### **9.1 Hoarding, Set-up of Site, and Access/Egress Points**

The site area will be enclosed with hoarding, details of which are to be agreed with DLRCC. Hoarding panels will be maintained and kept clean for the duration of the project.

### **9.2 Removal of Services**

Prior to any works a utility survey will be carried out to identify existing services. All services on site will be disconnected, diverted or removed as agreed with service providers.

### **9.3 Site Clearance & Demolition**

On the site there is an existing two-storey castle located to the middle of the site with a number of adjoining one storey buildings and a house at the northwest of the subject site. The remaining site consists mostly of green area space and existing car parking accessed through Frankfort Castle entrance and Frankfort Castle. The existing castellated house has a gross floor area of approx. 693m<sup>2</sup> and the additional house approx. 363m<sup>2</sup>. The main portion of the castle will be retained for the proposed development. The adjoining buildings will be demolished.

Please refer to the Outline Method Statement for Demolition of Existing Buildings prepared by CS Consulting (included under separate cover with this planning application) for full details of the proposed demolition methodology. The following is a high-level method statement for the demolition of existing buildings:

- Establish a site set-up and welfare facilities.



- Carry out an invasive species survey using a qualified and approved surveyor.
- Carry out a full asbestos survey (see sub-section 5.7). This survey is to be performed before any demolition is performed on site.
- Carry out a detailed services survey of the site to identify all buried services, determine what services are live, redundant and potentially serve neighbouring properties. This survey is to be performed before any demolition is performed on site.
- Carry out any necessary services diversions and decommissioning works.

Any materials identified as being hazardous will be removed and disposed of in strict accordance with the applicable legislation. All services will be disconnected and removed from the building along with a 'soft strip' of any fixtures, fittings, and demountable non-load bearing structure.

Any materials identified as being hazardous will be removed and disposed of in strict accordance with the applicable legislation. All services will be disconnected and removed from the building along with a 'soft strip' of any fixtures, fittings and demountable non-load bearing structure.

Demolition will be completed by appropriately experienced and skilled Contractors who will commence by removing the remaining roof. Where possible material will be removed by hand or by low impact equipment. Walls will be demolished by pulling them from the top down back into the site so as not to impact on adjoining lands.

The existing slab and concrete foundations will be broken by excavators. All reinforced concrete will be partially processed on site to separate the steel from the concrete. All other materials will either be fully separated on site and disposed of to the applicable landfills or processing facilities, or otherwise will be sent to a processing facility for separation. Relevant certification and



documentation confirming the final separation and most environmentally friendly disposal will be available.

#### **9.4 Excavation**

This development will involve excavation and removal of material from site for foundations and regrading of the site profile. It is not envisaged that rock will be encountered during the excavation works.

The appointed Contractor will engage with the project archaeologist prior to the commencement of excavation on site. Excavation will be carried out under the supervision of the project archaeologist.

The Contractor must prepare a Construction Waste Management Plan in accordance with the *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (Department of Environment, Heritage and Local Government, 2006) and the *Draft Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects* (EPA, 2021), and must ensure that all material is disposed of at an appropriately licensed land fill site.

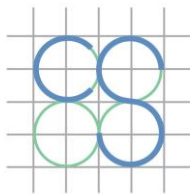
Refer to sub-section 5.5 of this report for details of measures that will be employed to prevent contamination of existing watercourses and groundwater during excavation.

#### **9.5 Site Service Installations**

Drainage, power, and water service connections will be installed to serve the proposed development.

#### **9.6 Construction Stage**

Following on from site clearance and excavations, foundations will be laid, and the external buildings envelope and roof constructed. The building frames will



most likely consist of load bearing masonry walls with reinforced concrete cores. Floors will likely be constructed using hollow core precast slabs overlaid with structural screed but with some localised elements of reinforced concrete slabs are also likely for transfer slabs and larger cantilevers.

Works to the façade will commence following partial completion of the external envelope. Once the buildings are weather sealed, the internal fit out and completion works will take place.

## 9.7 Superstructure

The construction of the superstructure will involve complex sequencing of activities and various construction methodologies could be adopted. It is envisaged that all buildings could be constructed as combination masonry and reinforced concrete frame subject to change in detailed design stages. The façades may consist of a typical rendered block 100mm thick outer leaf.

As noted, the construction methodology and therefore the programme of the construction activities will be dictated by the Contractor.

The following outlines a general construction sequence for the superstructure.

### 9.7.1 Buildings Structure:

- Construction of the foundation basement slab and permanent retaining wall structures in Block A.
- Construction of rising elements to ground floor and construction of ground floor slab in Block A.
- Construction of strip footings for Blocks B, C and D.
- Construction of 215mm masonry load bearing walls and any required reinforced concrete beams and columns.
- Installation of precast floor panels on load bearing walls.
- Installation of screed on precast floor panels.

#### 9.7.2 Envelope / Cladding:

- Commencement of envelope works to ground floor when structure has progressed to approximately Level 2/3, with suitable temporary openings in the façade left for ease of transport of construction material.
- Advancing of external leaf two or three levels behind the structure.

#### 9.7.3 Mechanical & Electrical fit-out:

- First fix will commence at each level behind structure
- This will be followed by the second fix and the final connections

#### 9.7.4 General fit-out:

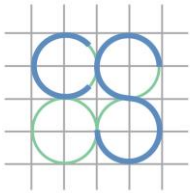
- Initial installation of stud work when cladding is complete, and floor is weather tight.
- Installation of equipment and associated connection to services.
- Completion of finishes.

#### 9.7.5 Commissioning:

- The final commissioning period will commence during fit-out.
- The above is an indicative construction sequence. The final sequence will be dictated by the Contractor. The Contractor must issue a detailed construction programme outlining the various stages prior to commencement of works.

### **9.8 Erection and operation of cranes**

It is envisaged that up to 3no. tower cranes will be temporarily erected to accommodate the construction works for the distribution of reinforcing steel, concrete skips, concrete formwork elements, and general building materials. The Contractor will obtain all necessary licences from the Local Authority. A 'mast climber' may be installed at some local areas to facilitate particular



façade features. The mast climber is essentially a climbing platform that allows the user to safely access any level without the requirement for a full scaffold tower.