ARUP

Creamfields Residential Development

Environmental Impact Assessment Report

Part 2 of 2

Appendices

February 2022

Appendix 1.1

Screening and Scoping Report

Screening and Scoping Report

Watfore Limited

Creamfields Residential Development

Environmental Screening and Scoping Report

Issue 2 | 5 August 2021

Job number 252666-00

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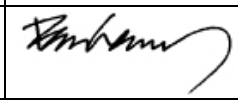
		Signature			
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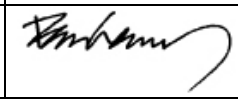
		Signature			
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Contents

1 Introduction

Arup has prepared this environmental screening and scoping report on behalf of Watfore Limited for the proposed strategic housing development (SHD) at the Creamfields Site (Former CMP Dairy Site) on the Kinsale Road, in Cork City.

This report summarises the potential requirement for environmental impact assessment, Appropriate Assessment under the Habitats Directive, and outlines the possible effects on the environment at this point in the design development, highlighting any aspect of the development likely to have significant effects on the environment and/or any significant effects on a European site. This statement has been prepared in advance of, and to inform, the tripartite meeting with Cork City Council and An Bord Pleanála.

2 Screening for EIA

2.1 Classes of Development

Section 172 of Part X of the Planning and Development Act, 2000, as amended in Section 17 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) sets out the requirement for EIA as follows:

"172 (1) An environmental impact assessment shall be carried out by the planning authority or the Board, as the case may be, in respect of an application for consent for proposed development where either—

(a) the proposed development would be of a class specified in—
(i) Part 1 of Schedule 5 of the Planning and Development Regulations 2001, and either—
(I) such development would equal or exceed, as the case may be any relevant quantity, area or other limit specified in that Part, or
(II) no quantity, area or other limit is specified in that Part in respect of the development concerned,
or
(ii) Part 2 of Schedule 5 of the Planning and Development Regulations 2001 and either—
(I) such development would equal or exceed, as the case may be any relevant quantity, area or other limit specified in that Part, or
(II) no quantity, area or other limit is specified in that Part in respect of the development concerned,
or
(b)(i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but does not equal or exceed, as the case may be, the relevant quantity, area or other limit specified in that Part, and

(ii) the planning authority or the Board, as the case may be, determines that the proposed development would be likely to have significant effects on the environment."

The Fifth Schedule of the Planning and Development Regulations, as amended, lists classes of development where an EIA is mandatory under Part 1 and where an EIA may be required under Part 2. Where a project falls within a criterion for a type of development and/or exceeds a threshold as listed in Part 1 or Part 2, then it must be subjected to EIA.

2.2 Project Type and Thresholds

A description of the proposed development is provided in Section 2 of this report. It is noted that the proposed development comprises 706 no. residential units. As such, it falls within Class 10 (b) (i) of Part 2 of the Fifth Schedule of the Regulations, namely:

"Construction of more than 500 dwelling units."

As the proposed development comprises the construction of 706 no. dwelling units, which exceeds the threshold set out in Class 10 above, a mandatory EIA is required for the proposed development and therefore an EIAR must be prepared to accompany the SHD consent application.

3 Screening for Appropriate Assessment

According to the EU Habitats Directive (92/43/EEC) and the EU Birds Directive (79/409/EEC), Member States are required to establish a Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species across the EU.

In Ireland, the Natura 2000 network of European sites includes Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and all migratory birds and their habitats. The Annex habitats and species, for which each site is selected, are the qualifying interests (QI) of SACs, and special conservation interests (SCI) are the equivalent for SPAs. Conservation objectives for the site are defined for these interests.

A key requirement of the Directives is that the effects of any plan or project, alone, or in combination with, other plans or projects, on the Natura 2000 network, should be assessed before any decision is made to allow that plan or project to proceed. This process is known as Appropriate Assessment (AA). The obligation to undertake an Appropriate Assessment derives from Article 6(3) and 6(4) of the Habitats Directive (92/43/EEC) and both involve a number of steps and tests that need to be applied in sequential order.

Article 6(3) is concerned with the strict protection of sites, while Article 6(4) is the procedure for allowing derogation from this strict protection in certain restricted circumstances.

Article 6(3) of the Habitats Directive states:

"Any plan or project not directly connected with, or necessary to, the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only having ascertained that it will not adversely affect the integrity of the site concerned and if appropriate, after having obtained the opinion of the general public".

Article 6(4) states:
"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."

The competent authority is required to carry out Appropriate Assessment, as required by Article 6(3) and 6(4) of the Habitats Directive, as follows:

- Stage 1 - Screening for Appropriate Assessment – to assess, in view of best scientific knowledge, if the development, individually or in combination with another plan or project is likely to have a significant effect on the Natura 2000 site.
- Stage 2 - Appropriate Assessment – This is required if it cannot be excluded, on the basis of objective information, that the development, individually or in combination with other plans or projects, will have a significant effect on a Natura 2000 site. The Appropriate Assessment must include a final determination by the competent authority as to whether or not a proposed development would adversely affect the integrity of a Natura 2000 site. In order to reach a final determination, the competent authority must undertake examination, analysis and evaluation, followed by findings, conclusions and a final determination. The appropriate assessment must contain complete, precise and definitive findings and conclusions, and may not have lacunae or gaps.
- Stage 3 – Assessment of alternative solutions- the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

- Stage 4 - Assessment where no alternative solutions exist and where adverse impacts remain - an assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

In relation to Natura 2000 sites, there is a possible hydrological connection between the Cork Harbour SPA and the proposed development site via the Tramore River. The Tramore River is located circa. 80m to the south of the site and flows into the Cork Harbour SPA circa. 2.7km downstream. In addition, there is a potential hydrological connection to Great Island Channel SAC which is further downstream in Cork Harbour.

A Stage 1 Report for Screening for Appropriate Assessment will be carried out to aid the competent authority in its determination as to whether or not a Stage 2 Appropriate Assessment is required. Based on the currently available information on the proposed development, identified pathways, and the conservation interests of the designated sites, it is not envisaged that a Stage 2 Appropriate Assessment will be required, but this will be assessed and documented in further detail as the design evolves.

4 Description of the Proposed Development

4.1 Overview of the Proposed Development

Watfore Limited intend to apply to An Bord Pleanála (the Board) for planning permission for a Strategic Housing Development (SHD) with a total application site area of c. 2.94 ha, on lands located at the former "CMP Dairies" site, Kinsale Road / Tramore Road, Cork. The proposed development will provide 706 no. residential dwellings, as follows:.

- 656 no. apartments and 50 no. townhouse apartments, to include 240 no. 1-bed dwellings; 383 no. 2-bed dwellings; 72 no. 3-bed dwellings; and 11 no. 4-bed dwellings, and ancillary facilities arranged in 9 no. buildings (Buildings A, B, C, E, F, G, H, J and K) varying in height from 3 to 15 floors.
- All of the dwellings proposed in Blocks E and F will consist of Build-To-Rent apartments, which will also include at ground level a crèche with ancillary outdoor play area, a community hub facility, a gym, a retail unit, and a café.
- The proposed development will also include a single storey coffee kiosk; 217 no. shared car parking spaces (including EV charging points) provided on surface and within an undercroft car-park; and 1,242 no. bicycle parking spaces (provided within 9 dedicated external and internal cycle stores).
- The proposed development will also include the provision of private, communal and public open space (including all balconies and terraces at all levels); internal roads and pathways; pedestrian access points; hard and soft landscaping; boundary treatments; waste storage; 6 no. ESB substations; signage; new access from Kinsale Road; an upgrade of the Kinsale Road/Mick Barry Road junction; an upgrade to the existing access from Tramore Road; public lighting; and all associated ancillary site development and drainage works.

A new Primary Care Centre located on the Tramore Road side of the development is also planned but is not included in the proposed SHD application. The provision of this Primary Care Centre will bring people to the town square.

While not part of the proposed development for the purposes of the consent application, the potential effects of the proposed Primary Care Centre, in cumulation with the proposed development, will be fully addressed in the EIAR.

4.2 Phasing

The proposed development is anticipated to be constructed in five sequential phases; four main construction phases preceded by a site enabling works phase.

In summary, the proposed development phasing consists of the following components –

- **Site Enabling Works (4 months)**
- **Phase 1 Construction (circa. 3 years):**

  - Primary Care Centre Incl. Retail – Pharmacy (this is the subject of a separate planning application)
  - Retail (Gym, Creche, and Café)
  - Town Square
  - Court Garden
  - Coffee Kiosk
  - Residential Blocks E & F
  - Ancillary Site Development Works (Incl. underground services, pavement upgrade works, central avenue site works, surface car parking, landscape works etc.)
- **Phase 2 Construction (circa. 2 years):**
  - Residential Blocks G & C
  - Ancillary Site Works
- **Phase 3 Construction (circa. 2.5 years):**
  - Residential Blocks J, H, B
  - Ancillary Site Development Works (Incl. underground services, pavement upgrade works, landscape works – Meadow 2 etc.)
- **Phase 4 Construction (circa. 2 years):**
  - Residential Blocks A & K
  - Ancillary Site Development Works (Incl. underground services, pavement upgrade works, landscape works – Meadow 1 etc.)
- **Project Completion**

It is presently assumed construction will commence within 4-8 months of a final planning grant. This assumption relies highly on tender strategy, design progression and market factors, etc.

The specifics of the durations and sequence of works will be further informed by the appointed contractor during the tender period in due course.

5 Summary of Potential Effects

5.1 Introduction

An Environmental Impact Assessment Report (EIAR) will accompany the SHD planning application to An Bord Pleanála.

The EIAR is being co-ordinated by Arup with specialist input provided by key environmental subconsultants, with the relevant expertise and experience required

for the specialist topic (e.g. meeting the competent expert requirement). The table below sets out the proposed structure for the EIAR as well as identifying the authors of each section:

Chapter	Chapter title	Author
1	Introduction	Arup
2	Background and Need for Scheme	Arup
3	Alternatives Considered	Arup
4	The Proposed Development	Arup
5	Construction Strategy	Arup
6	Planning and Policy	Coakley O'Neill Town Planning
7	Traffic and Transportation	Arup
8	Air Quality and Climate	Arup
9	Noise and Vibration	Arup
10	Biodiversity	DixonBrosnan
11	Archaeology, Architecture and Cultural Heritage	Lane Purcell Archaeology
12	Townscape and Visual	Cunnane Stratton Reynolds
13	Land and Soils	Arup
14	Water	Arup
15	Resource and Waste Management	Arup
16	Population and Human Health	Arup
17	Material Assets	Arup
18	Major Accidents and Disasters	Arup
19	Cumulative and Interactive Effects	Arup
20	Summary of Mitigation, Monitoring and Residual Effects	Arup

This report has been prepared based on the available construction and scheme design information at this stage of the design development and the predicted effects (on this preliminary basis) are described in the following sections. The EIAR which will be submitted with the application will contain the full assessment.

5.2 Traffic and Transportation

The proposed development will be carried out in development phases. Construction traffic will be generated for the various phases, with the most onerous construction period with regards to traffic generation envisaged, at this stage, to be the phases associated with the pouring of concrete.

The total construction traffic volumes per hour are not significant in terms of the overall existing traffic flows. These flows are not expected to significantly impact

on the capacity of the Kinsale Road and Tramore Road junctions or of the adjacent junctions.

Deliveries of materials to site will generally be between the hours of 07:00 and 19:00, Monday to Friday, and 07:00 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.

The development site is located approximately 2km to the south of Cork City and is an easy commute by foot (30 minutes) and by bike (10 minutes) from the city centre. The site is also located adjacent to the Black Ash Park and Ride which provides 935 parking spaces and a high frequency bus service to the city centre, with express buses on the 213 route between Black Ash and the City Centre operating at a 10 minute frequency between 07:00 and 20:00.

The Cork Metropolitan Area Transport Strategy (CMATS) 2040 prioritises sustainable and active travel, the introduction of more public transport and an increase in public transport capacity, as well as the associated enhancement of the public realm. A BusConnects route is proposed along Kinsale Road along with parallel walking and cycling lanes. The provision of this infrastructure together with the development's proposed linear park along Kinsale Road will provide the opportunity for sustainable travel to and from the site and an opportunity to limit vehicle trips.

Parking for the development will be approximately 0.3 bays per residential unit (assuming all spaces are available for residential use), which will reduce car ownership and usage. In light of the above, it is envisaged that the proposed development will have no likely significant adverse effects on the receiving environment.

5.3 Air Quality and Climate

5.3.1 Air Quality

The proposed development is located within Zone B, Cork Conurbation, as defined in the Air Quality Standards Regulations, 2011.

Background levels from 2015-2017 provided by the EPA's annual reports *Air Quality in Ireland – Indicators of Air Quality* outlined air quality monitoring results for NO_2, $PM_{2.5}$ and PM_{10} in Zone B which demonstrated good compliance with air quality standards.

There are no sensitive receptors in the immediate vicinity of the proposed development site. The closest residential properties are located circa.180m to the northwest of the proposed development site along Kinsale Road in Slieve Mish Park and circa. 175m to the west of the site located on Kent Road. The closest school to the proposed development site is Morning Star National School in Ballyphehane which is located circa. 500m to the west of the site. The closest place of worship (Cork Mosque) is located circa. 600m to the southwest of the site.

There is potential for dust impacts to arise due to construction activities associated with the proposed development such as excavations. However, standard mitigation measures will be put in place to minimise the generation of dust off-site, such as the provision of a dust screen around the site, such that no significant adverse effects are envisaged.

During the operational phase, potential air quality and climate impacts may arise due to the additional traffic accessing the site.

No likely significant adverse effects have been identified at this point in the EIAR preparation with respect to air quality during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be proposed to minimise the residual effect.

5.3.2 Climate

Carbon Emissions

Potential effects in relation to carbon emissions relate primarily to emissions from construction vehicles, construction materials such as concrete and the possible use of diesel generators during construction as well as emissions from resident's cars during the operational phase. However, no likely significant adverse effects have been identified at this point in the EIAR preparation with respect to carbon emissions during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

Wind

Computational Fluid Dynamics (CFD) analysis will be carried out during the preparation of the EIAR. However, no likely significant adverse effect with regard to local wind conditions are envisaged, arising from the proposed development. The CFD analysis will inform the landscaping and public realm elements of the project, ensuring for example that seating is located in areas of low wind impact.

5.4 Noise and Vibration

The baseline noise environment at the proposed development site is likely to consist of noise generated by vehicles on Kinsale Road, Tramore Road, the Black Ask Park and Ride and the South Link Road (N27) as well as operations at the nearby commercial properties such as Musgrave Retail Partners Ireland.

The main potential noise and vibration impacts associated with the proposed development will be:

Construction Phase

- Works associated with the development of the site; and
- Construction traffic to and from the site.

Operational Phase

- Induced traffic as a result of the proposed development; and
- Mechanical plant items serving residential and multi-use units (primary care centre and restaurant/café).

Construction works have the potential to cause short-term impacts on nearby noise sensitive receivers. Typically, mitigation measures are recommended as good practice to minimise any negative impact from construction activities. Where impacts are identified during the impact assessment phase of the EIAR process, specific mitigation measures will be provided for, where necessary.

It is not expected that there will be any significant vibration impact associated with the construction phase.

With respect to operational traffic noise, it is not expected that there will be a significant adverse impact, considering the existing busy, urban setting and the design measures taken to reduce operational traffic associated with the proposed development (active mobility, reduced parking, etc).

Mechanical plant items serving the proposed development have the potential to emit noise. Where impacts are identified during the impact assessment phase of the EIAR process, specific mitigation measures will be provided for, where necessary. Due consideration will be given to the design of the residential dwellings to protect residents from external noise in this built-up area. Potential effects on the proposed development from external noise sources including Musgraves will be assessed.

It is expected that there will be no likely significant adverse vibration impact associated with the operational phase.

No likely significant adverse effects have been identified at this point in the EIAR preparation with respect to noise and vibration during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

5.5 Biodiversity and Appropriate Assessment

5.5.1 Biodiversity

The proposed development site is a brownfield site. Large sections of the site are unvegetated apart from early successional species which are colonising the site in the absence of intensive usage and some encroachment by scrub. The site is surrounded by roads and industrial development and lacks connectivity to natural habitats in the surrounding landscape. Treelines along external boundaries including mixed conifers and broadleaved species (Ash, willow) and large sections of Griselinia sp. hedging provide some potential foraging habitat although light and traffic disturbance levels from traffic and adjoining facilities are relatively high.

A bat survey was carried out in September 2020, where two Leislers bats were recorded overflying the site during the site survey. However, no bat activity was

recorded from the site itself or along its boundaries. Light levels were generally high along external boundaries. Soprano Pipistrelle and Daubentons bats were recorded foraging along the Tramore River which is located circa. 80m south of the proposed development site. Given the distance involved and the nature of the surrounding landscape no impacts on bat population foraging along the Tramore River will occur.

The National Biodiversity Data Centre (NBDC) website (www.biodiversity.ie) contains a mapping tool that indicates known records of legally protected species within a selected OS 1km Grid Square. This site is located within 1km grid square W6769 and data on this square was downloaded from the website on 12th March 2021. It is noted that this list is not exhaustive, and an absence of records does not imply that they are not present within the given area nor does it guarantee their presence on site.

The only protected species recorded in this 1km grid square is the European Otter (*Lutra lutra*). The following invasive species were recorded within this 1km grid square – Himalayan Honeysuckle (*Leycesteria formosa*), Japanese Knotweed (*Fallopia japonica*), Three-cornered Garlic (*Allium triquetrum*) and Traveller's-joy (*Clematis vitalba*). An Invasive Species Management Plan will be prepared if required as part of the EIAR.

Where possible, biodiversity enhancements will be made as part of the proposed development.

Due to the low ecological value of the proposed development site, no likely significant adverse effects have been identified at this point in the EIAR preparation with respect to biodiversity during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

5.6 Archaeology, Architecture and Cultural Heritage

The proposed development site was developed as a creamery in the 1950s and operated until 2006, when CMP Dairies closed the facility. All buildings associated with this previous use have since been demolished and the site is currently vacant.

There are no features listed in the Record of Protected Structures for Cork City, the National Inventory of Architectural Heritage or the National Monuments Services within the proposed development site.

The site is not located within an Architectural Conservation Area.

There is the potential that previously unknown archaeological features may be present in areas of undisturbed ground and may be unearthed during construction activities such as excavations for the undercroft car park.

No predicted significant adverse impacts have been identified at this point in the EIAR preparation with respect to archaeology, architecture and cultural heritage during the construction or operational phases of the proposed development.

Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

5.7 Townscape and Visual

The proposed development site is located in an existing built-up area of Cork city and is not located within an area of high landscape character, and is described as a 'gateway to the city' in the Cork City Council Development Plan's Conceptual Landscape Structure Plan.

The proposed development will include a cluster of substantial buildings ranging from 7 to 15 floors. The scale of the proposed development will be such that it is likely to be openly visible from a number of areas in the city. A Townscape and Visual Impact Assessment will be carried out as part of the EIAR and effects will be classified in accordance with EPA guidelines. Photomontages will also be prepared. The design of the proposed development will be cognisant of the objectives of the Cork City Development Plan 2015-2021 and any relevant policies in relation to townscape and visual and also the Proposed Cork City Development Plan 2022-2028 and any emerging policy.

The quality of effects on the visual environment: positive, negative or neutral, will depend on how the development is perceived by observers. Factors influencing perception will include the quality of the architectural expression of the proposed structures, their scale and mass in relation to their surroundings, the quality of the spaces made both within and around the development, the distance from which the development is seen and the context of the view.

No predicted significant adverse effects have been identified as this point in the EIAR preparation due to the low sensitivity of the proposed development site and the existing built environment. Due consideration will be taken in respect of the design to minimise townscape and visual effects and, where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

5.8 Land and Soils

The proposed development site is a brownfield site. It was developed as a creamery in the 1950s and operated as such until 2006, when CMP Dairies closed the facility. All buildings associated with this previous use have since been demolished and the site is currently vacant. Site investigation works will be carried out and the results of which will be communicated in the EIAR.

Excavation works will be undertaken as part of the proposed development, to provide an undercroft car park to the north of the site, and also to facilitate the construction of foundations for the proposed new structures.

Should the removal of any of the made ground from across the site be necessary it would likely have a moderate, positive long-term impact on the site by removing potentially contaminated made ground.

Conventional building works will be employed during the construction phase which will ensure that any negative impacts associated with construction will be short term.

During the operation of the site, there are no likely predicted effects on land and soils.

No likely significant adverse impact has been identified at this point in the EIAR preparation with respect to land and soils during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

5.9 Water

The Tramore River is located approximately 80m to the south of the proposed development site. According to the EPA Envision Mapping, the Tramore River's River Waterbody WFD (Water Framework Directive) Status is classed as 'under review'.

The construction of the proposed development is likely to give rise to a short term moderate negative effect on the receiving surface watercourse and surface/ground water regime of the area. There are potential sources of pollution from drainage from the site resulting from runoff and erosion from site earthworks and temporary stockpiles. The presence of fuels, lubricants and other chemicals from construction activities also have the potential to temporarily affect the surface/ground water regime of the area if not managed properly.

There are no historic flood events recorded within the proposed development site according to FloodInfo.ie. Therefore, the proposed development is not likely to have an impact on floodplain storage and conveyance and will not increase flood risk off site during the construction phase. Notwithstanding, a Flood Risk Assessment will be prepared to accompany the consent application and inform the EIAR.

The proposed development will include the construction of residential dwellings, and a town square including pedestrian and paved areas. There is also a Primary Care Centre proposed (which will be the subject of a separate planning application). Surface water from these areas will be captured by a new drainage network for the site. Surface water will likely be discharged to the Tramore River. Any new drainage elements on site will include hydrocarbon interceptors and other necessary elements to ensure safe discharge into the receiving waters. Measures will be put in place to ensure that foul water will be managed appropriately. The applicant will engage with Irish Water to ensure that there will be a sufficient water supply to the proposed development site.

No likely significant adverse impact has been identified at this point in the EIAR preparation with respect to water during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

5.10 Resource and Waste Management

During the demolition and construction phases, typical C&D waste materials will be generated which will be source segregated on-site into appropriate skips/containers, where practical and removed from site by suitably permitted waste contractors to authorised waste facilities. Where possible, materials will be reused on-site to minimise raw material consumption. Source segregation of waste materials will improve the re-use opportunities of recyclable materials off-site. Completion of the undercroft car park and construction of new foundations and the installation of any underground services will require the excavation of approximately 37,150m^3 of made ground and subsoil. The historical use of this site suggests that there is limited potential to encounter contaminated land when undertaking these groundworks and undercroft car park excavations.

Should the removal of any of this material be necessary, it will require removal offsite for appropriate reuse, recovery, recycling and/or disposal.

A planned approach to waste management and adherence to the site-specific Construction and Demolition Waste Management Plan (which will be prepared as part of the EIAR) during the construction phase will ensure that the effect on the environment will be short-term, neutral and imperceptible. Circular economy principles will be implemented wherever possible.

During the operational phase, waste will be generated from the residents, the primary care centre (subject of a separate planning application), café/restaurant and from transient users of the town square. A dedicated communal waste storage area will be allocated for the residents at ground level. The waste storage area will be appropriately sized to accommodate the estimated waste arisings. The primary care centre/commercial tenants will also have a dedicated waste storage area. These waste storage areas will be allocated to ensure a convenient and efficient management strategy with source segregation as a priority. Waste will be collected from the designated waste collection areas by permitted waste contractors and removed off-site for re-use, recycling, recovery and/or disposal.

An Operational Waste Management Plan will be prepared which will provide a strategy for segregation (at source), storage and collection of wastes generated within the development during the operational phase including dry mixed recyclables, organic waste, mixed non-recyclable waste and glass as well as providing a strategy for management of waste batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil and furniture. The Plan will comply with all legal requirements, waste policies and best practice guidelines and will demonstrate that the required storage areas have been incorporated into the design of the development.

Provided mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be long-term, neutral and imperceptible.

No likely significant adverse impact has been identified at this point in the EIAR preparation with respect to resource and waste management during the construction or operational phases of the proposed development. Where impacts

are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

5.11 Population and Human Health

During the construction phase of the proposed development, there is potential for negative effects on population and human health resulting from construction related noise and dust. Potential effects will be managed by means of a Construction Environmental Management Plan and will be short term in nature.

The proposed development is likely to result in an operational residual significant positive effect on the population through the provision of a range of 706 no. residential units and the provision of a primary care centre (subject of a separate consent application) which will contain local GP practices, HSE services, medical support services and a pharmacy to serve the wider community with a “one stop shop” health care service. The provision of a town square will also provide a focal point for the surrounding areas of Ballyphehane, Togher, Turner’s Cross and The Lough.

Employment will be generated during the construction and operation of the proposed development resulting in both a short and long-term positive impact.

No likely significant adverse impact has been identified at this point in the EIAR preparation with respect to population and human health during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

5.12 Material Assets

During the construction phase, it is envisaged that the existing council combined sewer that crosses the site will be diverted, however it is not predicted that there will be significant negative effects as a result of this work.

It is envisaged that all local service and utility networks have sufficient capacity to support the operation of the proposed development. The potential for effects on material assets is therefore not expected to be significant during the operational phase.

No likely significant adverse impacts have been identified at this point in the EIAR preparation with respect to material assets during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

5.13 Major Accidents and Disasters

A review was undertaken to identify the closest Seveso site in relation to the proposed development site. Goulding Chemicals Limited is located circa. 2km north west of the site along Centre Park Road and is classed as a Lower-Tier site.

Consultation with the Health and Safety Authority (HSA) will be undertaken during the preparation of the EIAR.

It is anticipated that potential risks of major accidents/disasters occurring during the operational phase of the proposed development will be mitigated by ensuring the proposed development is designed, built and operated in line with best practice.

No likely significant adverse impacts have been identified at this point in the EIAR preparation with respect to major accidents and disasters during the construction or operational phases of the proposed development.

5.14 Cumulative and Interactive Effects

5.14.1 Cumulative Projects

A review of the Cork City Council online planning records will be carried out during the preparation of the EIAR. In the event that there are any developments identified which may result in cumulative effects, appropriate mitigation measures will be put in place. Further, a Construction Environmental Management Plan (CEMP) will be implemented in order to mitigate any potential negative effects.

As mentioned previously, a new Primary Care Centre located on the Tramore Road side of the development, is also planned as part of an overall masterplan for the site but is not included in the proposed SHD application. Therefore, there is the potential for cumulative effects but these will be managed both through the design process and through the implementation of a CEMP and Construction Traffic Management Plan.

5.14.2 Interactive Effects

The following potential impacts have been identified at this stage in the preparation of the EIAR. These interactions will be assessed in further detail as the individual environmental topic assessments are finalised (e.g. Townscape and Visual Assessment).

	Traffic and Transportation		Air Quality and Climate		Noise and Vibration		Biodiversity		Archaeology, Architecture and Cultural		Townscape and Visual		Land and Soils		Water		Resource and Waste Management		Population and Human Health		Material Assets		Major Accidents and Natural Disasters	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Traffic and Transportation			✓	✓	✓	✓									✓	✓			✓	✓				
Air Quality and Climate							✓												✓	✓				
Noise and Vibration							✓												✓	✓				
Biodiversity																								
Archaeology, Architectural and Cultural Heritage																				✓		✓		
Townscape and Visual																			✓	✓				
Land and Soils	✓		✓		✓				✓		✓				✓		✓				✓			
Water							✓	✓											✓	✓	✓	✓		
Resource and Waste Management	✓	✓											✓											
Population and Human Health																								
Material Assets			✓	✓	✓				✓				✓		✓	✓								
Major Accidents and Disasters																			✓	✓				

6 Summary

At this stage in the preparation of the EIAR, no significant adverse effects have been identified. Detailed assessments will be carried out as the design of the proposed development evolves.

Appendix 5.1

Construction Environmental Management Plan

Construction Environmental Management Plan

Watfore Limited

Creamfields Residential Development

Construction Environmental Management Plan

252666-00-RPT-CEMP

Issue 1 | 17 February 2022

Job number 252666-00

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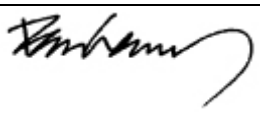
CREAMFIELDS

ARUP

Document verification

ARUP

Job title		Creamfields Residential Development			**Job number** 252666-00
Document title		Construction Environmental Management Plan			**File reference**
Document ref		252666-00-RPT-CEMP			
Revision	**Date**	**Filename**	252666-00 Creamfields CEMP_EIAR Issue 1.docx		
Issue 1	17 Feb 2022	Description	Issue for Planning		
			Prepared by	Checked by	Approved by
		Name	Debbie Flynn	Stephen Ginn	Daniel Garvey
		Signature			
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				Issue Document verification with document	✓

Contents

Appendices

1 Introduction

1.1 Overview

This Construction Environmental Management Plan (CEMP) has been prepared by Arup to support Watfore Limited's application for consent for the proposed strategic housing development (SHD) at the Creamfields Site (Former CMP Dairy Site) on the Kinsale Road and Tramore Road, in Cork City.

Watfore Limited will have a construction management team which will supervise aspects of the construction phase of the proposed development.

Watfore Limited's construction management team will ensure the contractor (and any subcontractors) will comply with all of the performance requirements set out in the tender documentation including the conditions attached to statutory consents which may be granted by An Bord Pleanála, Irish Water and other relevant statutory consent authorities.

Watfore Limited's construction management team will ensure compliance with the mitigation measures set out in the Environmental Impact Assessment Report (EIAR).

This CEMP sets out the duties and responsibilities which will be imposed on the contractor in the construction contract. Watfore Limited's construction management team will be responsible for ensuring that the contractor complies with all the requirements of this CEMP.

1.2 Purpose

The purpose of this CEMP is to provide a framework that outlines how Watfore Limited will manage and where practicable minimise negative environmental effects during the construction of the proposed development. Construction is considered to include all site preparation, enabling works, demolition, materials delivery, materials and waste removal, construction activities and associated engineering works.

This CEMP identifies the minimum requirements with regard to the appropriate mitigation, monitoring, inspection and reporting mechanisms that need to be implemented throughout construction. Compliance with this CEMP does not absolve Watfore Limited from compliance with all legislation and bylaws relating to their construction activities.

This CEMP has been produced as part of the application for consent to ensure compliance with legislative requirements and the EIAR and associated ecological reports that have been prepared for the proposed development.

1.3 Approach

This CEMP provides a framework to:

- Describe the programme for environmental management during construction;

- Implement those monitoring and mitigation measures identified in the EIAR and associated ecological reports;
- Outline the principles and minimum standards required during the development of the CEMP (and associated Method Statements) and throughout construction;
- Identify the relevant roles and responsibilities for developing, implementing, maintaining, and monitoring environmental management; and
- Outline the procedures for communicating and reporting on environmental aspects of the proposed development throughout construction.

It is intended that this CEMP would be expanded and updated prior to the commencement of any construction activities on site. The CEMP is a dynamic document and will remain up to date for the duration of the construction period. The CEMP may need to be altered during the lifecycle of the construction period to take account of monitoring results, legislative changes, outcomes of third-party consultations etc.

Following appointment, the contractor will be required to develop more specific Method Statements that are cognisant of the proposed construction activities, equipment and plant usage and environmental monitoring plan for the proposed development. This CEMP should not be considered a detailed Construction Method Statement as it would be the responsibility of the contractor, appointed to undertake the individual works, in association with Watfore Limited, to implement appropriate procedures and progress this documentation prior to commencement of construction.

This CEMP outlines the range of potential types of construction methods, plant and equipment which may be used by any contractor appointed to enable their effects to be assessed for the purposes of the planning authority's environmental impact assessment and appropriate assessment prior to determining whether to grant planning permission.

1.4 Structure

This CEMP is structured as follows:

- **Section 1** introduces the proposed development and outlines the purpose of the CEMP;
- **Section 2** describes in detail the proposed development;
- **Section 3** describes the construction strategy for the proposed development;
- **Section 4** sets out the framework and mechanisms through which environmental requirements would be managed;
- **Section 5** outlines the procedures to be employed during construction to manage environmental aspects;
- **Sections 6** and **7** describe in detail the measures to be implemented to minimise likely significant negative effects, as far as practicable, during the construction of the proposed development.

1.5 Updates to CEMP

The detailed CEMP is considered a 'live document' that will be reviewed and revised regularly as construction progresses. The process for update, review and approval of the CEMP must be documented in the detailed CEMP to ensure that all revisions can be easily understood, applied and updated.

The contractor is required to update the CEMP to ensure that it:

- Is in accordance with the mitigation measures specified in the EIAR and associated ecological reports and this CEMP;
- Is in accordance with any conditions that may be prescribed as part of the consent(s) for the proposed development;
- Aligns with those design and construction details described in the EIAR and associated ecological reports and ensures there is no material change in terms of significant effects on the environment;
- Where practicable the contractor should seek to identify opportunities for further reducing significant negative environmental effects and to implement best practice in as far as reasonably practicable, i.e., take every reasonable effort to reduce and prevent negative effects, while enhancing benefits; and
- Will have regard to the guidance contained in the handbook published by Construction Industry Research and Information Association (CIRIA)[1].

Further, the following plans, and any others considered relevant, will be incorporated into the CEMP:

- Construction Compound Management Plan;
- Construction Traffic Management Plan;
- Noise and Vibration Management Plan;
- Water Quality Management Plan;
- Dust Management Plan;
- Invasive Species Management Plan; and
- Emergency Incident Response Plan.

It is expected that amendments to the CEMP may be necessary to reflect inter alia changes in the project scope, contract scheduling, contractor appointments, environmental management policies, practices or regulations, and developments on the site. These reviews and updates are necessary to ensure that environmental performance is subject to continual improvement and that best practice is implemented throughout construction.

[1] CIRIA (2015) Environmental Good Practice on Site Guide, 4th Edition

2 The Proposed Development

2.1 Overview

Watfore Limited intend to apply to An Bord Pleanála (the Board) for permission for a Strategic Housing Development with a total application site area of c. 3.39 ha, on lands located at the former CMP Dairies site at Kinsale Road / Tramore Road, Cork. Refer to **Figure 1** for a site location map.

The site is located North of the Kinsale Road Roundabout and is bounded by Tramore Road to the north, Kinsale Road to the east, existing commercial developments to the south and the existing Musgrave Distribution Site to the west.

The existing topography of the site generally increases in elevation from approximately 6.0mOD (Malin) in the southern part of the site to 12.5mOD (Malin) in the northern part of the site.

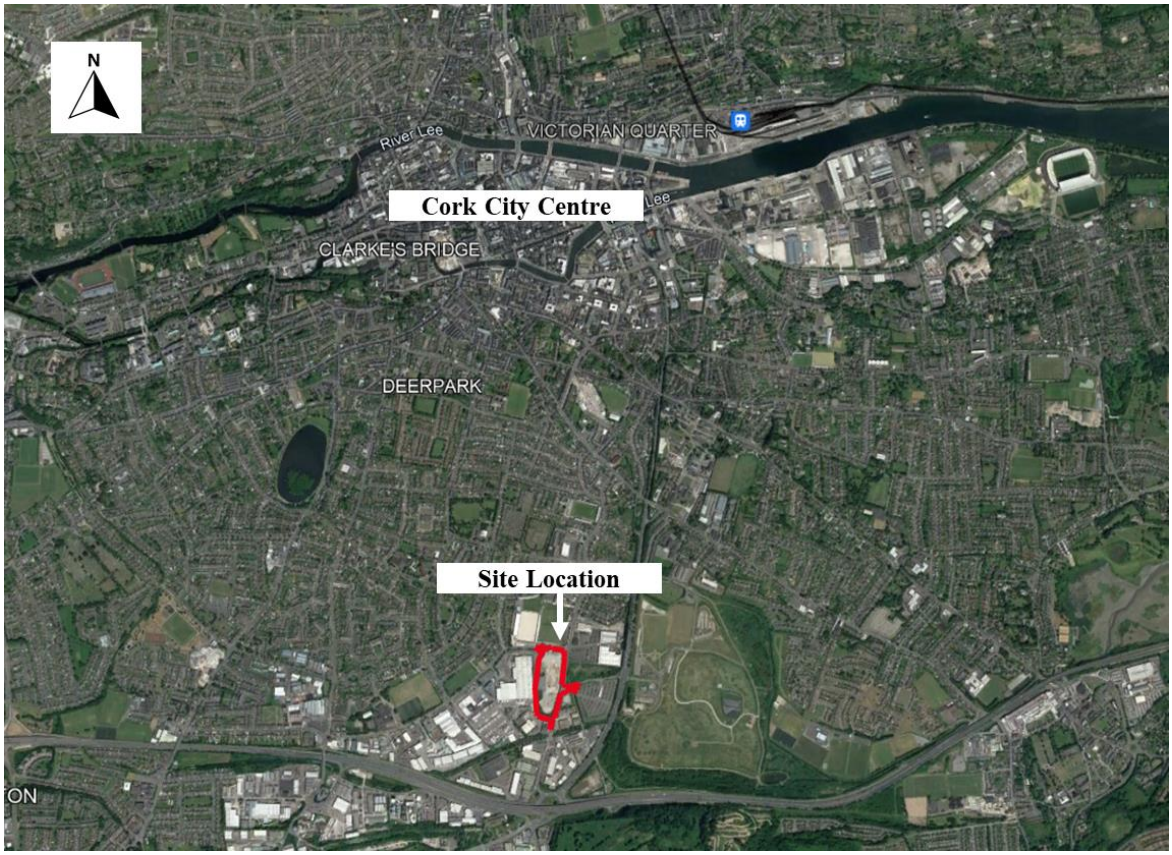

Figure 1: Site Location. Background Mapping: © Google Maps. Not to scale.

2.2 Elements

The proposed development will consist of a strategic housing development of 609 no. residential dwellings (561no. apartments and 48no. townhouse apartments, to include 189no. 1-bed dwellings; 338no. 2-bed dwellings; 48no. 3-bed dwellings; and 34no. 4-bed dwellings) and ancillary facilities arranged in 12no. buildings (Buildings B, C, E, F, G, H, I, J, L, M, and N and a standalone 100sq.m. coffee kiosk) varying in height from 1 to 15 floors over ground.

All of the dwellings proposed in Buildings E and F (257no. dwellings) will consist of Build To Rent apartments, and a 289sqm crèche with ancillary outdoor play area, a 547.5sqm community hub facility, a 550sqm gym, a 218sqm retail unit, and a 272sqm café at ground floor level.

The proposed development will also include: 209 no. shared car parking spaces (including EV charging points) provided on surface and within an undercroft carpark; 1,145 no. bicycle parking spaces provided in dedicated external and internal cycle stores/shelters; and 21no. motorcycle spaces.

The proposed total gross floor area above ground is 60,833.7m^2.

The proposed development will also include the provision of private, communal and public open space, including all balconies and terraces; internal roads and pathways; pedestrian access points; hard and soft landscaping and boundary treatments; waste storage; 5 no. ESB substations and 1no. ESB kiosk; plant, including rooftop solar PV panels; signage; new footpath and cycle lane along Kinsale Road; new access from Kinsale Road; an upgrade of the Kinsale Road/Mick Barry Road junction to facilitate improved pedestrian access to the Black Ash Park and Ride; an upgrade to the existing access from Tramore Road; a cycle lane on Tramore Road; public lighting; all site development works, including the demolition of existing hardstanding areas; and all drainage works, to include a new foul pumping station, and the diversion of the existing combined sewer and manhole, at the c. 3.39ha former CMP Dairies site, known as Creamfields, at Kinsale Road and Tramore Road, Cork.

Extracts of the site plan for Level 0 and Level 1 of the proposed development are presented in **Figure 2** and **Figure 3.**

Table 1: Approximate Building Gross Floor Space

Building	Internal Gross Floor Area (m^2)
Building B	**7790**
Building C	**10575**
Building J	**6960**
Duplex Building G	**1094**
Duplex Building H	**874**
Building I	**874**
Building L	**2062**
Duplex Building M	**679**
Building N	**2843**
Building E	**13045**
Building F	**13885**
Total	**60681**

2.3 Project Participants

Table 2: List of Main Project Participants

Role	
Client	Watfore Limited
Architect	Reddy Architecture & Urbanism
Civil & Structural Engineers	Arup
Contractor	To Be Confirmed
Mechanical and Electrical Engineers	EDC Engineering
Project Manager	KSNPM
Quantity Surveyor	KSN
PSDP	KSNPM
Fire Consultant	Daire Byrne & Associates
Landscape Architect	Cunnane Stratton Reynolds
Planning Consultant	Coakley O'Neill
Property Consultants	Savills
Traffic & Transport Engineers	Arup
Environmental Consultants	Arup
Daylight & Sunlight Assessment	Arup
Wind Microclimate Assessment	B Fluid

Figure 2: Extract of Site Layout – Level 0. Source: Reddy Architecture + Urbanism. Not to scale.

Figure 3: Extract of Site Layout – Level 1. Source: Reddy Architecture + Urbanism. Not to scale.

3 Construction Strategy

3.1 Duration and Phasing

The proposed development is anticipated to be constructed in five sequential phases; four main construction phases preceded by a site enabling works phase. It is intended that the construction of the proposed development will be completed together with a Primary Care Centre development, located in the north-western part of the site.

In summary, the proposed development consists of the following components and is described further on the relevant drawings and architectural reports that accompany this application:

- **Site Enabling Works (2-4 months)**
- **Phase 1 Construction (circa. 2.5-3.5 years):**
    - Primary Care Centre Including Retail – Pharmacy (this is the subject of a separate planning application)
    - Retail (Gym, Creche, and Café)
    - Town Square
    - Court Garden
    - Coffee Kiosk
    - Residential Blocks E & F
    - New entrance from Kinsale Road
    - Ancillary Site Development Works (Including underground services, pavement upgrade works, central avenue site works, surface car parking, landscape works, etc.)
- **Phase 2 Construction (circa. 2-2.5 years):**
    - Residential Blocks G & C
    - Ancillary Site Works
- **Phase 3 Construction (circa. 2.5-3.5 years):**
    - Residential Blocks J, H, B
    - Ancillary Site Development Works (Including underground services, pavement upgrade works, landscape works – Meadow 2 etc.)
- **Phase 4 Construction (circa. 1.5-2.5 years):**
    - Residential Blocks I, L, M & N

- Ancillary Site Development Works (Including underground services, pavement upgrade works, landscape works – Meadow 1 etc.)

- **Project Completions (circa. 3-6 months)**

It is assumed construction will commence within 4-8 months of a final planning grant. This assumption relies on tender strategy, design progression and market factors, etc.

The specifics of the durations and sequence of works will be further informed by the appointed contractor during the tender period in due course.

The phasing plan is presented in **Figure 4** and **Figure 5**.

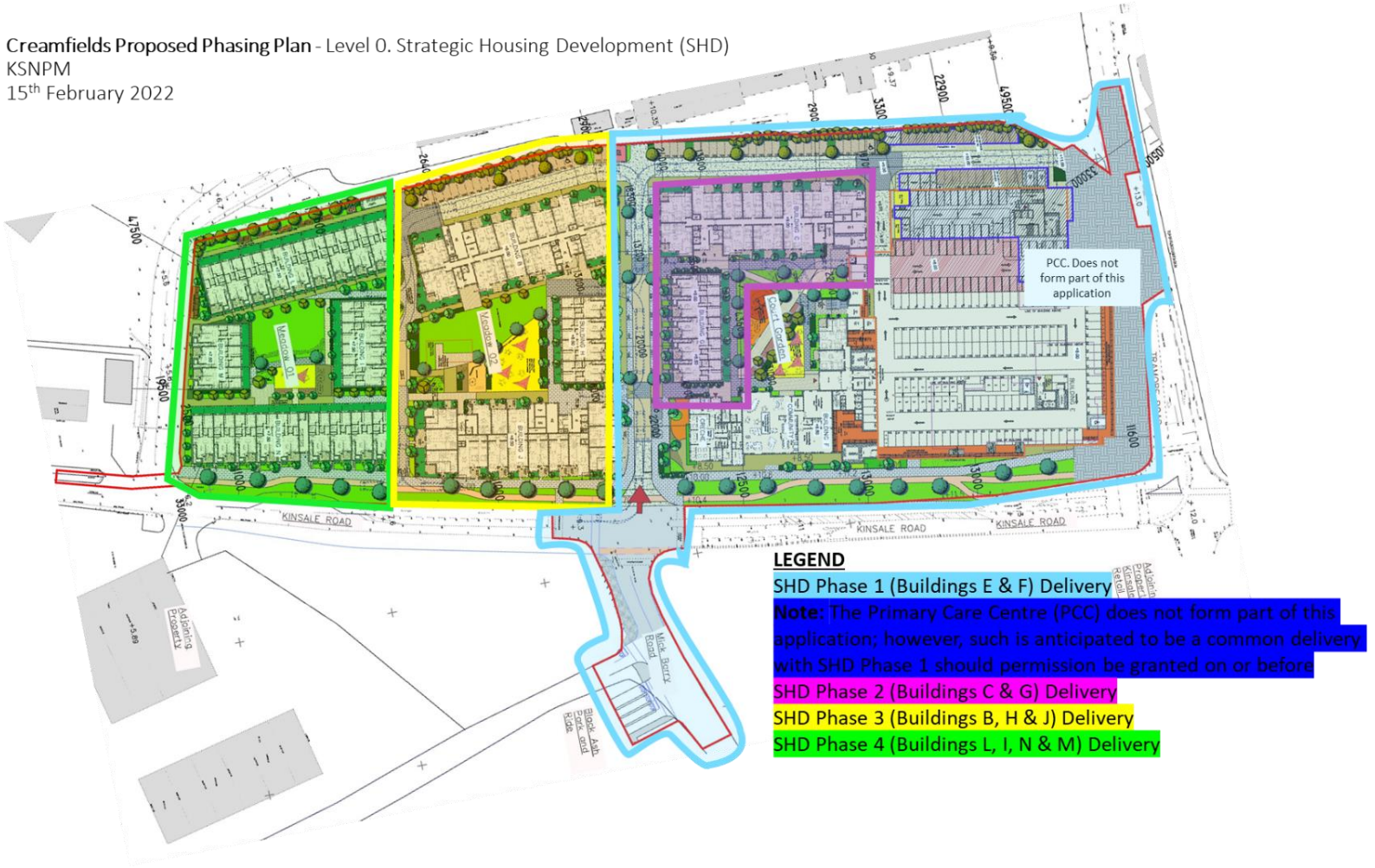

Figure 4: Phasing Plan – Level 0. Not to scale.

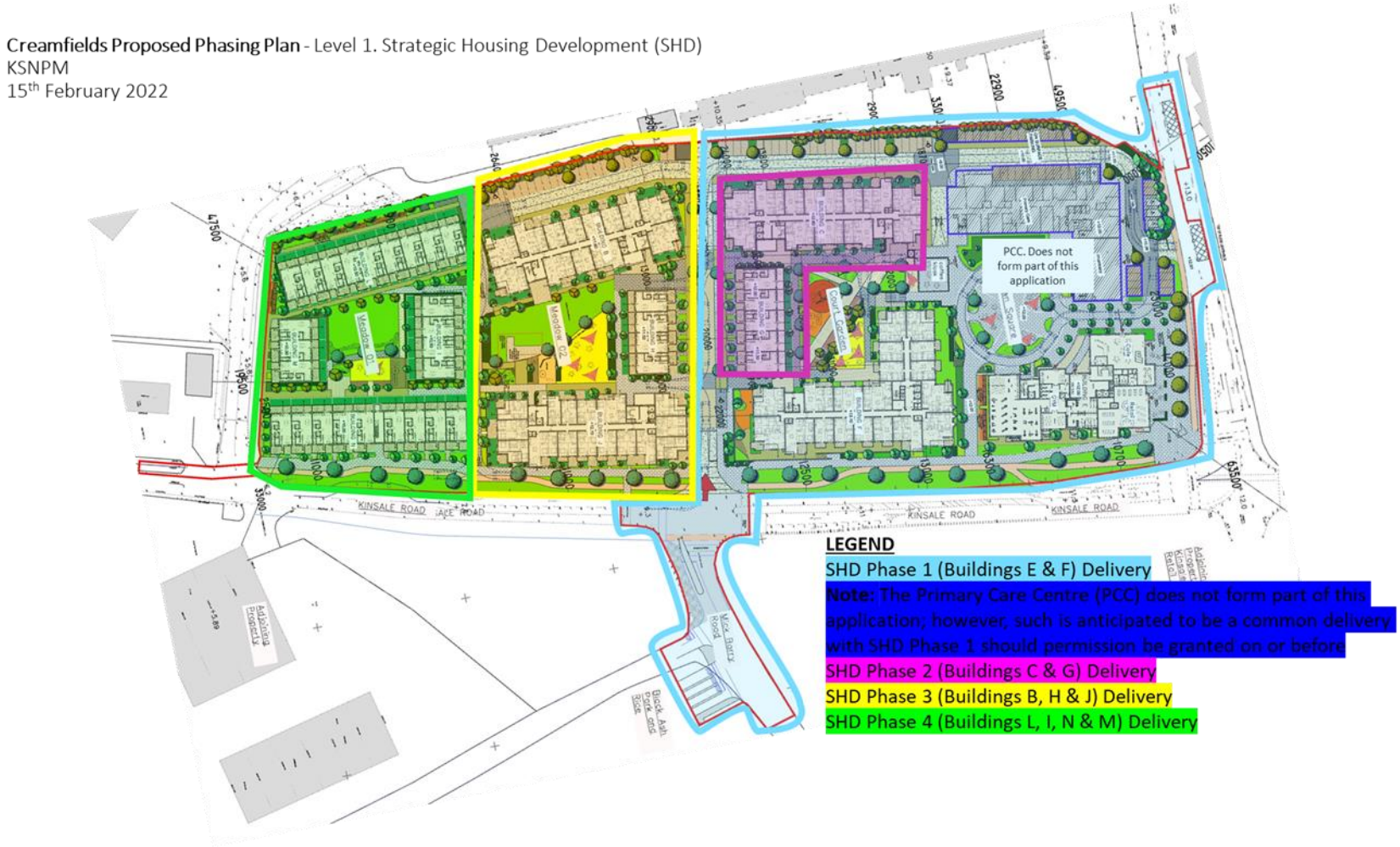

Figure 5: Phasing Plan – Level 1. Not to scale.

3.2 Site Preparation and Enabling Works

The site preparation and enabling works, to be carried out by the appointed Contractor, will include erecting perimeter hoardings around the site, construction of the site compound and storage areas, forming site access and egress points, enacting the traffic management plan, providing site security and erecting cranes.

3.3 Demolition and Site Clearance

There are no buildings or structures currently present on the site, however there are concrete ground floor slabs and foundations for previously demolished structures within the site.

The proposed development includes the demolition and removal of the existing concrete ground floor slabs and foundations along with carpark surfacing. The approximate area of hardstanding to be removed is 18,308m^2 and includes the areas is outlined in **Figure 6** below.

Figure 6: Extract from Google Maps marked up to show existing concrete ground slabs and foundations | red: concrete floor slabs/ foundations, blue: carpark | not to scale

3.3.1 Pre-Demolition and Condition Surveys

A pre-demolition survey will be undertaken to provide sufficient information for the Main Contractor to prepare a detailed Demolition Management Plan (DMP), giving methodology and work sequences for the demolition phase.

This survey will inform the Design Team and Specialist Demolition Contractor of the ground floor slab and foundation construction so that measures can be put in place to ensure the safe demolition. This information will also assist in the preparation of a detailed Waste Management Plan for these waste streams.

A Construction and Demolition Resource and Waste Management Plan has been prepared as part of this planning application package and is included in **Appendix 5.2** of the EIAR. In this Plan, it is estimated that approximately 45,920m^3 of excavated material will be generated from the proposed development. Where possible clean, non-hazardous or inert excavation material will be re-used. The Contractor will endeavour to send all other remaining materials to authorised facilities for beneficial re-use, recovery or recycling so far as is reasonably practicable, in accordance with the provisions of the Waste Management Act, 1996 as amended.

This pre-demolition survey will be accompanied by a detailed risk assessment to identify potential hazards, and necessary mitigation measures for safe demolition.

Dilapidation surveys will also be carried out as required in all adjoining properties, roads and footpaths and issued to the property owners and local authorities in advance of the demolition and excavation works.

3.3.2 Asbestos Audit

Asbestos Containing Materials (ACMs) were identified in a previous asbestos survey and during standard geo environmental sampling undertaken as part of site investigation works at the proposed development site. A formal asbestos audit will therefore be undertaken prior to any demolition and excavation works. If ACM is encountered during construction, a risk assessment will be carried out to determine its suitability for re-use. If re-use within the site is not possible, contaminated material will be removed offsite to an appropriately licenced facility.

3.3.3 Structural Demolition

The structural demolition scope for the development will be minimal as the previous buildings that were present onsite have already been demolished. The demolition works to be undertaken as part of the development comprise the demolition and removal of the existing concrete ground floor slabs and associated foundations.

All demolition works will be carried out with due consideration toward mitigating noise and vibration pollution to minimise disturbance to the surrounding area. Dust suppression systems, such as misters, will be used during the demolition operations, keeping air pollution to a minimum.

To comply fully with works specification, planning conditions, environmental and safety requirements and adhering to demolition best practice, the works will be undertaken by adopting a methodology that combines the following operations:

- Saw cutting and lifting:
  This method will be adopted in sensitive locations.

- Mini excavators and breakers:
  The use of mini excavators and breakers may be adopted in constricted locations around the site where larger machinery may not be appropriate.
- Hydraulic concrete breaking equipment:
  The use of breaking equipment will be employed to break out ground floor slabs and any external areas of hard-standing, such as car parking areas. The breaker will typically be fitted to a 20T excavator but there may be some hand-held tools utilised in isolated or constricted locations.

3.4 Services and Utilities Requirements

3.4.1 Existing Services

There is an existing Irish Water 600mm diameter combined sewer which enters the site from the west and exits to the east before ultimately draining away from the site in a north-easterly direction. There are existing utilities on site that previously served the former CMP site (e.g. water, power, telecoms). These are assumed to be redundant but will be reviewed by the contractor in advance of any works.

There is existing potable watermain infrastructure located adjacent to the site within Kinsale Road (150mm diameter) and Tramore Road (200 mm diameter).

It is understood there are two surface water outfalls into the Tramore River to the south of the site. These are understood to take surface water runoff from the roads and buildings to the north.

3.4.2 Watermain

It is proposed to provide a new connection from the existing watermain in Kinsale Road to serve the site.

A bulk water meter will be provided downstream of the connection point. Downstream of the bulk water meter a series of ring mains will be provided on site from which each development block will be fed.

The assumed water metering strategy for the individual buildings within the site is described in **Figure 7** (and drawing 252666-ARUP-ZZ-XX-DR-C-3000 included with the planning application) and will be confirmed and agreed with Irish Water during detailed design. It is assumed that booster pumping will be required for high rise buildings on site.

External fire hydrants will be connected to the ring mains on site. A pre-connection enquiry has been submitted to Irish Water and they have issued a Confirmation of Feasibility Letter confirming they have capacity within their network to serve the development without upgrade. Subsequent to this, the planning design drawings were shared with Irish Water and they have issued a Statement of Design Acceptance.

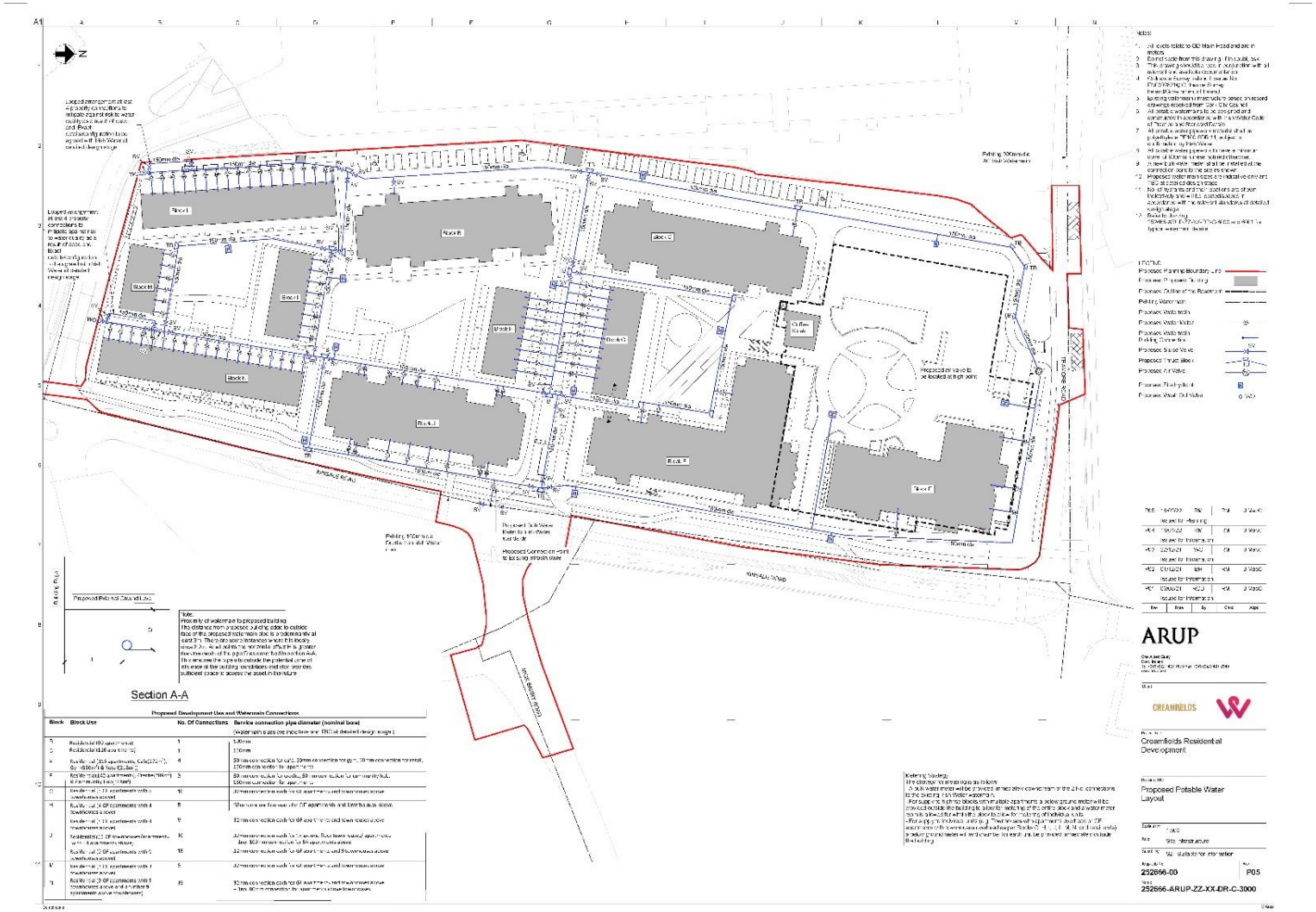

Figure 7: Watermain Layout. Not to scale.

3.4.3 Foul Sewer

It is proposed to construct a dedicated below ground foul network to collect and convey all foul water generated by the development. Foul water flows generated on site are expected to be as follows.

As described in **Section 3.4.1** there is an existing 600mm diameter combined sewer crossing the site from west to east. This sewer will be diverted to accommodate the proposed buildings/site layout. The sewer will be diverted beneath a proposed site road and the route will take into account any Irish Water wayleave requirements.

It is proposed to discharge all foul water from Block E in the northern section of the site via gravity to the diverted combined sewer.

The remaining buildings to the south cannot discharge to the combined sewer via gravity due to the topography of the site. As a result, it is proposed to discharge foul runoff from most of the site to a centrally located Pumping Station (PS). A rising main from the PS will discharge to the combined sewer to the north. Refer to **Figure 8** and drawing 252666-ARUP-ZZ-XX-DR-C-2000 included with this planning application.

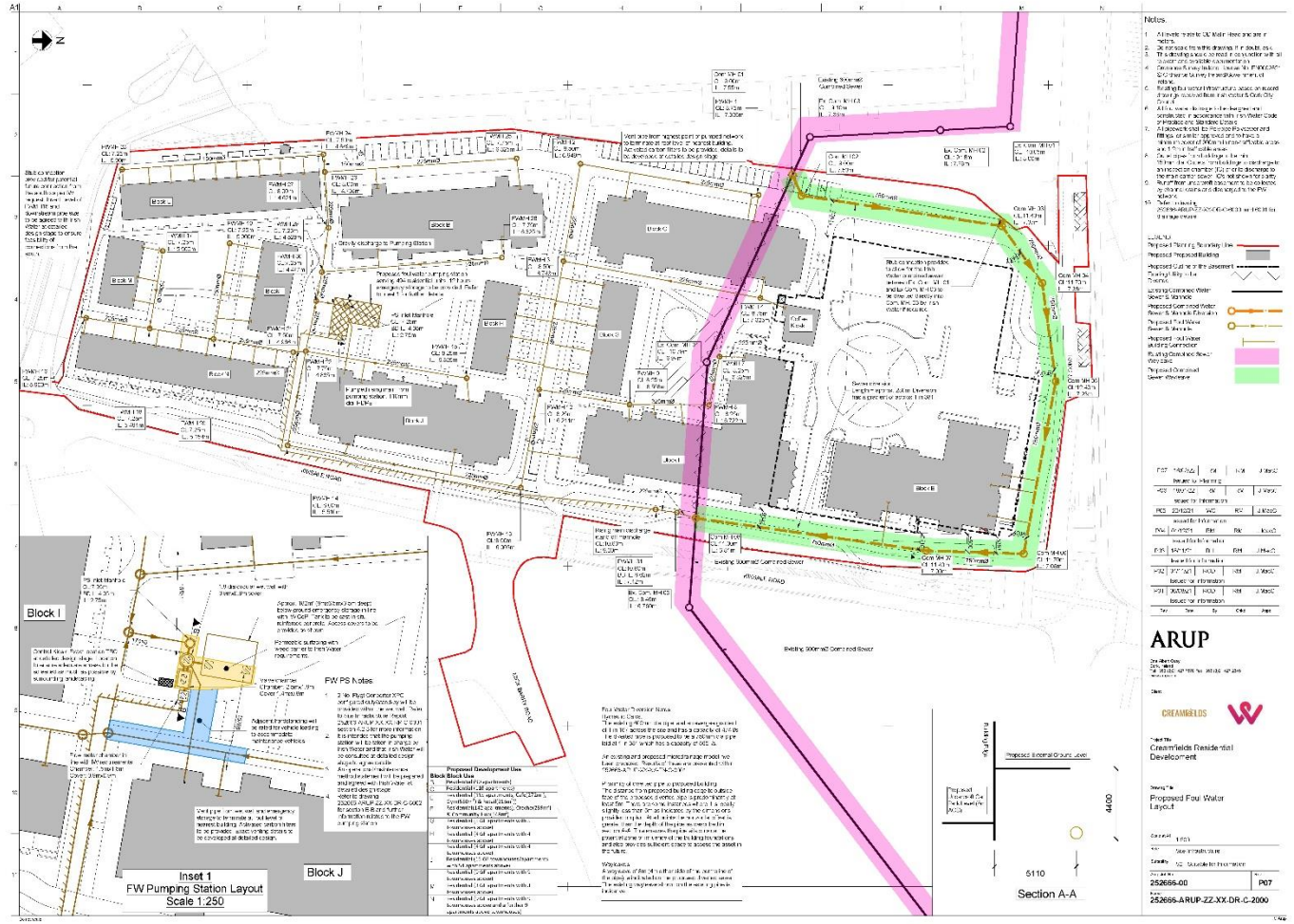

Figure 8: Foul Sewer Layout. Not to scale.

3.5 Construction of New Buildings

3.5.1 Podium Structure Works

The proposed development requires the construction of one single storey podium structure to serve Block E and the public realm space. The podium structure will be under the footprint of Block E and will support podium landscaped courtyards and open spaces between these buildings. Beneath the podium structure, car and bike parking will be provided along with waste storage rooms and plantrooms.

3.5.2 Earthworks

During the construction of the foundations, site services and attenuation tanks it is estimated that approximately 45,920m^3 of excavated material will be generated from the proposed development. It is noted that there is likely to be asbestos contamination present in soils on site.

Once the foundations are constructed and contaminated soil removed, fill materials will be required to build up the site to the required levels, in addition further fill will be required for under hard and soft landscaping areas.

Although the soil to be excavated may contain contaminants it may also have suitable engineering properties that could make it useful as a fill material. A detailed analysis will be undertaken to consider the potential options for reuse of the soil. Should this highlight potential options and subject to any legal requirements such as environmental licensing, the contaminated soil will be treated and retained on site for re-use where possible. Suitable potential re-use options include under hard and soft landscaping areas such as public open spaces. This is likely to comprise a sustainable solution but will likely require some offsite disposal for excess soils.

If it is required to export contaminated soil offsite for disposal (with or without treatment) it is likely to be classified as either non-hazardous waste with trace level of asbestos or hazardous waste. In this case, it will likely be exported and disposed of outside of Ireland.

Samples from the ground investigation will be compared to the limits defined in the EU Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II to Directive 1999/31/EC, referred to as the Waste Acceptance Criteria (WAC). In addition, the results will be compared to the contents of the EPA Hazardous Waste Classification Paper Tool (version WM3 V1) using the online tool HazWaste Online to determine if the materials are considered hazardous.

The assessment criteria used to categorise the soils are based on Irish and European standard criteria. The operators of landfills may use their own discretion to set their own limits for materials.

A Construction and Demolition Resource and Waste Management Plan has been prepared for the proposed development which details the management of exported

soils from site. This document will be further updated by the contractor prior to construction and is included as part of this planning application package.

3.5.3 Foundations

The design of the foundations will be subject to detailed design at a later stage but initial indications from the site investigation carried out would suggest that a piled / raft slab solution may be the preferred foundation type. If piling is deemed the preferred solution these would be either Continuous Flight Auger or rotary cored piles to minimise noise and vibration.

3.5.4 Ground Floor slab and Substructure

In general, it is envisaged that the ground floor of each building will comprise reinforced concrete suspended slabs, spanning onto the pile caps. The exact depths of excavation required for the ground floor and foundation structures varies, depending on existing ground level, however it will generally be in the region of 1-2.5m below existing ground level.

Block E will be constructed on top of a podium structure as described in **Section 3.5.5.**

3.5.5 Podium Slab and Transfer Structures

The podium structure comprising a reinforced concrete flat slab will be constructed beneath Block E including the hard and soft landscaped areas in this part of the development. The outer walls and the internal core walls and columns will be constructed from in-situ concrete. The western, northern and eastern walls of the podium bounding the Tramore Road and Kinsale Road will be retaining structures designed as propped cantilevers and therefore will require the podium floor slab to be cast and cured prior to backfilling.

Due to varying structural grids between residential and commercial/ car parking, a transfer structure will be required at Level 01 of Block E. It is intended that this is to consist of a thickened reinforced concrete flat slab designed to support the loading from the residential block over.

3.5.6 Superstructure Works

It is envisaged that the proposed buildings are all to be a combination of in-situ and / or precast concrete construction.

Stability will be achieved through central reinforced concrete lift and stair cores in each building, extending to ground floor level, and diaphragm action of the slabs.

The concrete framing for all buildings will be constructed on a sequential basis with concrete pumping envisaged. The floor slabs will be supported using temporary props as necessary, to ensure the stability of the structure at all times during the construction process. Concrete will be delivered to site using a ‘just-in-time’ approach. This will help mitigate against traffic congestion as well as reducing the amount of space required for material storage on site.

3.5.7 Façade and Fit Out Works

Once the building structure has been well advanced, the completion of the facades and the installation of mechanical and electrical services and building finishes will commence.

It is proposed that fit-out, handover and occupation of the buildings will be carried out on a phased basis. The proposed phasing may be subject to change as the project progresses.

Final drainage and utility connections will be completed towards the end of the construction programme for each phase.

3.5.8 Landscaping Works

Once the building fit-out, finishes and underground utility connections are substantially complete at the end of each construction phase, the completion of hard and soft landscaping of the Level 01 Podium areas and the Level 00 ground level areas will commence, including all ties-ins to existing and surrounding roadways, paths and cycle lanes.

3.5.9 Adjacent Proposed Public Infrastructure Development

The following confirmed and possible future adjacent public infrastructure projects may be constructed during one or more of the construction phases.

- BusConnects Cork

The appointed Contractor will liaise with Cork City Council and any contractors appointed for the above works as required, to ensure coordination of construction works in the area.

4 Environmental Management Framework

4.1 Overview

The contract(s) awarded for the proposed development will include a requirement for the contractor to comply with relevant documentation including the EIAR, the associated reports, planning (and other statutory consent) conditions received and this CEMP.

As part of the environmental management framework contractors will be required to comply with all relevant environmental legislation and take account of published standards, accepted industry practice, national guidelines and codes of practice appropriate to the proposed development. Due regard should be given to the guidance and advice given by ISO14001 standard[2] and Construction Industry Research and Information Association (CIRIA) guidance[3,4,5].

The contractor will be required to develop and implement an Environmental Management System (EMS) that follows the principles of ISO14001. Further, the contractor's EMS should include an environmental policy, operational, monitoring and auditing procedures to ensure compliance with all environmental requirements and to monitor compliance with environmental legislation and the environmental management provisions outlined in the relevant documentation.

4.2 Responsibilities

4.2.1 Employer

Watfore Limited will be the employer responsible for ensuring that competent parties are appointed to undertake construction and that sufficient resources are made available to facilitate the appropriate management of risks to the environment.

4.2.2 Employer's Representative

Watfore Limited and/or the Employers Representative (ER) appointed by Watfore Limited will be responsible for monitoring compliance with the CEMP. The ER may be required to appoint temporary or permanent specialists with appropriate skills and experience as required to implement on site procedures and monitor construction on behalf of the employer, i.e. competent experts in biodiversity, noise, vibration, dust, waste, land, soils, contamination and/or water.

[2] ISO (2015) ISO 14001:2015 Environmental management systems -- Requirements with guidance for use
[3] CIRIA (2015) Environmental Good Practice on Site C692 (fourth edition) (C762)
[4] CIRIA (2015) Coastal and marine environmental site guide (second edition) (C744)
[5] CIRIA (2002) Brownfield development sites: ground-related risks for buildings (X263)

4.2.3 The Contractor

The contractor(s) appointed will be responsible for the organisation, direction and execution of environmental related activities during the detailed design and construction of the proposed development. The contractor is required to undertake all activities in accordance with the relevant environmental requirements including the consent documentation and other regulatory and contractual requirements.

4.2.4 Site Manager

A Site Manager will be appointed by the contractor to oversee the day-to-day management of working areas within the site and ensure that effective, safe, planned construction activities are delivered on an ongoing basis to the highest standards. The Site Manager will be a suitably qualified, competent and experienced professional that will oversee site logistics, communicate regularly with construction staff, accommodate project-specific inductions for staff on site and ensure that all work is compliant with the relevant design standards and health and safety legislation.

4.2.5 Environmental Manager

An Environmental Manager will be appointed by the contractor to ensure that the CEMP is effectively implemented. The Environmental Manager will be a suitably qualified, competent and experienced professional that would perform the necessary tasks, review environmental procedures and consult with the members of the construction team and stakeholders as requited. The Environmental Manager will be responsible for:

- Preparing, maintaining and implementing the CEMP;
- Establishing, implementing, and maintaining the EMS in line with ISO 14001;
- Conducting regular environmental inspections and audits as specified in the contract and checking adherence to the CEMP;
- Ensuring that construction occurs in accordance with the relevant environmental requirements and that such compliance is adequately recorded and documented;
- Completing a site inspection and compiling an environmental compliance as agreed and specified in the CEMP;
- Attending site and stakeholder meetings as required;
- Keeping up-to-date with relevant environmental best practice and legislative changes;
- Liaising with the relevant staff to prepare Method Statements and relevant plans for all activities where there is a risk of environmental damage;
- Having a detailed level of knowledge on all aspects of environmental information associated with the proposed development;

- Ensuring all personnel have undertaken adequate environmental inductions, awareness briefings and training (including subcontractors);
- Dealing with environmental complaints; and
- Managing and responding to environmental incidents and ensuring that all incidents are recorded and reported in an appropriate manner.

4.2.6 Liaison Manager

A liaison manager will be appointed and will be responsible for managing such tasks as the following:

- Briefing residents/ neighbours on progress and issues as necessary;
- Liaison with Cork City Council and emergency services as appropriate; and
- Liaison with local Gardaí, particularly in relation to traffic movements and permits where necessary.

Contact details for the liaison manager will be posted on all construction site notice boards and on any other information or correspondence, which may be distributed from time to time.

4.2.7 Environmental Specialists engaged by the Contractor

To fulfil its obligations under the CEMP and to support its Environmental Manager, the contractor will be responsible for engaging suitably qualified and experienced professionals including where necessary the following (i.e. depending on the scope of the contract) competent experts:

- Project archaeologist;
- Project ecologist;
- Noise and vibration specialist;
- Air quality and dust specialist;
- Land, soils and contamination specialist(s); and
- Water specialist.

4.3 Communication Procedures

4.3.1 Community and Stakeholder Engagement

The contractor will take all reasonable steps to engage with stakeholders in the local community, focusing on those who may be affected by the construction works including residents, businesses, community resources and specific vulnerable groups.

Communication with the local community, Cork City Council and other relevant stakeholders shall be undertaken at an appropriate level and frequency throughout

construction. Where communications are related to environmental issues the Environmental Manager will be informed and engaged with, as appropriate.

4.3.1.1 Community Liaison

Watfore Limited recognises the importance of effective community liaison in order to reduce nuisance to residents, to ensure public safety and welfare and to help ensure the smooth running of construction activities. Important issues in ensuring good relations are:

- Providing information for the public during the construction phase, (particularly nearby sensitive receptors);
- Providing the correct points of contact and being responsive; and
- Ensuring good housekeeping in all aspects of the operations.

A ‘good neighbour’ policy will be implemented, as far as possible. Key aspects of this policy include:

- Early implementation of the policy i.e. from the commencement of construction;
- Reduction of nuisance factors;
- Maintaining access to neighbouring premises and businesses;
- Clear and concise information; and
- Undertaking timely liaison with stakeholders.

4.3.2 Advance Notice of Works

The contractor will ensure that local residents, businesses, occupiers, general users of the area and stakeholders are informed in advance of construction activities that may affect them. Relevant obligations and procedures in relation to advance notice of works will be identified in the updated CEMP.

All notifications will detail the nature, estimated duration and working hours. All notifications will include a project-specific contact number to which any enquires can be directed. The contractor will be responsible for preparing and issuing the notifications subject to the relevant approval and consents.

Watfore Limited and the contractor in consultation with Cork City Council and statutory stakeholders will decide whether to arrange any further targeted consultation with the public or relevant stakeholders in advance of specific construction activities on a local basis.

4.3.3 Emergency Contacts

An emergency contact list will be established and made available to all construction staff employed. The contact list shall be displayed prominently on site as well as at suitable locations where construction activity is being carried out around working areas. The contact list will include key environmental representatives that may need to be contacted in the event of an incident.

4.3.4 Enquiries and Complaints

The contractor will establish a process for handling all enquiries including complaints. All enquiries will be recorded and a log will be maintained to include details of the response and action taken. This will be available upon request for inspection to Cork City Council. All enquiries, whether a query or a complaint, will be dealt with in a timely manner.

The Environmental Manager will be immediately informed of any environmental-related issues that have been raised. Where appropriate, the Environmental Manager would be responsible for informing Cork City Council, relevant stakeholders and statutory bodies.

5 Environmental Management Procedures

5.1 Training, Awareness and Competence

The contractor (and their subcontractors) will be selected with due consideration of relevant qualifications and experience. The contractor will be required to employ construction staff with appropriate skills, qualifications and experience appropriate to the needs of the works to be carried out during construction.

A site induction will be provided to all construction staff before they commence work on site. Where appropriate, the contractor will identify specific training needs for the construction workforce and will ensure that appropriate training requirements are fulfilled.

The contractor will establish an Environmental Training and Awareness Programme and ensure that all personnel receive adequate training prior to the commencement of construction activities. A baseline level of environmental awareness will be established through the site induction programme. Key environmental considerations and objectives will be incorporated into this induction. Specifically, site inductions will cover the following as a minimum:

- Introduction to the Environmental Manager;
- Description of the CEMP and consequences of non-compliance;
- The requirements of due diligence and duty of care;
- Overview of conditions of consents, permits and licences;
- Requirements associated with community engagement and stakeholder consultation;
- Identification of environmental constraints and notable features within the site; and
- Procedures associated with incident notification and reporting including procedures for dealing with damage to the environment.

Nobody will work on site without first receiving environmental induction. Signed records of environmental training will be established, maintained and made available to the Employers Representative.

Site briefings and talks would be carried out on a regular basis to ensure that construction staff have an adequate level of knowledge on environmental topics and community relations and can effectively follow environmental control procedures throughout construction.

5.2 Meetings

Watfore Limited and/or the Employer's Representative will arrange regular meetings to discuss environmental matters and ensure effective coordination to be attended by:

- Watfore Limited;

- The Employer's Representative;
- Contractor (including Site Manager);
- Environmental Manager; and
- Environmental Specialists – engaged by either Watfore Limited and/or the contractor.

The Environmental Manager will be responsible for arranging and holding monthly meetings and site walk overs with the Employer's Representative. The Environmental Manager would develop and distribute minutes of the monthly meetings and distribute them accordingly.

5.3 Monitoring, Inspections and Audits

For the duration of the contract(s), the environmental performance of the contractor will be monitored through site inspections and audits. The programme for monitoring, inspections and audits shall be specified in the contract and it is likely to be a combination of internal inspections and independent external audits that may be either random or routine.

Records of all inspections carried out will be recorded on standard forms and all actions should be closed out in a reasonable time. The updated CEMP will include further details of inspection procedures.

5.3.1 Monitoring

Mitigation and monitoring will be carried out in accordance with the requirements of the EIAR and associated ecological reports so that construction activities are undertaken in a manner that does not give rise to significant negative effects. Suitable monitoring programmes will need to be developed, implemented, documented, and assessed.

The results of all environmental monitoring activities would be reviewed by the Environmental Manager on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented as necessary. The contractor will be required to inform the Employer's Representative of any continuous exceedances of criteria.

5.3.2 Inspections

Routine inspections of construction activities will be carried out by the Environmental Manager daily to ensure all necessary environmental measures relevant to the construction activities are being effectively implemented by construction staff, ensuring legal and contractual conformity.

More detailed inspections would be undertaken by the Environmental Manager on a weekly basis.

The weekly inspections would be appropriately documented by the Environmental Manager and copies of these records and any action required to be undertaken should be made available to the Employers Representative.

Each month one of the weekly inspections will include a review of environmental documentation and records. The monthly inspection will be recorded on a standard form and reported to the Employers Representative within five days of the inspection taking place. This standard form will address the following as a minimum:

- Summary of compliance/non-compliance with the CEMP;
- Results and interpretation of the monitoring programme;
- Key issues noted in inspections and/or audits;
- Summary record of non-conformities, incidents and corrective actions;
- Summary of environmental complaints and queries received in relation to environmental matters; and
- Summary record of environmental training undertaken by staff.

5.3.3 Audits

Watfore Limited will arrange for independent environmental audits to be carried out by a third-party during construction. External audits provide the opportunity for an independent auditor to advise on compliance with applicable environmental regulatory requirements, the efficacy of the environmental management approaches used, and recommendations for reducing identified environmental risks (if considered appropriate).

Further, regulatory and statutory bodies may undertake site visits to monitor compliance with legislative and regulatory requirements. These site visits may occur randomly throughout the construction period. The contractor will facilitate these visits and the Environmental Manager will be available to provide information as required and deal with any issues that may arise during, or as a result of, these visits.

Planned and documented audits aimed at evaluating the conformance of the EMS would also be carried out by the Environmental Manager. The Environmental Manager will establish a schedule for internal audits and this inspection calendar will be made available to the Employer’s Representative. These environmental audits will be scheduled at least once every three months.

Standard forms for reporting and audit items will be prepared and will include but not be limited to the following activities:

- Review of environmental documentation to establish if relevant requirements are being achieved and if continual improvement is occurring;
- Site inspection and interviews with onsite personnel; and
- Reporting with recommendations.

For any environmental nonconformities found, the auditor will prepare a Corrective Actions Report to describe and record the findings of the non-conformance. The verification of previous Corrective Actions Reports should be also recorded.

Upon completion of an audit, the auditor will review all Corrective Actions Reports and prepares an Audit Report to summarise:

- Corrective action requests raised;
- Previous corrective action requests closed; and
- Observations made during the audit.

The Environmental Manager will be entitled to participate in all audits. Notwithstanding this, the Employers Representative shall produce and provide the contractor with a copy of each audit report within five working days of the audit. Each audit report will detail the findings from the auditor, specify non-conformances identified and outline the proposed corrective action.

5.4 Incident Response

5.4.1 Corrective Actions

5.4.1.1 Overview

Corrective actions are measures to be implemented to rectify any non-conformances (i.e. exceedance of criteria or targets) identified during monitoring, inspections and/or audits.

In the first instance, an investigation should be undertaken by the Environmental Manager to identify the cause of any non-conformances. Appropriate remedial measures shall be identified and implemented as soon as practicable to prevent further exceedances. If necessary, the appropriate statutory authority and stakeholders will be notified.

Where new or amended measures are proposed, the relevant CEMP will be updated accordingly by the Environmental Manager and the Employer's Representative should be informed at the earliest opportunity.

5.4.1.2 Corrective Action Reports

As previously mentioned, a Corrective Actions Report is prepared on foot of any non-conformances identified during environmental monitoring, inspections and/or audits on site. The Corrective Actions Report will describe in detail the cause and effect of a non-conformance on site and describe the recommended corrective action that is required to remedy it.

An appropriate timeline for closing out the corrective actions will be identified by the contractor as well as arrangements for the Environmental Manager verifying the Corrective Actions Report and informing appropriate authorities and stakeholders in a timely manner.

5.4.2 Emergency Incidents

5.4.2.1 Overview

Emergency incidents are those occurrences that give rise to significant negative environmental effects including but not limited to the following:

- Any malfunction of any mitigation measure and/or environmental protection system;
- Any emission that does not comply with the requirements of the contract and relevant licences;
- Any circumstance with the potential for environmental pollution; or
- Any emergency that may give rise to environmental effects (e.g. significant spillages or fire outbreak).

As discussed in **Section 4.3.3** an emergency contact list will be established and made available to all construction staff employed. The contact list shall be displayed prominently on site as well as at suitable locations where construction activity is being carried out around working areas. The contact list will include key environmental representatives that may need to be contacted in the event of an incident.

5.4.2.2 Spill Control Measures

Every effort will be made to prevent pollution incidents associated with spills during the construction of the proposed development. The risk of oil/fuel spillages will exist on the site and any such incidents will require an emergency response procedure. Given the scale and extent of the proposed development, contractors will carry spill kit materials in their cabins.

The following steps provide the procedure to be followed in the event of an oil/fuel spill occurring on site:

- Identify and stop the source of the spill and alert people working in the vicinity;
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action;
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident;
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill;
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses and/or sensitive habitats;
- If possible, clean up as much as possible using the spill control materials;

- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited;
- The Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring; and
- The Environmental Manager will notify the appropriate stakeholders such as Cork City Council, National Parks and Wildlife Service, Department of Environment Climate and Communications, and Department of Housing, Local Government and Heritage and/or the EPA.

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be reported, recorded and investigated in accordance with the procedures described in **Section 4.4**.

5.4.2.3 Emergency Incident Response Plan

A set of standardised emergency response procedures will govern the management of emergency incidents. The contractor will be required to detail emergency incident response procedures and to develop an Emergency Incident Response Plan.

The Emergency Incident Response Plan will contain emergency phone numbers and the method of notifying local authorities, statutory authorities and stakeholders. Contact numbers for key personnel will also be included therein. Contractors will be required to adhere to and implement these procedures and ensure that all staff and personnel on site are familiar with the emergency arrangements.

In the case of work required in an emergency, or which if not completed would be unsafe or harmful to workers, the public or local environment, Cork City Council will be informed as soon as reasonably practicable of the reasons and likely duration. Examples may include where the ground needs stabilising if unexpected ground conditions are encountered, concrete pouring taking longer than anticipated due to delayed deliveries or equipment failure.

In the event of an emergency incident occurring, the contractor will be required to investigate and provide a report including the following, as a minimum:

- A description of the incident, including location, the type and quantity of contaminant and the likely receptor(s);
- Contributory causes;
- Negative effects;
- Measures implemented to mitigate adverse effects; and
- Any recommendations to reduce the risk of similar incidents occurring.

The contractor will consult with the relevant statutory authorities, stakeholders and relevant parties such as the Health and Safety Authority, the Fire Authority, the Ambulance Service, the EPA, utilities companies and Cork City Council when

preparing and developing response measures. Further, if any sensitive receptor is impacted, the appropriate environmental specialists will be informed and consulted with accordingly.

Any response measures will be incorporated into an updated Emergency Incident Response Plan that should be disseminated accordingly to construction staff, Watfore Limited and the Employer's Representative.

5.4.2.4 Emergency Access

The contractor will be required to maintain emergency access routes throughout construction and identify site access points for each working area.

This should be developed in partnership with the emergency services and documented as part of the Emergency Incident Response Plan.

5.4.3 Extreme Weather Events

The contractor will consider the effects of extreme weather events and related conditions during construction. The contractor will use a short to medium range weather forecasting service from Met Eireann or other approved meteorological data and weather forecast provider to inform short to medium term programme management, environmental control and mitigation measures.

All measures deemed necessary and appropriate to manage extreme weather events will be considered and will specifically cover training of personnel and prevention and monitoring arrangements for staff. As appropriate, method statements will also consider extreme weather events where risks have been identified, e.g., construction works adjacent to public roads and business premises.

5.4.4 Unexpected Discoveries

Appropriate procedures will be put in place in the event of encountering unexpected archaeological or cultural heritage assets or subsurface contamination during intrusive ground works.

Appropriate procedures will be developed as part of the CEMP and the Environmental Manager will ensure that specialists (e.g., archaeologist) are facilitated to ensure management in accordance with industry best practice and effective compliance with the relevant legislation. All unexpected discoveries will be reported to the appropriate authorities and documented in an appropriate manner.

5.5 Reporting

5.5.1 Environmental Compliance Report

The contractor will be required to submit a monthly report to the Employer's Representative for review and approval. The report shall address the following as a minimum:

- Summary of compliance with the CEMP including identification of any non-conformances;
- Interpretation of the results of ongoing monitoring;
- Detailed description of any issues and/or non-conformances identified during inspections and/or audits;
- Record of incidents and corrective actions (including Corrective Actions Reports as appropriate);
- Synopsis of environmental complaints received / queries raised by stakeholders; and
- Records of environmental training undertaken (as appropriate).

5.5.2 Incident Investigation Reports

The contractor will inform the Employer's Representative of all emergency incidents immediately and prepare an initial report within 24 hours setting out the details of the incident and cause(s) if known. The contractor will be required to complete the Environmental Incident Report and any further documentation requested by the Employer's Representative in relation to the incident within 7 days of the incident occurring. The Contractor will respond to all comments made by the ER on any incident.

The Environmental Incident Report will contain details of the incident including the location, known and suspected causes and weather conditions. It will define the scale and effects (short, medium, long term, temporary/permanent) as well as required corrective actions and mitigation/ remediation/compensation measures (as appropriate).

5.6 Environmental Records

Records of all environmental documentation will be maintained including monitoring, test results, method statements and plans. All records will be kept up to date and be made available for audits, inspections and periodical reporting. The Contractor will maintain the following environmental records (as a minimum) that will be made available for inspection to the Employer's Representative and the relevant authorities, if required:

- Management Plans;
- Records of environmental incidents;

- Monthly environmental reports;
- Records of environmental training;
- Register of environmental complaints;
- Corrective Action Reports;
- Environmental inspection and audit reports;
- All monitoring data;
- Waste and chemical inventories; and
- Health and Safety records.

6 General Requirements

6.1 Good Housekeeping

A "good housekeeping" policy will be employed at all times. This will include, but not necessarily be limited to, the following requirements:

- General maintenance of working areas and cleanliness of welfare facilities and storage areas;
- Provision of site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities etc;
- Maintain all plant, material and equipment required to complete the construction work in good order, clean, and tidy;
- Keep construction compound, access routes and designated parking areas free and clear of excess dirt, rubbish piles, scrap wood, etc. at all times;
- Details of site managers, contact numbers (including out of hours) and public information signs (including warning signs) will be provided at the boundaries of the working areas;
- Provision of adequate welfare facilities for site personnel;
- Installation of appropriate security, lighting, fencing and hoarding at each working area;
- Effective prevention of oil, grease or other objectionable matter being discharged from any working area;
- Provision of appropriate waste management at each working area and regular collections to be arranged;
- Excavated material generated during construction will be reused on site as far as practicable and surplus materials/soil, should it be deemed a by-product, shall be recovered or if considered to be waste material, disposed of to a suitably authorised waste facility site;
- Effective prevention of infestation from pests or vermin including arrangements for regular disposal of food and material attractive to pests will be implemented. If infestation occurs the contractor will take appropriate action to eliminate and prevent further occurrence;
- Maintenance of self-contained wheel washing facilities at the construction compound and other contaminant measures as required;
- No discharge of site runoff or water without agreement of the relevant authorities and an appropriate discharge licence, if relevant;
- Open fires will be prohibited at all times;
- The use of less intrusive noise alarms which meet the safety requirements, such as broadband reversing warnings, or proximity sensors to reduce the requirement for traditional reversing alarms;

- Maintenance of public rights of way, diversions and entry/exit areas around working areas for car users, pedestrians and cyclists where practicable and to achieve inclusive access; and
- Material handling and/or stockpiling of materials, where permitted, will be appropriately located to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods.

6.2 Working Hours

The timing of construction activities, core working hours and the rate of progress of construction works are a balance between efficiency of construction and minimising nuisance and significant effects.

The core construction working hours for the proposed development will be:

- 8am – 6pm: Monday to Friday; and
- 8am – 4pm: Saturday.

or as stipulated on the Planning Permission in due course.

The hours above correspond to the current construction programme.

Breaking equipment will be employed to break-out ground floor slabs and any areas of hardstanding, such as car parking areas. All rock breaking/fracturing activities will be undertaken during daytime hours. The removal of waste material off site by road and regular deliveries to site would be generally confined to daytime hours but outside of peak traffic hours (i.e. 10am to 4pm).

It may be necessary in exceptional circumstances to undertake certain activities outside of the core construction working hours. Any construction outside of the core construction working hours will be agreed in advance with Cork City Council and scheduling of such works will have regard to nearby sensitive receptors.

6.3 Security

Adequate security will be provided to prevent unauthorised entry to or exit from any working areas. The following measures may be used to prevent unauthorised access:

- Install CCTV and alarm systems where required;
- CCTV and security systems will be sited and directed so that they do not intrude into occupied residential properties;
- Provide adequate security guards and patrols where required;
- When there is no site activity, close and lock site gates and set appropriate site security provisions in motion;

- Consult with neighbouring properties, local businesses and local crime prevention officers including Cork City Council and An Garda Síochána on site security matters as required; and
- Prevent access to restricted areas and neighbouring properties by securing equipment on site such as scaffolding and ladders.

6.4 Hoarding and Fencing

A site boundary in the form of hoarding or fencing will be established around the full perimeter of the site before any significant construction activity commences. The hoarding/fencing will be a minimum of 2.4m high to provide a secure boundary to what can be a dangerous environment for those that have not received the proper training and are unfamiliar with construction operations.

Site hoarding also performs an important function in relation to minimising nuisance and effects including:

- Noise emissions (by providing a buffer);
- Visual impact (by screening the working areas, plant and equipment); and
- Dust minimisation (by providing a buffer).

The erection of hoarding would be of a similar nature to what is carried out on most construction sites. Mounting posts would be erected by using a mini-digger and the posts would be set in concrete or otherwise secured. The size and nature of the posts and hoarding would depend on the requirements for any acoustic mitigation as well as preferences that the contractor may have. Where practicable, hoarding and fencing would be retained and re-configured and re-used between working areas as the construction activities progress.

The following measures will be applied in relation to hoarding and fencing:

- Maintenance of adequate fencing and hoardings to an acceptable condition to prevent unauthorised access to working areas and provide noise attenuation, screening, and site security where required;
- Appropriate sight lines/visibility splays will be maintained around working areas to ensure safety of both vehicles and pedestrians is preserved;
- Use of different types of fencing and hoarding (e.g. mesh fence of solid hoarding including hoardings used for noise control);
- Temporary fences may be used in certain areas, such as for short term occupation of working areas;
- Display information boards with out of hours contact details, telephone helpline number (for comments/complaints) and information on the works;
- Erect notices on site boundaries to warn of hazards on site such as deep excavations, construction access, etc.;
- Signage to be displayed which direct pedestrians and convey “Business as Usual” for adjoining businesses;

- Ensure suitable measures for tree protection are implemented as required;
- Keep hoarding and fencing free of graffiti or posters;
- Retain existing walls, fences, hedges and earth banks as far as reasonably practicable; and
- Appropriate positioning of the fencing or hoarding to minimise the noise transmitted to nearby receptors or from plant, equipment and vehicles entering or leaving the working area.

6.5 Services and Lighting

6.5.1 Services and utilities

Site services will be installed as part of the enabling works in parallel with the rearrangement and diversion of existing utilities. Working areas will be powered by mains supplies or diesel generators where an electrical supply is not available.

6.5.2 Lighting

Site lighting will typically be provided by tower mounted 1000W metal halide floodlights. The floodlights will be cowled and angled downwards to minimise spillage to surrounding properties. The following measures will be applied in relation to site lighting:

- Lighting will be provided with the minimum luminosity sufficient for safety and security purposes. Where practicable, precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas;
- Motion sensor lighting and low energy consumption fittings will be installed to reduce usage and energy consumption; and
- Lighting will be positioned and directed as not to unnecessarily intrude on adjacent buildings and businesses, ecological receptors and structures used by protected species, nor to cause distraction or confusion to passing motorists.

6.6 Welfare Facilities

Welfare facilities will be provided, as appropriate, for construction staff and site personnel such as locker rooms, toilets, showers, kitchen etc. The construction compound located within the site boundary, will be used as the location for worker welfare facilities.

Potable water will be made available by installing a temporary construction water connection. A temporary foul water connection will be made to the existing combined sewer which traverses the site. In the event that this connection is not possible, self-contained sanitary facilities will be used, with wastewater stored and tankered off-site to appropriately licenced disposal facilities.

6.7 Reinstatement of Working Areas on Completion

All working areas and access routes will be reinstated as work proceeds during construction. All plant, equipment, materials, temporary infrastructure and vehicles will be removed at the earliest opportunity.

6.8 Health and Safety

All Health & Safety, Fire Safety and security requirements will be provided in co-ordination with Cork City Council and Watfore Limited. A Construction Traffic Management Plan has been prepared and is included with this application. Watfore Limited will ensure that the Construction Traffic Management Plan (CTMP) will be further developed by the contractor, prior to the commencement of construction, to ensure that construction traffic will be managed and monitored safely and efficiently throughout the construction phase. This is to protect members of the public. The CTMP includes all suitable temporary signage, barriers and hoarding as necessary.

All construction staff and operatives will be inducted into the security, health and safety and logistic requirements on site prior to commencing work.

All Contractors will be required to progress their works with reasonable skill, care and diligence and to proactively manage the works in a manner most likely to ensure the safety, health and welfare of those carrying out construction works, all other persons in the vicinity of the working areas and interacting stakeholders.

All aspects of works and project facilities will comply with legislation, good industry practice and all necessary consents.

The requirements of the Safety, Health and Welfare at Work Act 2005 (Government of Ireland, 2005), the Safety, Health and Welfare at Work (Construction) Regulations, 2013 (Government of Ireland, 2013), as amended, (the “Regulations”) and other relevant Irish and EU safety legislation will be complied with at all times.

As required by the Regulations, a Health and Safety Plan will be formulated which will address health and safety issues from the design stages through to completion of the construction and maintenance phases. This plan will be reviewed and updated as required, as the development progresses.

In accordance with the Regulations, a ‘Project Supervisor Design Process’ has been appointed and a ‘Project Supervisor Construction Stage’ will be appointed as appropriate.

The Project Supervisor Construction Stage will assemble the Safety File as the project progresses.

7 Environmental Management

This section describes the specific environmental requirements identified as part of the specimen design and EIAR and associated ecological reports that will need to be adhered to.

It should be noted that the measures in this CEMP provide a summary of minimum requirements that will be developed as the project progresses. It is intended that the measures set out herein will be discussed in more detail with relevant stakeholders as required to support the identification of any additional measures to be taken account of during construction.

7.1 Traffic and Transportation

The following measures will be implemented in relation to traffic and transportation during construction:

Construction Traffic Management Plan

A Construction Traffic Management Plan has been prepared and is included with this application. The Construction Traffic Management Plan (CTMP) will be further developed by the contractor, prior to the commencement of construction, to ensure that construction traffic will be managed and monitored safely and efficiently throughout the construction phase.

The CTMP provides details of intended construction practices for the development, including:

- Outlining the minimum road safety measures to be implemented at the site access/egress locations and at the approaches to such access/egress locations, during the works.
- Demonstrating to the contractor and suppliers the need to adhere to the relevant guidance documentation for such works.
- Providing the basis for the contractor to further develop the details of the CTMP.

Please refer to the **Appendix A** to this CEMP, *Construction Traffic Management Plan* for further information.

7.2 Air Quality and Climate

Emissions to air during construction will occur, although the prevailing weather, the extent of the works and the distance from sensitive receptors will determine the extent of the effects. The focus of the control procedures will therefore be to reduce the generation of airborne material.

‘Standard mitigation’ measures will be implemented, as per guidance presented in the TII document *Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes* (TII, 2011). These will include the following:

- Spraying of exposed earthwork activities, temporary stockpiles and site haul roads during dry weather;
- Provision of wheel washes facilities at the site entrance;
- Covering of temporary stockpiles;
- Control of vehicle speeds, speed restrictions and vehicle access; and
- Sweeping of hard surface roads.

In addition, the following measures will be implemented. These measures are based on best practice as outlined in the British Research Establishment (BRE) document *Controlling particles, vapour and noise pollution from construction sites* (BRE, 2003) and the Institute of Air Quality Management (IAQM) document *Guidance on the assessment of dust from demolition and construction* (IAQM, 2016).

- Exhaust emissions from vehicles operating within the working areas, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor through regular servicing of machinery;
- During dry periods when dust generation is likely or during windy periods, working areas and vehicles delivering material with dust forming potential will also be sprayed with water, as appropriate;
- Areas where materials will be handled and stockpiled will be designed to minimise their exposure to wind – all temporary stockpiles shall be kept to the minimum practicable height with gentle slopes;
- There shall be no long-term stockpiling within the working areas and storage time will be minimised;
- Material drop heights from plant to plant or from plant to stockpile will be minimised;
- Dust screens will be implemented at locations where there is the potential for air quality effects during the construction phase e.g. mesh netting to be erected around the scaffolding to minimise dust emissions from the site; and
- Truck loads will be covered when carrying material likely to generate dust.

Employee awareness is also an important way that dust may be controlled on any site. Staff training and the management of operations will ensure that all dust suppression methods are implemented and continuously inspected. Further details on employee training is provided in **Section 5.1** above.

The following mitigation measures will be implemented during the construction phase of the development to minimise CO_2 emissions:

- A Construction Traffic Management Plan to be prepared by the contractor in advance of the commencement of the construction will be implemented in full. This will minimise congestion and encourage car sharing and the use of public transport, where practicable;
- Materials will be handled efficiently on site to minimise the waiting time for loading and unloading, thereby reducing potential emissions;
- Engines will be turned off when machinery is not in use; and

- The regular maintenance of plant and equipment will be carried out.

7.3 Noise and Vibration

Specific noise abatement measures will be taken to comply with the recommendations of BS 5228-1 and 2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites: Noise and vibration* (BSI, 2014) and the *European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001* (EC, 2001).

The following specific measures will be implemented during the construction phase to ensure noise and vibration effects are minimised:

- Site representatives shall be appointed to be responsible for matters relating to noise and vibration;
- Equipment will be switched off when not required;
- Internal haul routes will be well maintained;
- Rubber linings shall be used in chutes and dumpers etc. to reduce impact noise;
- Plant and vehicles will be started sequentially rather than all together;
- Construction plant and activities to be employed on site will be reviewed to ensure that they are the quietest available for the required purpose;
- Generators will be located away from sensitive receivers and will be enclosed;
- Where required, improved sound reduction methods e.g. enclosures shall be used;
- For all construction works likely to generate off-site vibration, the contractor will be required to meet the vibration limits set out in BS 5228.
- Acoustic barriers will be provided around construction works to minimise the effects of noise and vibration generating activities in the vicinity of sensitive locations;
- Typically, site activities will be limited to 8am – 6pm, Monday to Friday; and 8am – 4pm, Saturday. It may also be necessary in exceptional circumstances to undertake some other types of activities outside of normal construction core working hours. Any such working hours outside the normal construction core working hours will be agreed with Cork City Council. The planning of such works will have regard to nearby sensitive receptors;
- A Community Liaison Plan shall be prepared to provide for effective community liaison to help ensure the smooth running of construction activities and to address any issues that may arise.
- Avoid unnecessary revving of engines and switch off equipment when not required;
- Keep internal haul routes well maintained and avoid steep gradients;

- Use rubber linings in, for example, chutes and dumpers to reduce impact noise;
- Minimise drop height of materials; and
- Start-up plant and vehicles sequentially rather than all together.

The following more specific measures will also be implemented where practicable:

- In accordance with Best Practicable Means, plant and activities to be employed on site will be reviewed to ensure that they are the quietest available for the required purpose;
- Where required, improved sound reduction methods, e.g. enclosures should be used;
- Site equipment should be located away from noise sensitive areas, as much as is feasible;
- Regular and effective maintenance by trained personnel should be carried out to reduce noise and/or vibration from plant and machinery;
- A 2.4 metre high hoarding will be provided around the construction site;
- Limiting the hours during which site activities likely to create high levels of noise or vibration are carried out;
- Establish channels of communication between the contractor/developer, Local Authority and residents;
- Appointing of a site representative responsible for matters relating to noise and vibration; and

Monitoring typical levels of noise and vibration during critical periods and at sensitive locations for comparison with limits and background levels.

7.4 Biodiversity

Mitigation measures (of relevance in respect of any potential ecological effects) will be implemented throughout the project, including the preparation and implementation of detailed method statements. The works will incorporate the relevant elements of the guidelines outlined below:

- *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads.* National Roads Authority, Dublin (2010).
- *Control of water pollution from construction sites. Guidance for consultants and contractors (*C532). CIRIA. H. Masters-Williams et al (2001)
- *Control of water pollution from linear construction projects. Technical guidance (C648).* CIRIA. E. Murnane, A. Heap and A. Swain. (2006)

All personnel involved with the proposed development will receive an on-site induction relating to construction and operations, and the environmentally sensitive nature of the Tramore River and to re-emphasise the precautions that are required as well as the control measures to be implemented. Site managers,

foremen and workforce, including all subcontractors, will be suitably trained in risks and preventative measures.

All staff and subcontractors have the responsibility to:

- Work to agreed plans, methods and procedures to eliminate and minimise environmental impacts,
- Understand the importance of avoiding on-site impacts, including noise and dust, and how to respond in the event of an incident to avoid or limit environmental impact;
- Respond in the event of an incident to avoid or limit environmental impact;
- Report all incidents immediately to the site manager;
- Monitor the workplace for potential environmental risks and alert the site manager if any are observed; and
- Co-operate as required, with site inspections.

7.4.1 Water Quality

The employment of good construction management practices will minimise the risk of impacts to soil, stormwater run-off, seawater or groundwater. Measures relevant to hydrology are provided in **Section 7.8** and are in accordance with Construction Industry Research and Information Association (CIRIA) guidance – *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors* (Masters-Williams *et al*, 2001).

7.4.2 Noise

Specific noise abatement measures will be taken to comply with the recommendations of BS 5228-1 and 2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites: Noise and vibration* (BSI, 2014) and the *European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001* (EC, 2001).

Specific measures will be implemented during the construction phase to ensure noise and vibration effects are minimised. These measures are described in **Section 7.4**, will minimise the risk of adverse impacts from the noise and vibration during the construction phase.

7.4.3 Protection of Habitats

There will be a defined working area which will be fenced off to prevent inadvertent damage to adjoining habitats.

To prevent incidental damage by machinery or by the deposition of spoil during site works, any habitats earmarked for retention nearby will be securely fenced or sign posted early in the construction phase. These will be clearly visible to machine operators.

Habitats that are damaged and disturbed will be left to regenerate naturally or will be rehabilitated and landscaped, as appropriate, once construction is complete.

7.4.4 Invasive Species Management

An *Invasive Species Management Plan* (ISMP), which has been included as **Appendix B,** will be agreed with Cork City Council prior to the works being carried out.

The contractor will employ a suitably qualified ecologist to update the plan prior to the commencement of construction. The updated plan will contain the following:

- Site background including proposed works
- Extent of the Japanese Knotweed infestation
- Specific control plan to be put in place
- Site hygiene protocols
- Responsible individuals
- Follow up requirements
- Any other relevant information

There are a number of management options that may be implemented to control and prevent the spread of invasive species. Those involved in the application of herbicides/pesticides will be competent to do so and will have sufficient experience and knowledge in the area of herbicides/pesticides application.

All staff involved in the application of herbicides/pesticides will have received appropriate training, which may include achieving competency certification in the safe use of herbicides/pesticides through a National Proficiency Tests Council registered assessment centre or achieving an appropriate FETAC award in this area.

Further details have been included in **Appendix B** *Invasive Species Management Plan.*

7.5 Archaeology, Architecture and Cultural Heritage

Archaeological monitoring of the southern end of the proposed development site in the area of the former Macroom railway line will be carried out. Should railway infrastructure be found, it will be preserved by record, i.e. a written and photographic record will be made.

7.6 Townscape and Visual

The proposed measures relate to implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc.

- Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish.
- Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate.
- To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound, and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above.

7.7 Land, Soils, Geology and Hydrogeology

The following measures will be implemented in relation to land and soils during construction:

- Potential pollutants shall be adequately secured against vandalism and will be provided with proper containment according to the relevant codes of practice. Any spillages will be immediately contained and contaminated soil shall be removed from the proposed development and properly disposed of in an appropriately licensed facility.
- Dust generation shall be kept to a minimum through the wetting down of haul roads as required and other dust suppression measures.
- Any stockpiles of earthworks and site clearance material shall be stored on impermeable surfaces and covered with appropriate materials where necessary.
- Silt traps shall be placed in gullies to capture any excess silt in the run-off from working areas.
- Soil and water pollution will be minimised by the implementation of good housekeeping (daily site clean-ups, use of disposal bins, etc.) and the proper use, storage and disposal of these substances and their containers as well as good construction practices as described the CIRIA guidance.
- A contingency plan for pollution emergencies will also be developed by the appointed contractor prior to the commencement of works and regularly updated. The contingency plan will identify the actions to be taken in the event of a pollution incident in accordance with the CIRIA guidance which requires the following to be addressed:
    - Containment measures;
    - Emergency discharge routes;
    - List of appropriate equipment and clean-up materials;
    - Maintenance schedule for equipment;
    - Details of trained staff, location and provision for 24-hour cover;
    - Details of staff responsibilities;

- Notification procedures to inform the relevant environmental protection authority or Cork City Council
- Audit and review schedule;
- Telephone numbers of statutory water undertakers and local water company; and
- List of specialist pollution clean-up companies and their telephone numbers.

Loss of crushed rock aggregate and granular aggregate potential area

Excavated material will be removed during the construction phase. Where possible, excavated material will be reused as construction fill. The appointed contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to the Earthworks Specification(s). These excavated soil materials will be stockpiled located within the working area where possible, using an appropriate method to minimise the impacts of weathering. Care will be taken in reworking this material to minimise dust generation, groundwater infiltration and generation of runoff. Any surplus suitable material excavated that is not required elsewhere for the proposed development shall be used for other projects where possible, subject to appropriate approvals/notifications.

Ground movements

Ground movement, horizontal movement and vibration monitoring will be implemented during construction activities to ensure that the construction does not exceed the design limitations.

Ground movements will be controlled through the selection of a foundation type and method of construction which are suitable for the particular ground conditions.

Pollution from construction activities

The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off, adjacent watercourses and groundwater. The construction management of the site will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for consultants and contractors (Masters-Williams et al., 2001) to minimise as far as possible the risk of soil, groundwater and surface water contamination.

Measures, as recommended in the guidance above, that will be implemented to minimise the risk of spills and contamination of soils and waters, include:

- The construction management of the site will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for consultants and contractors (Masters-Williams et al., 2001) to minimise as far as possible the risk of soil, groundwater and surface water contamination;

- Training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures;
- Careful consideration will be given to the location of any fuel storage facilities. These will be designed in accordance with guidelines produced by CIRIA, and will be fully bunded;
- All vehicles and plant will be regularly inspected for fuel, oil and hydraulic fluid leaks. Suitable equipment to deal with spills will be maintained on site;
- Ensure that all areas where liquids are stored or cleaning is carried out are in designated impermeable areas that are isolated from the surrounding area e.g. by a roll-over bund, raised kerb, ramps or stepped access;
- Minimise the use of cleaning chemicals;
- Use trigger-operated spray guns, with automatic water-supply cut-off.

During construction, the potential risk to site users and member of the public from contaminated dust will be managed using standard health and safety measures as outlined in the Health and Safety Authority guidance document on working with asbestos (HSA 2013). This states that:

> *"Removal of asbestos from contaminated soil will require a specialist asbestos contractor for any friable asbestos to be removed."*

And

> "*A risk assessment by an independent competent person should determine the most appropriate control measures and remediation strategies.*"

Control measures for the construction stage will be devised based on a risk assessment carried out by the contractor prior to the development and will be specific to the construction methods.

Earthworks Haulage

Earthworks haulage will be along agreed predetermined routes along existing national, regional and local routes. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practicable, compaction of any soil or subsoil which is to remain in situ along the sites will be avoided.

Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding. Runoff will be controlled through erosion and sediment control structures appropriate to minimise the water impacts in outfall areas. Care will be taken to ensure that the bank surfaces are stable to minimise erosion.

Removal of soils;

Excavations in made ground will be monitored by an appropriately qualified person to ensure that any spots of contamination encountered are identified,

segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure no cross-contamination with clean soils elsewhere throughout the site.

Where possible, excavated material will be retained and reused on site as construction fill or off site as a by-product under an Article 27 notification.

The appointed contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to the Earthworks Specification(s). These excavated soil materials will be stockpiled within the working area where possible, using an appropriate method to minimise the impacts of weathering. Any surplus suitable material excavated that is not required elsewhere for the proposed development shall be used for other projects where possible, subject to appropriate approvals/notifications (e.g., Article 27).

7.8 Water

The following best practice water management measures will be implemented during the construction phase:

- A filter drain and silt pits will be located at the base of all embankments, settled solids will be removed from the silt pits regularly;
- Temporary stockpiles will be surrounded by silt fencing;
- Where at all possible, soil excavation will be completed during dry periods and undertaken with excavators and dump trucks. Topsoil and subsoil will not be mixed together. Excavation and earthworks will be suspended during and immediately following periods of heavy rainfall to minimise sediment generation and soil damage;
- Oil, petrol and other fuel containers will be double-skinned and bunded to be able to contain 110% volume to guard against potential accidental spills or leakages entering local watercourses;
- A spill kit including an oil containment boom and absorbent pads will be on site at all time;
- A designated bunded refuelling area on an impermeable surface will be provided at a minimum distance of 15m away from any watercourse. No vehicles will be left unattended when refuelling;
- Dedicated fuel storage areas will be introduced on-site which will be a minimum of 15m from watercourses or drains or, alternatively, fuelling will take place offsite;
- All vehicles and plant will be regularly maintained, washed and inspected for fuel, oil and hydraulic fluid leaks;
- Machinery including hand-tools will never be washed in watercourses or drainage ditches or within 15m of watercourses or drainage ditches;

- Concrete pouring will not take place during heavy rain when run off is likely due to excess water. Shuttering will be designed to accommodate small increases in the volume of material contained within the shuttered area due to rainfall. Pre-cast concrete will be used if possible; otherwise all cast-in-place concrete will be isolated from flowing water for a minimum of 48 hours to allow pH to reach neutral levels;
- Wash down and washout of concrete transporting vehicles will not be permitted at the location of construction. Such wash down and washout activities will take place at an appropriate facility offsite or at the location where concrete was sourced;
- Oily water associated with construction activities will pass through an oil separator before discharging into the surface water drainage system which discharges into the local watercourse to the west of the site;
- Ensure that all areas where liquids are stored, or cleaning is carried out are in a designated impermeable area that is isolated from the surrounding area, e.g. by a roll-over bund, raised kerb, ramps or stepped access;
- Use collection systems to prevent any contaminated drainage entering surface water drains, watercourses or groundwater, or draining onto the land;
- Minimise the use of cleaning chemicals;
- Use trigger-operated spray guns, with automatic water-supply cut-off;
- Use settlement lagoons or suitable absorbent material such as flocculent to remove suspended solids such as mud and silt;
- Ensure that all staff are trained and follow vehicle cleaning procedures. Post details of the procedures in the work area for easy reference;
- Fuel, oil and chemical storage on site will be secure;
- Site storage will be on an impervious base within a secondary containment system such as a bund;
- A spill kit with sand, earth or commercial products that are approved for the stored materials will be kept close to the storage area. Staff will be trained on how to use spill kits correctly;
- Damaged, leaking or empty drums will be removed from site immediately and disposed of via a registered waste disposal contractor;
- Mobile plant will be refuelled in a designated area, on an impermeable base away from drains or watercourses;
- A wheel-wash will be installed for use by all construction vehicles leaving site;
- A road-sweeper will be used to remove dirt and debris from roads;
- Silt traps will be located around the site to collect run off, with settled solids removed regularly and water recycled and reused where possible; and

- A bypass petrol interceptor will be installed in the car park drainage network prior to connection to the existing drainage network to prevent any hydrocarbon spills from entering the surrounding drainage network.

A summary of the best practice measures relevant to hydrology are provided as follows and are in accordance with CIRIA guidance, and will be implemented by the contractor:

- Construction compound will be located in areas that are at minimal risk of flooding (outside 1:100-year flood zone);
- A monitoring regime/programme for water quality will be put in place;
- There will be no tracking of machinery within watercourses;
- Silt fences/swales shall be provided at all locations where surface water run-off may enter/leave the working areas, and adjacent to the haul roads;
- All works undertaken will be fully consolidated to prevent run-off of silt;
- Access/haul roads shall be set back from watercourses by at least 10m where possible.

7.8.1 Foul Drainage

The foul drainage associated with the welfare facilities at the construction compound includes a canteen, toilets, showers and hand wash basin only. Wastewater will be disposed of by connection to the existing foul drainage system or by removal from site to an appropriately licensed treatment facility.

7.8.2 Flooding

- No construction materials or temporary stockpiles will be stored in flood plains or in areas which would impede flood flow paths; and
- In relation to effects of extreme weather events and related conditions the contractor will use a short to medium range weather forecasting service from Met Eireann or other approved meteorological data and weather forecast provider to inform short to medium term programme management, environmental control and mitigation measures.

7.9 Resource and Waste Management

Construction – General

In addition to the inherent design measures which will be implemented during the construction phase, the following mitigation measures will be implemented:

- Waste disposal will be minimised so far as is reasonably practicable;
- Possibilities for re-use of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excavated material may not be re-used within the proposed works the

Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable;

- Waste from the proposed development will be transported by authorised waste collectors in accordance with the relevant Irish waste legislation (Waste Management (Collection Permit) Regulations, 2007 as amended;
- Waste from the proposed development will be delivered to authorised waste facilities in accordance with the relevant Irish waste legislation (Waste Management Acts 1996-2016) as amended;
- Source segregation: Where possible, metal, timber, glass and other recyclable material will be segregated on site in a designated area within the construction compound during construction works and will be removed off site to a permitted/licensed facility for recycling. Where required waste stream colour coding, and photographs of wastes will be used to facilitate segregation. Where waste generation cannot be avoided this will maximise the quantity and quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental effect;
- Material management: 'Just-in-time' delivery will be used so far as is reasonably practicable to minimise material wastage;
- Supply chain partners: The contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse;
- Waste Auditing: The contractor will record the quantity in tonnes and types of waste and materials leaving site during the construction phase;
- Waste fuels/oils may be generated from equipment used on-site during construction and may be classified as hazardous waste. Such wastes will be stored in a secure, bunded area on-site prior to collection by a Contractor who holds the appropriate waste collection permit;
- Possibilities for re-use of excess uncontaminated soil and stone only as fill or in landscaping works within the site will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excess excavation material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable;
- The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material, which is recovered, and which is disposed of;
- The contractor will ensure that any off-site interim storage or waste management facilities for excavated material have the appropriate waste licences or waste facility permits in place;
- Site office and food waste arising on site will be source separated at least into dry mixed recyclables, biodegradable residual wastes;

- Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain, including photographs as appropriate;
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site;
- Excessive temporary works will be avoided, existing facilities will be reused as appropriate;
- Paints, sealants and hazardous chemicals etc. will be stored in secure, bunded locations;
- All hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection holder; and
- Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised waste facility.
- If asbestos/contaminated material is encountered during construction, a risk assessment will be carried out to determine its suitability for re-use. If re-use within the site is not possible, contaminated material will be removed offsite to an appropriately licenced facility.

7.10 Population and Human Health

Measures which will be implemented to minimise effects on the general amenity of residents will include:

- The erection of directional and information signage for members of the public to indicate alternative routes and paths to be taken and convey “Business As Usual” for adjoining businesses;
- The provision of information to local residents and businesses during the construction phase;
- The provision of community liaison and nomination of personnel to manage community relations; and
- The preparation of an emergency response plan to cover foreseeable risks.

Industry-standard traffic management measures will be put in place to alleviate construction-related traffic disruptions. Refer to **Section 7.1** for further details.

Dust emissions will be controlled throughout the construction phase. Refer to **Section 7.2** for details of dust mitigation measures.

Noise and vibration disturbance will also be minimised. Best practice measures for noise control on construction sites will be adhered to during construction. Refer to **Section 7.3** for further details of noise and vibration mitigation measures.

As required by regulation and legislation, a Health and Safety Plan will be prepared to address health and safety issues during the construction phase. This plan will be reviewed and updated as required, as the development progresses.

The Project Supervisor Construction Stage will assemble the Safety File as the project progresses.

7.11 Material Assets

The following measures in relation to material assets during construction will be implemented:

- The contractor will undertake their own surveys to establish full extent of underground services prior to the commencement of construction to support any surveys already undertaken as part of early design work and statutory consent applications
- Put measures in place to ensure that there are no interruptions to existing utilities and services unless this has been agreed in advance with the relevant service provider
- All utilities and services diversions will be agreed and undertaken as part of the enabling works and in advance of the commencement of construction activities
- All works near utilities apparatus will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have.
- Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements;
- All construction activities in the vicinity of existing services and utilities will be carried out with ongoing consultation with the relevant service provider and undertaken in compliance with any requirements or guidelines they may have.

7.12 Major Accidents and Disasters

The proposed development will be designed and built in line with best international current practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded throughout the design. The contractor will be required to ensure that all fire safety requirements are provided for in co-ordination with Cork City Council. Appropriate site personnel will be trained as first aiders and fire marshals. The contractor will also be required to maintain an emergency response plan which will cover all foreseeable risks i.e. fire. In preparing this plan the contractor will be required to liaise with the emergency response services.

The mitigation measures, which will limit the likelihood and consequence of a vehicle collision, include a Construction Traffic Management Plan (CTMP). Prior to the commencement of works the appointed contractor will prepare a CTMP, which will be agreed with Watfore Limited and Cork City Council. This will be a live document which will be updated/added to as construction progresses and will be implemented for the duration of the proposed works.

See **Section 7.8** for details on pollutant control.

8 References

BRE (2003). *Controlling particles, vapour and noise pollution from construction sites*

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Appendix A

Construction Traffic Management Plan

A1 Construction Traffic Management Plan

Watfore Ltd

Creamfields Housing Development

Construction Traffic Management Plan

252666-00-RPT-CTMP-SHD

Issue 2 | 14 February 2022

Job number 252666-00

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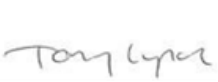
		Signature			
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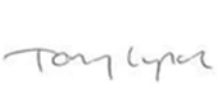
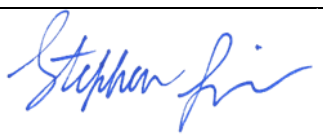
		Signature			
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Contents

1 Introduction

1.1 General

This report is an outline Construction Traffic Management Plan for the Strategic Housing Development proposed by Watfore Ltd proposed by Watfore Ltd at the former "CMP Dairies" site at Kinsale Road / Tramore Road, Cork. The Construction Traffic Management Plan (CTMP) will be further developed by the contractor, prior to the commencement of construction, to ensure that construction traffic will be managed and monitored safely and efficiently throughout the construction phase.

1.2 Purpose and Scope

This Construction Traffic Management Plan will be a key construction contract document, the implementation of which will reduce possible impacts which may occur during the construction of the proposed scheme.

The objectives of this CTMP are to:

- Outline minimum road safety measures to be implemented at the site access/egress locations and at the approaches to such access/egress locations, during the works;
- Demonstrate to the contractor and suppliers the need to adhere to the relevant guidance documentation for such works; and
- Provide the basis for the contractor to further develop the details of this CTMP.

Watfore Limited and/or the Employers Representative (ER) appointed by Watfore Limited will be responsible for ensuring that the contractor manages the construction activities in accordance with this CTMP.

Objectives and measures are also included for the management, design and construction of the project to control the traffic impacts of construction insofar as it may affect the environment, local residents and the public in the vicinity of the construction works.

In the event that the approval is granted for the proposed development, the CTMP will address the requirements of any relevant conditions, including any additional mitigation measures which are conditioned. The CTMP (updated by the contractor prior to construction to incorporate these conditions) will require approval from the Cork City Council and An Garda Síochána.

The objective of this CTMP is to ensure that the residual impacts to the public road network during the construction phase of the proposed development are minimised and that transport related activities are carried out as safely as possible and with the minimum disruption to other road users. The CTMP has also been prepared for the purpose of identifying appropriate and safe methods of access for construction traffic to the proposed scheme.

This CTMP describes the traffic management for the transportation of construction materials, equipment and personnel along the public road network to facilitate the construction of the proposed development. Light vehicles, such as cars and vans, will be used by site operatives travelling to and from the site. Heavy Construction Vehicles (HCV) will be required to deliver general construction materials, such as concrete, to the site and for the removal of excavated material that is to be disposed of off-site.

This CTMP will remain a live document that will be reviewed by the contractor and updated, where necessary, throughout the construction phase.

1.3 Implementation

Key to the implementation of the CTMP is the dedication of an on-site manager (nominated by the contractor) who will supervise the implementation of the plan and regularly liaise with and update the supervising employer's representative team on the operation of the plan and any proposed improvements. All site personnel will be charged with following good practice and will be encouraged to provide feedback and suggestions for improvements. Site personnel will also be required to ensure compliance with the requirements of the site's CTMP.

1.4 Document Revision

The CTMP will be subject to on-going review throughout the construction phase of the proposed scheme, and regular auditing and site inspections.

All of the information required to further develop the CTMP will be highlighted in the specification for the construction contract. The contractor will be required to include further details and/or confirmation, as described below.

2 Proposed Construction Traffic Generation

2.1 Overview

The potential temporary impacts of the scheme on the road network are as follows:

- Temporary impacts during construction due to the excavation of materials in order to facilitate construction, and the associated movements of excavation vehicles;
- Temporary impacts associated with the importing of construction materials to the works areas, and the relevant movements of delivery and construction vehicles and construction workforce;
- Construction staff commuting to and from the construction compounds; and
- General service traffic associated with construction activities (i.e. plant deliveries, visitors, traffic between compounds and working areas, etc.)

2.2 Traffic Generation from Proposed Scheme

The level of construction traffic associated with the proposed development will vary over the course of the construction programme. It is envisaged that construction will take place in four phases, starting at the northern part of the site with phase 1 and gradually moving towards the south as the remaining construction phases commences.

Although both applications, the Strategic Housing development and the Primary Care Centre site boundaries overlap, they are separate applications and it is assumed for the purpose of this CTMP that both applications will be granted planning permission and therefore that the construction of each development will occur concurrently.

The construction phasing is the best guess now and will need to be updated after planning permission is obtained and more detail on the construction programme becomes available. The current estimation suggests that following a site enabling works period of 2-4 months, Phase 1 will take approximately 2.5 – 3.5 years to complete, Phase 2 will take approximately 2 – 2.5 years, Phase 3 will take approximately 2.5 – 3.5 years and finally, phase 4 will take 1.5 – 2.5 years. It is estimated project completions will take 3 – 6 months.

An opening year of 2025 is assumed for Phase 1 of the development. Following this, construction will commence at Phase 2, and so forth. In 2025 therefore there will be traffic associated with first residential blocks occupied by residents and the functional primary health care facility and construction traffic associated with Phase 2.

By 2030, which corresponds to the Opening Year +5 it has been assumed that both development phases 1 and 2 will be completed and occupied and that phase 3 will be under construction. In 2040, the entire development will be in place and therefore no construction traffic associated with the development will be on the road network.

Heavy and Light Construction Vehicles

The movements of HCV's and LCV's to and from the site is expected to generate traffic from the following activities:

- Enabling works (piling, substructure, etc.);
- Superstructure works;
- Façade;
- Fit-Out; and
- Landscaping.

The fit-out and landscaping works are expected to be the most intensive from a construction vehicle perspective. During this time, it is estimated that approximately 250 HCV and LCV vehicles will travel to the site per week (i.e. a total of 500 two-way vehicle movements).

Assuming a 5.5 day working week, this would equate to a daily total of 46 HCV/LCV vehicles travelling to the site (a total of 92 two-way movements).

Allowing for an increase to account for any miscellaneous deliveries, it is proposed to increase this figure to a total of 50 vehicles per day (i.e. 100 two-way movements). Based on experience on previous construction projects it is estimated that 33 of the 50 vehicles will be HCV's, with the remaining 17 expected to be LCV's.

Heavy vehicles are expected to have an evenly spread distribution profile starting early in the morning throughout the day towards the evening.

Assuming HGV deliveries will not occur early in the morning and late in the evening and within an 8-hour time period everyday, assuming an 8-hour work day, it is estimated that on average a total of 4 HCV's and 2 LCV's arrive and depart the site (a total of 6 vehicles) in the peak periods on the local road network. This represents 8 HCV and 4 LCV trips per hour.

At a consultation meeting with Cork City Council (CCC), the Council requested that a stress test be carried out on the construction traffic trip generation to ensure that a worst case is represented. To ensure that a robust assessment is carried out a stress test scenario will be carried out for construction traffic by assuming that there are 50% more HCVs and LCVs arriving and departing during peak hours. This therefore represent 6 HCVs and 3 LCVs arriving and departing (a total of 9 vehicles) in the peak periods on the local road network. This represents 12 HCV and 6 LCV trips per hour.

Workforce

The most intensive phase of construction for workforce numbers is also the fit-out and landscaping phases, when a total of 250 construction personnel are expected to be on site per day.

Due to the site benefiting from bus services in the vicinity and cycle connectivity, it is therefore envisaged that a proportion of the construction staff will travel to and from the site by public transport and other alternative modes. It is anticipated that approximately 25% of staff will travel by bus, by bike or on foot.

To support this, only a limited amount of parking is proposed for construction staff (to be located within the applicant's landholding). Those workers that do travel to the site by car will be encouraged to car-pool, and it is assumed that there will be an average occupancy of 1.2 persons per car.

Therefore assuming 75% of staff will travel by car and an average car occupancy of 1.2 persons per car it is estimated that a total of 156 vehicles will travel to the site on a daily basis for construction workers. Allowing a 10% increase to account for miscellaneous trips increases this to 172 vehicles per day at the site.

Construction hours are expected to be from 08:00-18:00; however, the arriving and departure of personnel on site will be managed not to coincide with peak hour traffic. This can be done by agreeing with Cork City Council that site personnel should arrive before or after peak hour traffic. The prevailing peak hours should be determined closer to the time of construction by carrying out new link counts or by reviewing traffic data collected by permanent counting stations on the N40 and the N27.Based on the above it has been assumed that between 20 to 25%

(Assume 22.5%) of the construction personnel trips (38 vehicles) arrive on site during the morning peak and depart the site during the evening peak on the local road network, respectively. Allowance is also made for the off-peak direction during each peak hour period to account for instance for a contractor leaving the site during the AM peak due to unforeseen circumstances. A stress test has been carried out by adding 50% more construction traffic to the estimated traffic, to ensure that a robust assessment is carried out.

Conclusion

The table below shows the estimated construction traffic during peak hours. It shows two scenarios, Scenario 1: Expected Construction Traffic and Scenario 2: Stress test, where 50% more construction traffic has been added as a worst case.

Table 1: Estimated Construction Traffic during peak hours

Assessment Scenario	**HGV Trips**		**LGV Trips**		**Contractor / Workforce Trips**	
	Arrival	***Departure***	***Arrival***	***Departure***	***Arrival***	***Departure***
2025 Opening Year	6	6	3	3	57	7
2025 Opening Year + 5 Years	6	6	3	3	7	57
2025 Opening Year + 15 Years	-	-	-	-	-	-

2.3 Envisaged Construction Equipment

Construction equipment and vehicles required for each construction element/operation will be delivered to site by appropriate vehicles. Specific equipment and vehicles which are deemed to be required for the proposed development by the principal contactor, suppliers and staff are to be confirmed and included in the updated CTMP, prior to the commencement of construction.

3 Matters to be Addressed in More Detail

The contractor will be required to ensure that the contents of this CTMP are further developed prior to the commencement of works. The contractor will implement monitoring measures to confirm the effectiveness of the mitigation

measures outlined in the CTMP. The updated CTMP will address the following issues:

- Site/works area access and egress;
- Traffic management signage;
- Timings of material deliveries to site;
- Traffic management speed limits;
- Road cleaning;
- Vehicle cleaning;
- Road condition;
- Road closures;
- Enforcement of traffic management plan;
- Emergency procedures during construction; and
- Communication.

These items are explained in detail in the remainder of this section of the plan.

3.1 Site Access and Egress

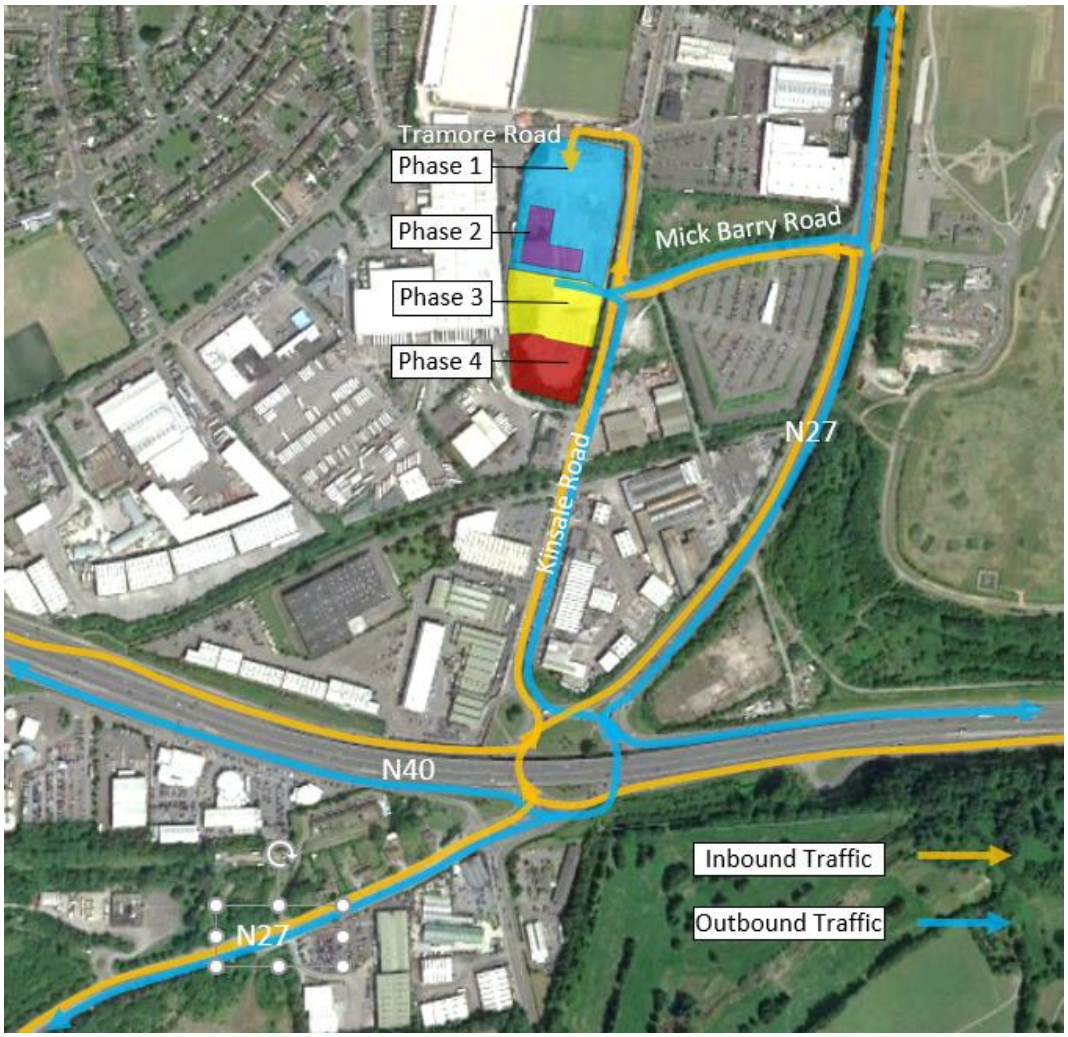
The proposed site access locations will be identified and the contractor will provide advanced warning signs, in accordance with Department of Transport's 'Traffic Signs Manual, Chapter 8: *Temporary Traffic Measures and Signs for Roadworks* (August 2019), on the approaches to proposed site access locations, a minimum of one week prior to construction works commencing at that location.

There are two accesses proposed to the site. The first access is off Tramore Road, at the original access to the site, while the second proposed access is to add a fourth arm to the Kinsale Road / Mick Barry Road junction, providing access to the site. During discussions with CCC, it was noted that Tramore Road / Kinsale Road junction is currently operating close to capacity and it was agreed that measures should be put in place to minimise the potential traffic impact on this junction.

To this end it is proposed that construction traffic should enter and exit the development site in a one way system. Both accesses will be operational from construction phase 1 onwards.

Figure 1 shows the proposed construction traffic circulation for the site development. It is proposed that the Tramore Road access is only used for inbound construction traffic while the Kinsale Road / Mick Barry junction access is used for outbound construction traffic. The greater majority of construction is expected to approach the site from the N40 and the N27 to the south of the development site. Some contractor vehicles and site employees are expected to approach the site from the City Centre direction.

Figure 1: Construction Traffic Circulation



3.2 National Road Network

Junction 6 on the N40 and the N27 national primary routes are anticipated to be utilised as the access route for all construction activity during the construction period.

3.3 Local Road Network

The following local roads will be utilised as haul routes during the construction period:

- Mick Barry Road
- Kinsale Road
- Tramore Road

As outlined earlier in this report, Tramore Road will only be used for inbound construction traffic. This is expected to minimise the traffic impact on the road network and especially Tramore Road as this will avoid right turning movements and include only left turning movements which involves less conflict with other

traffic movements. Compared to right turning traffic, left turning traffic movements has much higher capacity.

No construction traffic will be permitted to use Tramore Road approaching from the west. Although some contractors and staff may travel southbound from the City Centre towards the site and turn right onto Tramore Road, no HCV vehicles will take this route.

3.4 Traffic Management Signage

The Contractor will undertake consultation with the relevant authorities for the purpose of identifying and agreeing signage requirements. Such signage will be installed prior to works commencing on site.

Proposed signage will include warning signs to provide warning to road users of the works access/egress locations and the presence of construction traffic. All signage will be provided in accordance with the Department of Transport's 'Traffic Signs Manual, Chapter 8: *Temporary Traffic Measures and Signs for Roadworks* (August 2019).

In summary, the contractor will ensure that the following elements are implemented:

- Consultation with the relevant authorities for the purpose of identifying and agreeing signage requirements;
- Provision of temporary signage indicating site access route and locations for contractors and associated suppliers; and
- Provision of general information signage to inform road users and local communities of the nature and locations of the works, including project contact details.

3.5 Timings of Material Deliveries to Site

In order to reduce impacts on local communities and residents adjacent to the proposed sites:

- The contractor will liaise with the management of other construction projects in the area (if any) and the local authorities to co-ordinate deliveries;
- The contractor will schedule deliveries in such a way that construction activities and deliveries activities do not run concurrently, where practicable, e.g. avoiding pouring of concrete on the same day as material deliveries in order to reduce the possibility of numbers of construction delivery vehicles arriving at each site/works area location simultaneously, resulting in build-up of traffic on road network;
- The contractor will schedule deliveries to and from any proposed temporary construction materials storage yards or compounds such that traffic volumes on the surrounding road network are kept to a minimum;
- A construction phase programme of works will be developed by the contractor in liaison with Cork City Council, specifically taking into account

potential road repair works that are included in the local authority's road works schedule;

- HGV deliveries to specific areas of the site will be suspended on the days of any major local events, etc. that have the potential to cause larger than normal traffic volumes in the overlap areas. This in particular can include events at Musgrave Park;
- The contractor will liaise with members of the local community to ensure that construction-related traffic will not conflict with sensitive events such as funerals;
- Specific construction moratoria (for example, certain busy periods) as indicated by Cork City Council will be respected and incorporated into the construction phasing programme;
- HGV deliveries will avoid passing schools at opening and closing times where it is reasonably practicable; and
- Construction activities will normally be undertaken during daylight hours for all construction stages. It is anticipated that at critical certain stages of the construction works night-time and weekend work will be required, subject to consultation with Cork City Council and An Garda Síochána.

3.6 Traffic Management Speed Limits

Adherence to posted / legal speed limits will be emphasised to all staff and suppliers and contractors during induction training. Drivers of construction vehicles and HGVs will be advised that vehicular speeds in sensitive locations, such as local community areas, will be restricted to appropriate levels.

3.7 Road Cleaning

It will be a requirement of the works contract that the contractor carry out periodic road sweeping/cleaning operations to remove any scheme related dirt and material deposited on the road network by construction / delivery vehicles. Road sweepers will dispose of material following sweeping of road network, to a licensed waste facility.

3.8 Vehicle Cleaning

It will be a requirement of the works contract that the contractor will provide dry or wet wheel washing facilities where appropriate, and any other necessary measures to remove mud and organic material from vehicles exiting sites or works areas.

3.9 Road Condition

The contractor will ensure that:

- Loads of materials leaving each site will be evaluated and covered if considered necessary to minimise potential dust impacts during transportation.

- The hauliers will take all reasonable measures while transporting waste or any other materials likely to cause fugitive losses from a vehicle during transportation to and from site, including but not limited to:
    - Covering of all waste or material with suitably secured tarpaulin/ covers to prevent loss; and
    - Utilisation of enclosed units to prevent loss.
- The roads forming part of the haul routes will be monitored visually throughout the construction period and a truck mounted vacuum mechanical sweeper will be assigned to roads along the haul routes as required.
- In addition, the contractor will, in conjunction and through agreement with Cork City Council:
    - Undertake additional inspections and reviews of the roads forming the haul routes prior to the construction phase to record the condition of these roads at that particular time; and
    - Such surveys will comprise, any recording or documentation processes as determined necessary by Cork City Council.
- Where requested by Cork City Council prior to the commencement of construction operations, pavement condition surveys will also be carried out along roads forming part of the haul routes. These will record the baseline structural condition of the road being surveyed immediately prior to construction.
- Throughout the course of the construction of the proposed scheme, on-going visual inspections and monitoring of the haul roads will be undertaken to ensure any damage caused by construction traffic is recorded and that Cork City Council is notified. Arrangements will be made to repair any such damage to an appropriate standard in a timely manner such that any disruption is minimised.
- Upon completion of the construction of the proposed scheme, the surveys carried out at pre-construction phase will be repeated and a comparison of the pre and post construction surveys carried out.

3.10 Enforcement of Traffic Management Plan

All project staff and material suppliers will be required to adhere to the CTMP. The contractor will agree and implement monitoring measures to confirm the effectiveness of the CTMP and compliance will be monitored by the supervising employer's representative. Regular inspections / spot checks will also be carried out to ensure that all project staff, material suppliers and hauliers follow the measures specified in the CTMP.

3.11 Emergency Procedures During Construction

The contractor will ensure that unobstructed access is provided for all emergency vehicles along all routes and site accesses.

The contractor will provide to Cork City Council and the emergency services, the contact details of the contractor's personnel responsible for construction traffic management.

In the case of an emergency which occurs off site all construction traffic will be notified of the incident and location.

3.12 Communication

The contractor will ensure that close communication with Cork City Council and the emergency services is maintained throughout the construction phase. Such communications will include:

- Submissions of proposed detailed traffic management measures for comment and approval,
- Ongoing reporting relating to the condition of the road network and updates to construction programming,
- Information relating to local and community events that could conflict with proposed traffic management measures and construction traffic in order to implement alternative measures to avoid such conflicts.

The contractor will also ensure that the local community is informed of proposed traffic management measures in advance of their implementation. Such information will be disseminated by posting advertisements in local newspapers and delivering leaflets to houses in the affected areas. Such information will contain the contractor's contact information for members of the public to obtain additional information and to provide additional knowledge such as local events, sports fixtures etc. which may conflict with proposed traffic management measures.

4 Conclusions

This CTMP will form part of the construction contract and is designed to reduce possible impacts which may occur during the construction of the proposed development.

The CTMP will be further developed by the contractor following consultation with An Garda Síochána and Cork City Council.

The Employer representative will be responsible for ensuring that the contractor manages the construction activities in accordance with this CTMP and will ensure that any conditions of planning are incorporated into the site specific CTMP.

4.1 Monitoring

The implementation of the CTMP will be monitored by the contractor and employer's representative. Regular inspections / spot checks will be carried out to ensure that all project staff, material suppliers and hauliers follow the measures specified in the CTMP.

Appendix B

Invasive Species Management Plan

B1 Invasive Species Management Plan

DixonBrosnan
environmental consultants

Invasive Species Management Plan (ISMP)

Creamfields,
Kinsale Road, Cork

On Behalf of
Arup

February 2022

Project	Invasive Species Management Plan (ISMP) for proposed development at Creamfields, Kinasle Road, Cork	
Client	Arup	
Project Ref.	2111	
Report No.	2111	
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Date	**Revision**	**Prepared By**
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15/02/22	Issue to client	

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Table of Contents

1. Introduction

The information in this report has been compiled by DixonBrosnan Environmental Consultants, on behalf of the applicant. It provides information on the control of invasive species during construction works.

Invasive plant species have been recorded within the proposed development site boundary at Creamfields, Kinsale Road, Cork. One third schedule invasive species Japanese Knotweed (*Fallopia japonica*) was recorded within the proposed development site boundary. The medium impact species (NBDC) Buddleia (*Buddleja davidii*) and Himalayan Honeysuckle (*Leycesteria formosa*) and the low impact species Winter Heliotrope (*Arctostaphylos luciana*) were also recorded within the proposed development site.

This Invasive Species Management Plan (ISMP) describes the strategy that will be adopted during the construction and operation of the proposed development to manage the knotweed and other invasive species. This ISMP is a working document. Following the appointment of the contractor, and prior to commencing works on site, the ISMP will be further developed by the contractor.

The main objective of the ISMP is to control and prevent the spread of invasive species during the construction phase.

2. Methodology

This plan applies the most relevant and current guidance in relation to the treatment and management of invasive plant species in construction projects. The following guidance was referred to in preparation of this plan.

- NRA (2010) Guidelines for the Management of Noxious Weeds and Non- Native Invasive Plant Species on National Roads. National Roads Authority, Dublin.
- IW-AMP-SOP-009 Information and Guidance Document on Japanese knotweed
- Chapter 7 and Appendix 3 of the TII Publication: *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads* (NRA, 2010)
- *Best Practice Management Guidelines for Japanese Knotweed* (Invasive Species Ireland, 2015)
- *Circular Letter NPWS 2/08 Use of Herbicide Spray on Vegetated Road Verges* (National Parks and Wildlife Service 2008)

3. Legislation

The control of invasive species in Ireland comes under the Wildlife (Amendment) Act 2000, where it states that

'Any person who— [...] plants or otherwise causes to grow in a wild state in any place in the State any species of flora, or the flowers, roots, seeds or spores of flora, ['refers only to exotic species thereof']][...] otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence.'

The Birds and Natural Habitats Regulations 2011 (SI 477 of 2011), Section 49(2) prohibits the introduction and dispersal of species listed in the Third Schedule, which includes Japanese Knotweed, as follows: "any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [….] shall be guilty of an offence."

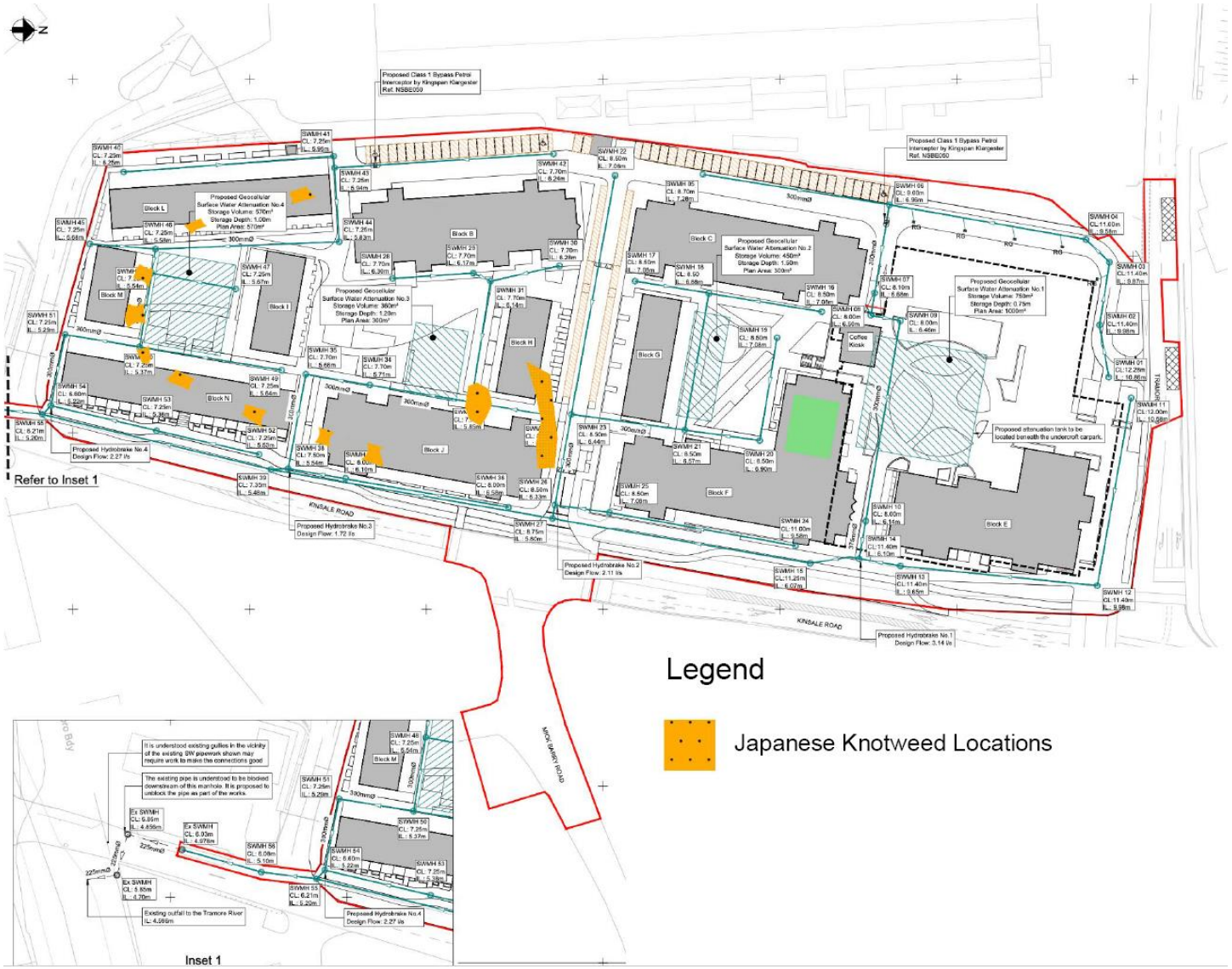

Figure 1. Location of Japanese Knotweed at proposed development site

Japanese Knotweed, which is listed on the Third Schedule, was recorded in dense stands within scrub habitat on the southern portion of the proposed development site.

Three other non-native species, Buddleia, Himalayan Honeysuckle and Winter Heliotrope, were also recorded with a scattered distribution at the proposed development site. These species are not included in the Third Schedule and therefore, the presence at these species at the proposed development site does not have the potential to lead to an offence under the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011). However, the National Biodiversity Centre (NBDC) notes that under the right ecological conditions, these species may have an impact on the conservation goals of a European site or impact on a water body achieving good/high ecological status under the Water Framework Directive (Directive 2000/60/EC).

4. Invasive Species Within the Study Area

Dense stands of Japanese Knotweed dominate scrub habitat in the southern section of the proposed development site (**Figure 1**). The medium impact listed species (NBDC) Buddleia and Himalayan Honeysuckle were also recorded within the proposed development site boundary. Buddleia and Winter Heliotrope (a low impact species) were recorded along the Mick Barry Road at the east of the site.

Japanese Knotweed is a highly invasive, non-native species which was originally introduced as an ornamental plant but has since spread along transport routes and rivers to become a serious problem. From an ecological viewpoint it out-competes native species by forming dense stands which suppresses growth of other species. It grows extremely vigorously and can penetrate through small faults in tarmac and concrete and thus can damage footpaths, roads and flood defence structures. As it can survive in poor quality soils, including spoil, it often thrives in brownfield sites and in urban areas.

Buddleia (also known as the butterfly bush) is a member of the Buddlejaceae family. It is very fast growing and can reach 2m in its first year, producing flowers and setting seed. Buddleia is a native of China but is common as a garden plant owing to its profusion of flowers which tend to attract a considerable diversity of butterflies (hence its other common name). It is frequently found in waste ground in urban environments, though has a widespread distribution throughout the country. It colonises bare ground very rapidly and can quickly form mono-typic stands. As Buddleia tolerates very poor soils, it is capable of growing on walls, rock outcrops or sub-soils, conditions which are frequent on new road schemes. In particular it poses a threat where such features are being left to re-colonize naturally as in rock cuttings, eskers, etc.

Himalayan Honeysuckle, also known as Pheasant's Bush, is a deciduous shrub, up to 2m tall; leaves oval 5-18cm long; tall green bamboo like stems; purple berries, 5-12mm. There are no documented impacts recorded for this species though appears to be expanding its range in Britain and Ireland. It forms dense thickets that can exclude native vegetation. Its fruits are dispersed widely by birds, particularly robins and chaffinches and small mammals. Himalayan Honeysuckle is used as a hedging plant and as cover for pheasants. It is still widely sold as an ornamental.

Winter heliotrope is a member of the Asteraceae family, is a low-growing herbaceous plant originating in North Africa. It is established widely in Ireland being frequent along roadsides, hedgerows, woodland edges and waste ground. As apparently only the male plant that is

present in Ireland, its spread is confined to vegetative means. Winter heliotrope produces large roundish leaves up to 30cm in diameter, which are downy underneath. Its pale pink flowers, which are amongst the earliest flowers of the year appearing in December and January, have a distinctive sweet smell. The foliage appears later in spring (though last year's foliage may not dieback completely) and forms a dense carpet at about 30cm in height.

5. Japanese Knotweed Management During Construction Phase

This purpose of this plan is to:

- Identify the extent of the infestation on the site
- Ensure further growth and spread of the plant on the site does not occur
- Ensure the plant is not spread to other sites either adjacent to the infested site or through transportation of contaminated soil to another site
- Identify the best method for managing and controlling Japanese Knotweed and other invasive species on the site with regard to the proposed site works and construction methods
- Communicate the plan to all site operatives to ensure success of the plan
- Document and record the treatment and management methods carried out on site for future reference, for future site owners and site users and to avoid litigation.

The contractor will employ a suitably qualified ecologist to update the plan prior to the commencement of construction. The updated plan will contain the following:

- Site background including proposed works
- Extent of the Japanese Knotweed infestation
- Specific control plan to be put in place
- Site hygiene protocols
- Responsible individuals
- Follow up requirements
- Any other relevant information

5.1 Management Options for Japanese Knotweed

There are a number of suitable management options to control and prevent the spread of Japanese Knotweed. The methodology outlined in this document will be updated, if required, based on an up to date survey of the contaminated area. The proposed management plan will be agreed with Cork City Council prior to the works being carried out. It should be noted that:

- Where any infested material (soil containing Knotweed species) is to be taken off site, a licence to transport the material will be required from National Parks and Wildlife Service (NPWS).

- A landfill, which is licensed to accept such material, will be identified to dispose of the excavated material. The landfill site operator will be informed of what the material contains.

- Where herbicide treatment will be used, consideration will be given to the proximity of the herbicide treatment to watercourses and other vegetation.

For all management plans, site hygiene protocols will be implemented. These protocols will apply to sites which are infested with Knotweed and those where Knotweed is not growing to prevent contaminated material being brought to site. Site hygiene protocols are outlined in **Section 5.3** below.

5.2 Pre-Construction Survey

Since invasive species spread quickly, prior to the commencement of treatment, a pre-construction survey will be undertaken to identify the extent of invasive species at that time. The survey will be undertaken by a suitably qualified ecologist. This information will be utilised to update the ISMP.

5.3 Site Hygiene at Contaminated Areas

Construction equipment, vehicles and footwear may provide a vector for the spread of invasive species. Maintaining site hygiene at all times in an area affected by invasive species is essential to prevent further spread.

The following site hygiene measures will be implemented for the contaminated area:

- Understand the potential extent of the rhizome (root) system underground – up to seven metres horizontally and three metres vertically.

- Where possible, the contaminated area will be avoided and fenced off, or the extent of the rhizomes clearly marked.

- If possible, the use of machinery with tracks will be avoid contaminated areas. Movement of machinery between contaminated and non-contaminated areas must be controlled and adequate power washing measures implemented.

- Areas where contaminated soil is to be stockpiled on site will be clearly identified and marked out.

- Designated entry and exit points will be identified for personnel on foot and for small mobile equipment. A delineated access track, to be maintained free of knotweed species, will be established through the site to minimise the spread of Knotweed species by permitted vehicles accessing the site.

- Vehicles, including footwear and tools, leaving the site will be inspected for any plant material and washed down (using a pressure washer) in a dedicated vehicular wheel

wash down facility, which will drain into a contained area within the site. Particular care is required with tracked machines.

- Vehicles used in the transport of contaminated material will be visually checked and washed down into a contained area before being used for any other work, either in the same area or on a different site.
- Only vehicles required for essential works including site investigation works will be brought on site and the number of visits minimised as much as practicable.
- Material gathered in the dedicated wash down contained areas will be appropriately disposed of off-site.
- For any subsoil or topsoil entering the site, the supplier will be required to provide an assurance that it is free of knotweed.
- All site personnel will be made aware of measures to be taken and will be informed of the requirements of the ISMP.
- Site hygiene signage, in relation to the management of invasive species, will be erected.

6. Japanese Knotweed Management Options

In addition to the possible advance treatment works and pre-construction survey, areas identified as requiring specific invasive species treatment will be demarcated and the designated control measures implemented at the earliest possible stage to reduce the risk of spread along the proposed scheme or beyond the land take.

There are a number of management options that may be implemented to control and prevent the spread of invasive species. These are presented in the sections below.

Those involved in the application of herbicides/pesticides will be competent to do so and, consequently, will have sufficient training, experience and knowledge in the area of herbicides/pesticides application.

All staff involved in the application of herbicides/pesticides will have received appropriate training, which may include achieving competency certification in the safe use of herbicides/pesticides through a National Proficiency Tests Council registered assessment centre or achieving an appropriate FETAC award in this area.

It is likely that chemical treatment, as described in **Section 6.1** will be the most suitable method for the identified invasive species.

6.1 Chemical Treatment

The control of knotweed will require the use of herbicides, which can pose a risk to human health, to non-target plants or to wildlife. In order to ensure the safety of herbicide applicators and of other public users of the site, it is essential that a competent and qualified person carries out the herbicide treatment. A qualified and experienced contractor will be employed to carry out all treatment work.

The contractor will follow the detailed recommendations of the following documents for the control of invasive species and noxious weeds:

- *Chapter 7 and Appendix 3 of the TII Publication: The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads* (NRA, 2010)
- *Best Practice Management Guidelines for Japanese Knotweed* (Invasive Species Ireland, 2015)
- *Circular Letter NPWS 2/08 Use of Herbicide Spray on Vegetated Road Verges* (National Parks and Wildlife Service 2008)

These documents include measures to aid the identification of relevant species, with details for the timing, chemicals and methodology for chemical control, and for measures to avoid environmental damage during the use of herbicides.

Chemical treatment involves the application of an herbicide to invasive species plant such as knotweed stands without any excavation or removal of the plant material. The preferred types of herbicides to be used in the treatment of knotweed are Glyphosate and 2,4-D Amine.

If herbicide is applied as the treatment option, it may need to be reapplied for up to five years after the first application to ensure the plant control measures have been effective.

Glyphosate is non-persistent and can be used near water but it is not selective (i.e. it is a broad spectrum chemical and will impact all plant species) whereas 2,4-D Amine can be persistent for up to one month, and can also be used near water but is more selective on certain plants. The selection of chemical by the contractor and supervising ecologist will depend on seasonal factors, site conditions, proximity to water, surrounding habitats etc.

The most effective time to apply Glyphosate is from July to September (or before cold weather causes leaves to discolour and fall). The majority of herbicides are not effective during the winter dormant stage because they require living foliage to take up the active ingredient.

Reapplication rates will depend on site specific considerations including the extent of the infestation, its location, and the time of year treatment commences. Details of the proposed chemical treatment plan will be included in the updated ISMP.

Foliar treatment (spraying) is usually applied with a sprayer such as a knapsack sprayer or a larger spray system. It is important to use a treatment dye to identify clearly all areas treated. Foliar treatment is an efficient way to treat large monocultures of invasive plants, or to spot-treat individual plants that are difficult to remove mechanically such as Japanese Knotweed.

In the case of knotweed, depending on weather and temperatures in the days following the initial treatment, and to ensure optimal uptake of herbicide into the rhizome system, a second similar treatment will be required usually within ten days, before the internal vascular system is no longer capable of translocating the herbicide to the root system.

While the upper surface of the leaves will be easier to treat, it is also important to treat the leaf under surface as knotweed possesses many stomata openings on the leaf under surface. Dead stems can be cut, removed and burned on/off site in accordance with the relevant legislation.

The stem injection method is sometimes used for knotweed control. This treatment requires a higher concentration of the active ingredient than is used in foliar applications. It involves the use of a specialist herbicide injection tool whereby the injection tool injects the herbicide directly into each of the canes approximately 20-30cms from the base of each cane (between the 1st and 2nd nodule).

Subsequently approximately 10 mL of herbicide mix is injected into each cane at a ratio of 5:1 through the use of a specialist stem injection tool. The application of glyphosate-based products by injection is most effective when applied in the early Autumn (mid to late Sept). Regrowth will occur in subsequent years, albeit much less vigorously, which will require follow up treatment at the appropriate time of year. Spot treatment will be required each year until no regrowth is observed.

In order to ensure that the use of herbicides does not contravene legislation, the contractor must comply with Circular Letter NPWS 2/08 *Use of Herbicide Spray on Vegetated Road Verges* from the National Parks and Wildlife Service dealing with the application on to non-target areas.

6.2 Excavation and Chemical Treatment On-Site

This option employs both physical and chemical methods of treatment. This method is employed in situations where treatment of invasive species, in particular knotweed, is required to be completed in a relatively short timeframe. Generally, digging up the rhizomes and re-cultivating it stimulates plant growth and will result in more successful herbicide application and management.

In summary, this management method requires cutting and killing of the surface plant. The cut material must be left on top of plastic sheeting until dried out and subsequently monitored for any sign of regrowth. Storage of cut material should not take place within flood risk zone of a river. The cut material should not be placed in a green waste recycling bin. Once dried out, the material should be burned on site in accordance with the relevant legislation. The surface of the affected area should be raked with tines to remove crowns and surface material, and in order to break up the rhizomes, bringing them to the surface, which will stimulate leaf production. This will make the plant more vulnerable to herbicide treatment. The more rhizomes that are brought to the surface, the more growth will occur, allowing for a more successful treatment. An excavator can be used to scrape the surface crowns and rhizomes into a pile and then to cultivate the ground to stimulate rhizomes to produce a higher density of stems for treatment. Reapplication of herbicide may be required for up to five years after initially application, subject to the site-specific management plan.

6.3 Excavation and burial

Excavated material containing knotweed can also be buried on site. This will require burying the material at a depth of at least five metres. The contaminated material must be covered with a root barrier membrane before being backfilled with topsoil, or other, suitable fill material. The manufacturer’s guarantee is required that the membrane will stay intact for at least 50 years. An accurate map and record of the location of the burial site, to prevent any future accidental disturbance, is required, and future owners must be informed of its position. If soil containing knotweed is stockpiled, the material must be stored in a manner that will not harm health or the environment. The stockpile should be on an area of the site that will remain

undisturbed. The area should be clearly fenced and marked with warning signs, and the stockpile should be regularly treated with herbicide to prevent any regrowth or re-infestation.

As a precaution, the stockpiled material should be laid on a root barrier membrane and covered to avoid contaminating the site further. The contractor must also comply with all waste legislation.

6.4 Excavation and root barrier membrane

Excavated material containing knotweed can also be buried on site within a root barrier membrane cell. The procedure is similar to that described in **Section 6.3** above.

This method will require burying the material at a depth of at least two metres. The contaminated material must be placed in a contained cell formed by a root barrier membrane before being backfilled with topsoil, or other, suitable fill material. The manufacturer's guarantee is required that the membrane will stay intact for at least 50 years. The method for stockpiling prior to burial would be as described as above. The contractor must also comply with all waste legislation.

6.5 Excavation and bund method

Where there is not sufficient depth on a site excavated material can be placed in a structured bund. The bund will comprise a raised area above ground level or a shallow excavation, no more than 0.5m deep, and lined with a root barrier membrane. The manufacturer's guarantee is required that the membrane will stay intact for at least 50 years. This method of treatment can also be used where knotweed material needs to be moved from a location and there is another area of the site available to contain it.

The aim of this method is to concentrate the rhizome material into the upper surface of the bund, where it will grow and be controlled by herbicide. If the rhizome is buried deep, it will become dormant when inside the bund and regrow when the apparently clean soil is used for landscaping on the site. The bund location needs to be clearly marked by warning signs and protected from potential accidental damage. Reapplication of herbicide may be required for up to five years after the initial application, subject to the site-specific management plan.

The appointed contractor must comply with waste legislation if this method is to be considered.

6.6 Excavation and removal from site

Where the above treatment options are not possible because the site is too small to contain excavated material, or too shallow for burial, or where there is a lack of space or where the infestation simply cannot be avoided by the construction works, removal of excavated material may be the only option. If any invasive species plant material is collected (e.g. by hand-pulling or mowing), it is important that its disposal will not lead to a risk of further spread. Where there are small amounts of Knotweed material to be removed it is possible to double bag the material and send to a licenced waste facility for disposal. Where the amount of material is larger in volume, it will be necessary to haul it from site to a suitably licenced waste facility.

Invasive species material, particularly roots, flower heads or seeds, must be disposed of at licensed waste facilities appropriately buried, or incinerated in compliance with the relevant legislation. Disposal must be carried out in accordance with the relevant waste management

legislation. Invasive species plant material or soil containing residual herbicides may be classified as either ‘hazardous waste’ or ‘non-hazardous waste’ under the terms of the Waste Management Acts, and both categories may require special disposal procedures or permissions. If the material has been treated with a persistent herbicide, the excavated material must be classified as hazardous waste and must be disposed of to a hazardous waste facility. Advice would need to be sought from a suitably qualified waste expert regarding the classification of the waste and the suitability of different disposal measures.

The movement of invasive plant material requires a licence from the NPWS under Section 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended).

7. Preferred Treatment Option Advance Chemical Treatment and Continued Chemical Treatment of Regrowth

The knotweed within the proposed development boundary is located within an area zoned as Flood Zone C. The risk of fluvial, pluvial, tidal and groundwater flooding on the site is low. However, in the event of a very extreme high-intensity rainfall event, the capacity of the drainage system on the site could be exceeded, leading to surface water/ ponding on the site. As there is the potential for flooding to impact on the area currently contaminated with knotweed species, there is the potential for fragments of knotweed to be spread from the works area and inadvertently distributed off-site.

Having assessed the available management options and constraints associated with this particular site, it has been concluded that *in-situ* chemical treatment prior to construction, careful management of the works and continued in-situ chemical treatment post construction is the preferred option. This is primarily due to the following significant constraints.

The risk of fragments of knotweed being spread outside of its current distribution is high as high flood levels could result in fragments of knotweed, which are dislodged during site works, being carried downstream along the River Lee and thus impacts on off-site receptors could occur.

For the re-growth material within the site or juvenile plants, a foliar spray application using a cowled knapsack sprayer will allow for efficient treatment when stems are too small and fragile to use stem injection.

Therefore, the following methodology is proposed:

1. Contractors will commence chemical treatment of the knotweed species in this area, in order to avoid the continued spread of the species. The preferred method for initial treatment is stem injection and spot treatment. This will be carried out under the supervision of a qualified ecologist who will ensure that the correct methodology and appropriate site hygiene methods are utilised. This ISMP will be updated by the supervising ecologist if required. Early treatment will effectively reduce the length of time that chemical treatment will be required. It is noted that knotweed can persist for long periods and the sooner treatment commences, the more rapidly this species will be eradicated from the works area.

2. Prior to the commencement of site works, the extent of contamination will be determined by site investigations including trial pits. This information will be used to determine the area of contamination taking into account that the roots of knotweed can extend 7m from the parent plant. If it is determined by visual inspections/trial hole investigation that viable plants remain within the work area the spreading of this viable Knotweed plant material outside the current area of contamination is not permitted.

3. Following the above, the identified area of contamination will be clearly fenced and all works in relation to knotweed will be carried out only within this fenced area.

4. Where possible, contaminated soil will remain on-site and be treated. The transport of any material that must be removed off site for disposal, as part of the construction works, will require a licence from the NPWS.

5. Any excavations that are carried out as part of the project, must be contained within this area and the spread of any fragments of viable plant material or contaminated soil outside of this area must be effectively prevented. All hygiene protocols as listed in this ISMP must be effectively implemented.

6. Any contaminated material including material from the wash down area must be contained within the identified and fenced contaminated area or removed to a suitably licenced facility offsite in line with standard hygiene measures.

7. Once works within the contaminated area is complete a follow-up programme of works will commence to treat any regrowth of knotweed. This will consist of stem injection and spot treatment and it will continue until the supervising ecologist can certify that Knotweed has been effectively eradicated.

8. The application of herbicide (injection/spot treatment) must take into account the risk of flooding which must be assessed immediately prior to the use of herbicides. Treatment will not be carried out when heavy rain is forecast or in the winter period when there is a higher risk of flooding and adverse weather.

8. Management of Other Non-native Species During Construction Phase

As noted in **Section 3** of this report, there is no statutory obligation to remove Buddleia, Winter Heliotrope or Himalayan Honeysuckle. However, removal is recommended.

8.1 Buddleia and Himalayan Honeysuckle

These species are straightforward to control using a mixture of mechanical removal and herbicide treatment. It is noted that Buddleia is a plant that favours disturbed sites, physical grubbing of plants can provide ideal conditions for the germination of seeds. Therefore, care needs to be taken to ensure re-vegetation of controlled areas is undertaken swiftly. The branches of Buddleia are capable of rooting as cuttings, so care should also be taken to ensure material is disposed of in a manner to avoid this risk.

Physical Control

Management methods such as digging it out are applicable only to minor infestations at the initial stage of invasion. Hand-picking of young plants is feasible but should be undertaken with care to avoid soil disturbance which can give rise to a flush of new seedling. Grubbing of mature stands as a sole attempt at control is not recommended for the same reason. After uprooting, it is essential to plant the ground in order to prevent a flush of new seedling growth.

When it is cut, both species grow back from the stump very vigorously. Mowing of young plants does not provide control as they re-sprout with vigour. Where removal of mature plants is not feasible in the short term, the flower heads should be cut off in June before seed set.

Chemical Control

Recommended practice for the application of herbicides requires cutting back of plants to a basal stump during active growth (late spring to early summer) which is then treated (brushed on) immediately with a systemic weed killer mix. Foliar application of triclopyr or glyphosate

may be adequate for limited infestations of younger plants but should be followed up at 6 monthly intervals. Where herbicide treatment will be used, consideration will be given to the proximity of the herbicide treatment to watercourses and other vegetation.

8.2 Winter Heliotrope

8.2.1 Physical Control

Due to the extensive rhizome network, physical removal of winter heliotrope is really only practical on a limited scale. Where mechanical means can be employed, it should be possible to deal with larger infestations but due to the potential for regeneration from fragments of roots, it may be best to tackle its control using a combination of excavation with follow-up treatment by herbicides. As with other plants with the potential to spread from small root fragments, disposal of material should be undertaken with due caution to prevent accidental spread of the plant. Other means of disposal include burial of material at a depth of at least 2m, incineration or disposal to licensed landfill. There is no evidence that the material would withstand composting though this approach would probably only be suitable for limited infestations.

8.2.2 Chemical Control

An application of a glyphosate-based herbicide after flowering in February to March is recommended by Cornwall Nature Reserves (2008), though the Royal Horticultural Society (2008b) recommends spraying in mid- summer or later but before the foliage begins to die back.

9. Conclusion

Japanese Knotweed is a high risk invasive plant species and will be treated in accordance with this ISMP.

It is important that knotweed is effectively eradicated within the site boundary and that the spread of this species outside of the site boundary via surface water discharges or construction works does not occur.

Herbicide treatment of knotweed via stem injection and spot treatment will commence as soon as practically possible under the supervision of a qualified ecologist. Site investigations will be carried out prior to the commencement of works to determine if Knotweed species are still present and the degree of contamination.

This information will be utilised to determine the extent of the contaminated area and will be utilised to update this ISMP. Detailed fencing and hygiene protocols will ensure that viable plant material will not be spread outside of its current distribution area. Following completion of works, monitoring and treatment protocols will be implemented to ensure any regrowth is effectively treated.

Buddleia, Himalayan Honeysuckle and Winter Heliotrope are considered a lower risk species and will be treated via cutting back to a basal stump or grubbing out followed by chemical treatment. Treatment will continue until the supervising ecologist certifies that this species has been effectively removed from the works area.

References

Invasive Species Ireland (2015) Best Practice Management Guidelines for Japanese Knotweed

IW-AMP-SOP-009 Information and Guidance Document on Japanese knotweed

National Parks and Wildlife Service (2008) Circular Letter NPWS 2/08 Use of Herbicide Spray on Vegetated Road Verges

National Roads Authority (2010) The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads

NRA, 2010 Chapter 7 and Appendix 3 of the TII Publication: *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*

Appendix 5.2

Construction and Demolition Resource and Waste Management Plan

Construction and Demolition Resource and Waste Management Plan

Watfore Ltd.

Creamfields Residential Development

Construction and Demolition Resource and Waste Management Plan

252666-00-RPT-CDRWMP-SHD

Issue 2 | 16 February 2022

Job number 252666-00

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Document Verification

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Contents

Appendices

Appendix D

EPA – List of Waste Codes for Construction and Demolition Wastes

Appendix E

Typical Content – Detailed Construction and Demolition Resource and Waste Management Plan

Appendix F

Resource and Waste Inventory Template

1 Introduction

1.1 Overview

This report sets out the Construction and Demolition Resource and Waste Management Plan (CDRWMP) prepared as part of the Planning Application for a Strategic Housing Development (hereafter referred to as the 'proposed development') on lands located at the former "CMP Dairies" site at Kinsale Road / Tramore Road, Cork.

The content presented in this CDRWMP has regards to the guidance outlined in the following documents:

- Environmental Protection Agency Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects – (EPA, 2021a) (Tier 2 development guidance applied); and
- The EU Construction & Demolition Waste Management Protocol (European Commission, 2016).

Waste management objectives, policy and legislation are outlined in this Section.

Subsequent Sections are included in this report which address the roles and responsibilities of relevant personnel (**Section 3**), details regarding wastes arising (**Section 4.2** – **Section 4.4**), the costs of waste management (**Section 4.5**), waste collection (**Section 5.3**), waste recovery/disposal off site (**Section 5.4**), and record keeping (**Section 5.5**).

Following appointment, the contractor will be responsible for detailing and maintaining this report and updating it as appropriate. The responsibilities as set out in the EPA Guidelines are included in **Appendix A**.

1.2 Waste Management Objectives

The principal objective of sustainable resource and waste management is to use material resources more efficiently, to re-use, recycle and recover material and to reduce the amount of waste requiring final disposal. The value of products, material and resources is maintained in the economy for as long as possible such that the generation of waste is minimised.

To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy (refer to **Figure 1**).

A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020 – 2025 (Department of Environment, Climate and Communications (DoECC), 2020) notes that:

> *"In a circular economy the value of products and materials is maintained for as long as possible; waste and resource use are minimised, and*

resources are kept within the economy when a product has reached the end of its life, to be used again and again to create further value."

The EU Circular Economy Action Plan (European Commission, 2020) notes that:

"the EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade."

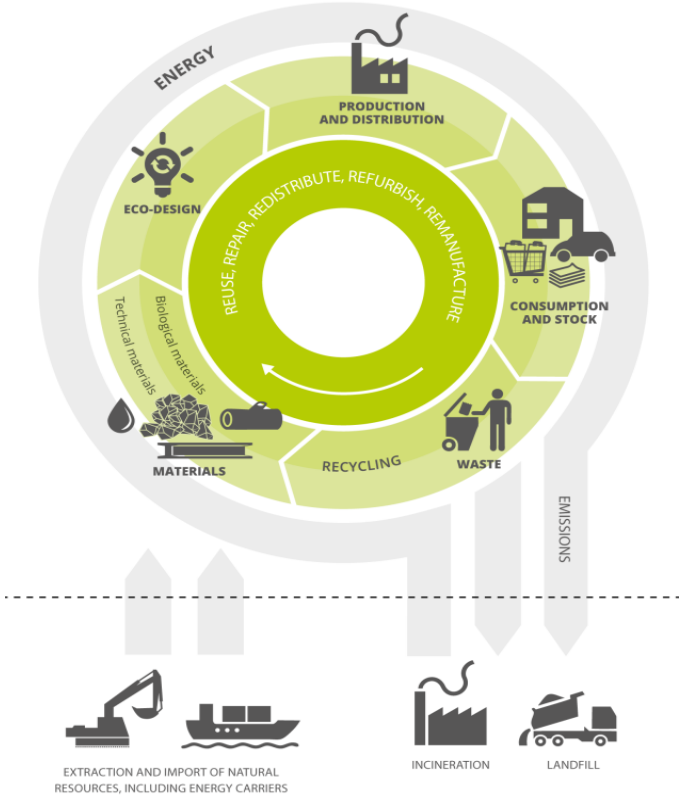

Figure 1: A Simplified Model of the Circular Economy for Materials and Energy (European Environment Agency, 2016)

However, where residual waste is generated, it should be dealt with in a way that follows the waste hierarchy (refer to **Figure 2** and set out in the European Communities (Waste Directive) Regulations 2011 (S.I. No. 126/2011). It is the intention that this would actively contribute to the economic, social and environmental goals of sustainable development.

The European Commission has adopted a new Circular Economy Action Plan (EC, 2020) - one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth. The Circular Economy Action Plan identifies buildings and construction as a key area where there are opportunities for resource efficiency and circularity.

The Department of the Environment, Climate and Communications published the Irish Waste Action Plan for a Circular Economy in September 2020 (DoECC,

2020). The Plan outlines the commitment in the new Programme for Government to implement a new National Waste Action Plan providing new waste policy and giving direction to waste planning and management in Ireland.

The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

The Plan includes the target of preparing for reuse, recycling and other material recovery (including beneficial backfilling operations using waste as a substitute) of 70% by weight of Construction and Demolition non-hazardous waste (excluding natural soils & stone).

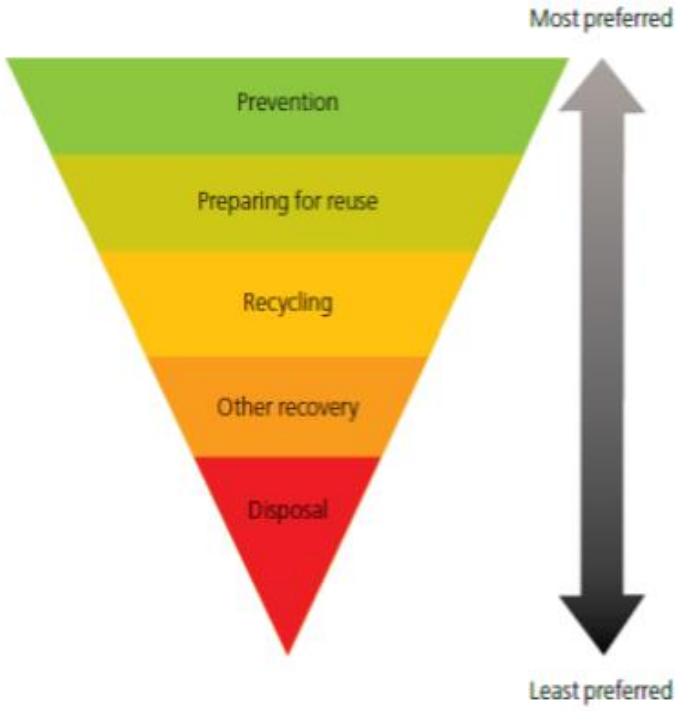

Figure 2: Waste Hierarchy

The Department of Environment, Climate and Communications published the 'Whole-of-Government Circular Economy Strategy' (DoECC, 2021a) in December 2021. The Strategy aims to support and implement measures that significantly reduce Ireland's circularity gap, so that Ireland's rate is above the EU average by 2030.

In June 2021, the Government published the heads of a circular economy bill entitled the 'Circular Economy Bill 2021' (DoECC, 2021b). This Bill, when enacted, aims to place the Strategy, and the commitment to a circular economy, on a clear statutory footing.

It also aims to streamline the statutory mechanisms for construction and demolition material reuse which are known as 'Article 27' and 'Article 28'.

The objectives of this Plan will facilitate reuse and recycling and divert waste from landfill. The content and headings used in this Plan comply with the EPA Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021a).

Following appointment, the contractor will be responsible for detailing and maintaining this Plan and updating it as appropriate.

1.3 Waste Management Legislation, Policy and GuidanceOverview

Resource and waste management takes place in a legislative and policy framework. Applicable legislation, policy and best practice guidance was reviewed during preparation of this Plan.

The key components of EU, national and local policy, legislation and guidance relevant to proposed demolition and construction are summarised as follows:

- prevention and minimisation of waste is the preferred option;
- where construction and demolition waste is generated it should be source separated to facilitate reuse and recycling and to maximise diversion of waste from landfill;
- where waste may not be prevented or recycled it should be transported and disposed of in accordance with applicable legislation and without causing environmental pollution; and
- waste may only be transferred by a waste collection permit holder and delivered to an authorised waste facility.

A description of relevant legislation, policy and best practice guidance related to waste management is presented in **Appendix B**, with a summary of key documents provided below.

1.3.2 Southern Region Waste Management Plan 2015 - 2021

For the purposes of waste management planning, Ireland is now divided into three regions: Southern, Eastern-Midlands, Connacht-Ulster. The Southern Region includes Cork City Council. The Southern Region Waste Management Plan 2015 - 2021 was launched in 2015 (Limerick City & County Council/Tipperary County Council, 2015). The strategic approach of the plan places a stronger emphasis on preventing wastes and material reuse activities. Three strategic targets have been set in the plan which include:

- 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill in favour of higher value pre-treatment processes and indigenous recovery practices.

The plan looks to 2030 and includes a goal of reaching a recycling rate of 60%.

1.3.3 Construction and Demolition Waste Soil and Stone Recovery / Disposal Capacity Update Report 2020

The Regional Waste Management Planning Offices (RWMPOs) appointed RPS on behalf of the Eastern – Midlands, Connacht-Ulster and Southern Waste Management Planning Regions to quantify and analyse national capacity within the market for the management of soil and stone waste arisings , including hazardous, based on 2018 data. This report (RPS, 2020) updates the Soil and Stone Recovery / Disposal Capacity report published in 2016.

The report shows that the Covid-19 crisis has significantly impacted development and construction. The forecast for 2022 predicted a continued gradual return to normal economic activity (although this is a fluid situation with an uncertain outlook). By the end of 2029 it is forecast that CDW will grow to a total of 10.1m tonnes. The corresponding forecast data for soil and stone waste is 8.7m tonnes by end of 2029. The report indicates that there is sufficient capacity at licenced facilities. There are 15 soil recovery facilities in the EPA licensing system for the EMR. The annual active licenced capacity for the EMR, at end-2018, is 2,411,400 tonnes, whilst the annual authorised capacity is 3,951,400 tonnes. The authorised capacity includes the capacity of active and uncommenced sites.

1.3.4 Cork City Development Plan 2015 - 2021

The Cork City Development Plan 2015-2021 (Cork City Council, 2015) sets out Cork City Council's policies and objectives for the development of the city over the Plan period.

The Council identifies a strategic environmental infrastructure objective to follow a waste hierarchy that starts with prevention, preparing for re-use, recycling, other recovery (e.g. energy recovery) and finally disposal (including landfill).

A draft Plan was also recently published which sets out the priorities for the city for a 6-year period from 2022 to 2028 (Cork City Council, 2021). The draft Plan seeks to ensure that measures will be adopted to ensure sustainable waste management while it also aims to support provisional initiatives that will develop the circular economy through implementation of the Regional Waste Management Plan for the Southern Region 2015-2021 and its successor.

1.3.5 European Commission (2016) EU Construction & Demolition Waste Management Protocol

This protocol was published by the European Commission in September 2016 (European Commission, 2016). The overall aim of the protocol is to increase confidence in the Construction and Demolition (C&D) waste management process and the trust in the quality of C&D recycled materials. This will be achieved by:

a) Improved waste identification, source separation and collection;

b) Improved waste logistics;

c) Improved waste processing;

d) Quality management; and

e) Appropriate policy and framework conditions.

1.3.6 Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021a)

These guidelines were published in 2021 (EPA, 2021a) and supersede the guidelines published by the Government in 2006 (DoEHLG, 2006).

The replacement guidelines reflect current waste legislation and policy including 'A Waste Action Plan for a Circular Economy Ireland's National Waste Policy 2020-2025' (DoECC, 2020). Since the publication of the 2006 guidelines, waste management legislation and policy have evolved towards prioritising waste prevention and life-cycle thinking through an increased emphasis on waste prevention and the promotion of ore circular design and construction principles in line with the EU Circular Economy Action Plan under the EU Green Deal.

The guidelines address the best practice approach for the following phases of a project:

- Prior to Construction – including the stages of design, planning and procurement in advance of works on site; and
- During Construction – relating to the effective management of resources and wastes during construction or demolition operations.

2 Description of the Proposed Development

2.1 Proposed Development

Watfore Limited. intend to apply to An Bord Pleanála (the Board) for permission for a Strategic Housing Development with a total application site area of c. 3.39 ha, on lands located at the former "CMP Dairies" site at Kinsale Road / Tramore Road, Cork.

The proposed development will consist of a Strategic Housing Development of 609no. dwellings (561no. apartments (of which 257no. are Build To Rent) and 48no. townhouses) in 12no. buildings of between 1-15 storeys in height over ground, to include a coffee kiosk; gym; café; retail use; creche and community hub; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

The site plans for Level 0 and Level 1 of the proposed development are presented in **Appendix C**.

There are no buildings or structures currently present on the site, however the concrete ground floor slabs and foundations for previously demolished structures remain.

The proposed development includes the demolition and removal of the of the existing concrete ground floor slabs and foundations. The approximate extent of the existing concrete ground floor slabs and foundations and carpark surfacing are identified in **Figure 3**.

Figure 3: Extract from Google Maps marked up to show existing concrete ground slabs and foundations. Red: concrete floor slabs/foundations, blue: carpark.

2.2 Receiving Environment

In 2019, the latest year for which there are published statistics available, 8.8 million tonnes of Construction and Demolition (C&D) waste was generated according to EPA data (EPA 2021b), an increase of 2.6 million tonnes from 2018. In addition, the EPA received by-product notifications for approximately 5.9 million tonnes of soil and stone material. Of this, approximately 2.7 million tonnes of this material was determined to be by-product, as notified.

The EPA reports that Ireland achieved 84% material recovery of construction and demolition waste in 2019 (EPA, 2021b). Under the Waste Framework Directive (2008/98/EC) Member States must achieve 70% of material recovery of non-hazardous, non-soil-and-stone C&D waste, by 2020.

A breakdown of the composition of C&D waste in Ireland in 2019 is set out in **Table 1**. These figures should be considered as a guide only as C&D waste can vary significantly from one project to another, depending on the nature of the development and the waste management practices employed on-site.

Approximately 7.4 million tonnes of this C&D waste was comprised of soil, stones and dredging spoil, making up approximately 85% of the material waste stream. **Table 1** shows the quantity (tonnes) of waste materials collected by authorised waste collectors.

Table 1: Composition of C&D waste material collected in Ireland (EPA, 2019)

C&D waste type	Quantity (tonnes)	% of material stream in reference to total
Soils, stones & dredging spoil	7,488,357 Note 1	84.8%
Concrete, brick, tile & gypsum	608,746	6.9%
Mixed C&D waste	393,247	4.5%
Metal	190,904	2.2%
Bituminous mixtures	113,454	1.3%
Segregated wood, glass & plastic	30,423	0.3%
Total	**8,825,130**	**100%**

Note 1 The quantity of hazardous contaminated soil generated in Ireland in 2019 amounted to 90,595 tonnes.

Data issued by the EPA demonstrates that final treatment operations (backfilling, recycling, energy recovery, disposal) of C&D waste materials varied greatly between material streams. By far the largest quantity of C&D waste was used for

backfilling (a recovery operation), which mainly reflects the dominance of soil and stones in the overall composition mix.

The EPA reports that a total of 580,977 tonnes of hazardous waste was managed and treated in Ireland in 2019, representing an increase of over 54,580 tonnes since 2018. Hazardous waste types include wastes from waste treatment, contaminated soils, chemical reaction residues and solvents. 65% of hazardous waste was exported for treatment in 2019 (compared with 73% in 2018).

3 Roles and Responsibilities

Copies of the Project Resource and Waste Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the Project Resource and Waste Management Plan and informed of their responsibilities.

The nominated Resource Manager (RM) responsible for implementation of this Resource and Waste Management Plan will be identified prior to construction commencement. The RM will be responsible for informing contractor staff and sub-contractors of content of the Plan and for maintaining and keeping the Records set out in **Section 5**. In the event of the RM leaving the project team the contractor will nominate a suitable replacement.

The RM will be responsible for conducting ongoing resource audits at the site during construction. The RM shall ensure that where training is required regarding the handling and management of wastes on site that this is provided to staff as required.

4 Key Materials, Quantities and Costs

4.1 Introduction

Construction and Demolition (C&D) waste is defined as waste which arises from construction, renovation and demolition activities.

Also included within the definition are surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities.

Typical construction and demolition waste types which are likely to arise during the proposed demolition and construction works are set out **Appendix D**, including EPA List of Wastes (LOW) codes.

The contractor will ensure that waste generation on site is minimised and that waste removed from site for recovery or disposal is reduced where feasible.

4.2 Site Clearance and Demolition

The first stage of the construction works will involve site preparation and clearance. Clearance of the site will include the removal of any vegetation, soil and stone or other materials.

Existing structures to be demolished/removed are outlined previously in **Section 2** and presented in **Figure 3**. The footprint area of the existing hardstanding to be demolished/removed is approximately 18,308 m^2.

In accordance with Section 4.3.1.3 of the EPA Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021a) the proposed demolitions works will be carefully planned to ensure the reuse and recovery of deconstructed components is maximised where feasible, in compliance with regulatory and performance requirements.

It is noted that there is likely to be asbestos present in soils on site. An asbestos audit will be therefore undertaken prior to any demolition and excavation works. Asbestos waste will be removed from site by specialist contractors and holders of the appropriate waste collection permit.

The contractor will arrange for removal of all material to a waste facility which has been authorised for recycling, recovery or disposal in accordance with the provisions of the Waste Management Act, 1996 as amended.

Organic waste (such as trees and vegetation) will be removed from site by a waste collection permit holder and delivered to an authorised composting or organic waste facility. The extent of vegetation clearance will not be significant. The vegetation clearance will be kept to the minimum required to facilitate construction.

Further details on the management of demolition waste is provided in **Section 5.1**.

4.3 Excavation Waste Arisings

The proposed development requires the construction of foundations, retaining walls, a ground floor podium structure and basement water tank rooms which will require the excavation of materials.

It is estimated that approximately 45,920m^3 of excavated material will be generated from the proposed development. The vast majority of this material will be comprised of made ground and will be non-hazardous or inert. A small volume of material is predicted to be hazardous.

Possibilities for the re-use of clean, non-hazardous or inert excavation material as fill or for engineering uses in the works will be considered following appropriate testing to ensure material is suitable for its proposed end use where required.

Where clean, non-hazardous or inert excavation material may not be re-used within the proposed works the contractor will endeavour to send the material to authorised facilities for beneficial re-use, recovery or recycling so far as is reasonably practicable.

Excavated material that is deemed hazardous will be treated at an authorised facility either in Ireland or abroad.

A Soil Management Plan will be prepared for the proposed development to identify detailed reuse opportunities for excavated material on site.

Further details on the management of excavation waste is provided in **Section 5.1**.

4.4 Construction Waste Arisings

A description of typical wastes from construction projects including their respective LoW Codes are outlined in **Table 2**.

Table 2: Typical Construction Waste LoW Codes and Corresponding Waste Descriptions (Environmental Protection Agency)

LoW Code	Waste Categories
17 01*	Concrete, bricks, tiles and ceramics
17 02*	Wood, Glass and Plastic
17 03*	Bituminous mixtures, coal tar and tarred products
17 04*	Metals
17 05*	Soil (incl. excavated soil from contaminated sites), stones and degrading spoil
17 08*	Gypsum-based construction materials
17 09*	Other Construction and Demolition Waste
16 02*	WEEE
16 06*	Batteries
03 02*	Wood Preservatives
17 05 03**	Contaminated Soils
13 07*	Liquid Fuels

*May include hazardous wastes

**Hazardous

These figures should be considered as a guide only as C&D waste can vary significantly from one project to another, depending on the nature of the development and the waste management practices employed on-site.

The UK Department of the Environment, Food and Rural Affairs and the Building Research Establishment (BRE) published benchmark construction waste figures which are suitable for use for planning purposes. These figures have been compiled from over 100 projects that entered waste data in the BRE SMARTwaste construction waste tool (SMARTwaste, 2012).

A breakdown of total floor areas is presented in **Table 3**. Using the BRE benchmark for waste generation, a tonnage of waste per square metre has been assumed in the calculation of the total proposed waste arising from the construction phase of the proposed development. It was found that the total estimated waste from the new build phase of the proposed development is approximately 10,201 tonnes.

Table 3: Breakdown of total proposed floor areas

Land Use	Total Area (GFA)	BRE Benchmark (Tonnes/100m^2)	Total Tonnage of Waste
Residential			
Residential	57,923m^2	16.8	9,731
Commercial			
Commercial Retail	590m^2	27.5	162
Community Facilities	547m^2	22.4	122
Gym	550m^2	21.6	119
Creche	289m^2	23.3	67
Total	**59,899m^2**	-	**10,201 tonnes**

The contractor will ensure that waste generation on site is minimised and that waste removed from site for recovery or disposal is reduced where feasible.

4.5 Costs of Waste Management

As required by the Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021a), this section addresses costs of resource management.

While landfill disposal has been the most commonly used method for waste management in Ireland in the past, waste to energy incinerators are also now in operation at Poolbeg, Dublin 4 and in Carranstown, County Meath.

Typically, the current cost of disposal of waste to landfill in Ireland exceeds €170 per tonne. From 1st July 2013 in accordance with the Waste Management (Landfill Levy) (Amendment) Regulations 2013 the 'landfill levy' increased to €75 per tonne for waste disposed to landfill. Disposal of hazardous waste can cost from €350 upwards.

In addition to landfill operator fees and landfill levies there are additional costs included in the 'true cost of waste management' including:

- The purchase cost of waste materials (including imported soil);
- Handling costs;
- Storage and transportation costs; and
- Revenue generated from sales.

Therefore, in order to reduce costs associated with waste management, surplus materials should be reused and recycled where possible and materials should be carefully stored and handled to minimise risk of damage.

5 Site Management

The contractor will ultimately be responsible for the management of resources on a project and agreeing and revising as necessary any commitments or targets included in the CDRWMP developed at design/planning with the Client for acceptance and adoption in the CDRWMP for construction.

The contractor will allocate responsibility for resource management to one or more individuals of sufficient seniority to put the relevant procedures into practice. The Contractor will nominate a suitably qualified Resource Manager (RM) with expertise in waste and resource management to implement the CDRWMP.

The nominated RM responsible for implementation of this Resource and Waste Management Plan will be identified prior to construction commencement.

Copies of the Plan will be made available to all relevant personnel on site.

All site personnel and sub-contractors will be provided with a copy of the Plan and will be informed of the objectives of the Plan and their responsibilities in relation to compliance with the Plan.

The RM shall ensure that where training is required regarding the handling and management of wastes on site that this is provided to staff as required and that the CDRWMP is included in site induction training.

The RM will be responsible for informing contractor staff and sub-contractors of content of the Plan and for maintaining and keeping the Records set out below.

In the event of the RM leaving the project team the contractor will nominate a suitable replacement.

5.1 Demolition and Excavation Waste Management

Possibilities for re-use of clean non-hazardous demolition and excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use.

Demolition and excavated material, which is not suitable for reuse on site, or surplus to requirements, will be stockpiled, tested and classified. Where feasible classification for reuse on other construction site(s), for example as a “by product” under Article 27, will be considered. Where the material is not suitable for reuse it will be categorised in accordance with the EPA List of Waste and Determining if Waste is Hazardous or Non-hazardous (EPA, 2018).

Waste may only be transferred from site by a waste collection permit holder and delivered to an authorised waste facility (i.e. a facility which holds a Certificate of Registration, Waste Facility Permit or Waste Licence) for the specific waste types it receives.

Where removal from site of construction by-products for further use is proposed this will take place in compliance with Article 27 of the European Communities (Waste Directive) Regulations, 2011, where appropriate. The contractor will be responsible for ensuring compliance with this article where appropriate.

Demolition and excavated material that is deemed hazardous will be treated at an authorised facility either in Ireland or abroad. Export of hazardous waste from the proposed development outside of the State is subject to a Europe-wide control system founded on EU Regulation 1013/2006 on the Shipments of Waste (known as the Transfrontier Shipment Regulations), as amended. This legislation is supplemented by the Waste Management (Shipments of Waste) Regulations 2007, as amended, which makes Dublin City Council responsible for the enforcement of this regulatory system throughout Ireland. In 2019 in Ireland, 580,977 tonnes of hazardous waste was generated and of this 333,195 tonnes was exported for treatment. The above procedures will be applied to any hazardous waste generated during the construction phase. Export of hazardous waste from site outside the state will comply with the procedures set out in this legislation.

As noted in **Section 1**, following appointment, the contractor will be responsible for detailing and updating this Plan. The detailed Plan will include a description of how demolition and excavation material from the proposed development will be managed. A full list of all facilities to which uncontaminated demolition and excavation material will be sent will be provided in the detailed Plan.

5.1.1 Article 27

Surplus excavation material may be declared a by-product under (under Article 27 of the EC Waste Directive Regulations, 2011-2020) for reuse in one or more known construction projects.

By-product notifications to the EPA provide an opportunity for reuse of surplus clean soil and stone material arising from construction activity. This can apply to locations other than authorised recovery facilities e.g. quarries operating under planning permission, parks or other developments requiring earthworks and importation of clean soil and stone. This option can bring significant economic benefits while facilitating beneficial re-use of by-products. This plays a role in Ireland's implementation of Circular Economy principles.

An Article 27 notification to the EPA under Article 27 (S.I. No. 323/2020) European Union (Waste Directive) Regulations 2020 is required to achieve by-product status for soil and stones. It is noted that the use of Article 27 is limited to clean soil and stone, and it must be demonstrated to the EPA that the following four conditions are met:

- further use of the soil and stone is certain;
- the soil and stone can be used directly without any further processing other than normal industrial practice;
- the soil and stone is produced as an integral part of a production process; and
- further use is lawful in that the soil and stone fulfil all relevant requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

Where it is proposed to use an Article 27 EPA notification in relation to excavation material from the proposed development, the contractor is responsible for submission of the Article 27 notification to the EPA. Where it is proposed to use soil from off-site with an Article 27 notification, the contractor is responsible for carrying out any necessary due diligence regarding the material and ensuring that all EPA guidelines relating to that Article 27 notification have been complied with before the soil is imported into the site. Where feasible, appropriate and available Article 27 materials arising from other sites will be used in the development of this site.

The contractor is responsible for ensuring all applicable regulatory requirements under waste, planning and other laws are complied with prior to movement of excavation material.

5.1.2 Soil Recovery at Sites Holding Waste Facility Permits or EPA Licences

Where removal of wastes from the proposed development is unavoidable it will be delivered by the contractor only to facilities which are authorised under the Waste Management Act, 1996 as amended and which hold the appropriate certificate of registration, waste facility permit or EPA licence.

The Waste Management (Facility Permit and Registration) Regulations 2007, as amended sets out the classes of waste activity requiring waste facility permits and certificate of registration. The most relevant class of activity in relation to soil recovery facilities is:

Class 5 (Third Schedule, Part 1 of the Regulations) for the *"Recovery of excavation or dredge spoil, comprising natural materials of clay, silt, sand, gravel or stone and which comes within the meaning of inert waste, through deposition for the purposes of the improvement or development of land, where the total quantity of waste recovered at the facility is less than 100,000 tonnes."*

For waste facility permits and certificate of registration the capacity is typically a lifetime capacity, and when reached, the facility typically closes. Waste facility permits and certificates of registration are granted to private operators by local authorities.

EPA licensed waste activities authorised to accept soil and stones for recovery and disposal include soil recovery sites, landfills, transfer stations and materials recovery facilities. These typically handle a larger tonnage of wastes than facilities holding certificates of registration of waste facility permits.

EPA licences typically include an annual maximum intake capacity and a maximum lifetime capacity for the licenced facility.

Where the contractor proposes to deliver excavated materials from the proposed development to facilities holding a certificate of registration, waste facility permit or EPA waste licence the contractor is responsible for ensuring the authorisation is valid and allows acceptance of the relevant List of Waste Code.

A copy of the authorisation will be included in the Plan and evidence will be provided that the proposed facility will have capacity to accept the required quantity of waste from the proposed development.

5.2 Construction Waste Management

The contractor will take the following measures to prevent waste, facilitate recycling and minimise waste disposal during the construction phase:

- Source Segregation: Where possible, metal, timber, glass and other recyclable material will be segregated and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation.
- Office and food waste arising on site will be source separated at least into dry mixed recyclables, biodegradable residual wastes.
- Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain, including photographs as appropriate.
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site.

- Excessive temporary works will be avoided, existing facilities will be reused as appropriate.
- Material Management: 'Just in time' delivery will be used so far as is reasonably practicable to minimise material wastage.
- Waste Auditing: The contractor will record the quantity in tonnes and types of waste and materials leaving the site during the demolition works. The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered and disposed of.
- Paints, sealants and hazardous chemicals etc. will be stored in secure, bunded locations.
- All hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection holder.
- Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised waste facility.
- The contractor will ensure that any off site interim storage facilities for excavated material have the appropriate waste licences or waste facility permits in place.

The appointed contractor will be required to produce a detailed Construction and Demolition Resource Management Plan prior to commencement of the proposed works. This will include the names, addresses and authorisation details of the facilities to which waste from the proposed development will be delivered. **Appendix E** provides further details of the information which shall be contained in the Detailed Construction and Demolition Waste Management Plan.

5.3 Waste Collection

Waste from construction will be transported by authorised waste collectors in accordance with the Waste Management (Collection Permit) Regulations, 2007 as amended.

A list of currently authorised waste collectors is available on the following website: https://www.nwcpo.ie/permitsearch.aspx.

An up to date list of all waste collectors used to transport waste from site during the proposed development will be maintained on site and updated by the contractor.

Copies of valid appropriate waste collection permits will be held on site by the contractor.

5.4 Waste Recovery and Disposal Offsite

Waste from construction will be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996 to 2011 as amended.

The following authorisations are applicable:

- Certificates of Registration (CoR) from the Local Authority (issued to private sector);
- Certificates of Registration (CoR from the EPA (issued to Local Authority);
- Waste Facility Permit (WFP) from the Local Authority;
- Waste or Industrial Emissions Licence from the EPA.

A list of currently authorised (CoR or WFP) waste sites in each Local Authority is available on the following website: http://facilityregister.nwcpo.ie/.

Lists of sites currently licensed by the EPA (Industrial Emissions or Waste Licence) are available on the following websites:

- http://www.epa.ie/terminalfour/waste/ (for Waste Licensed sites);
- http://www.epa.ie/terminalfour/ippc/ (for Industrial Emission Licensed waste facilities).

An up to date list of all waste facilities to which waste from the site will be delivered will be maintained on site and updated by the contractor.

Copies of valid facility Certificates of Registration, Waste Facility Permits, and Waste Licences will be held on site by the contractor.

5.5 Record Keeping and Auditing

The contractor will record the quantity in tonnes and types of waste and materials leaving the development site during demolition, excavation and construction of the proposed development.

The name, address and authorisation details of all facilities and locations to which waste and materials from the proposed development are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility and the date of the waste movement. Records will show material which is recovered and disposed of.

The waste manager will arrange for a waste audit of the project once demolition has fully commenced on site and of any facilities to which demolition waste from the project is delivered as required. The waste manager will also arrange for a waste audit of the project once construction has fully commenced on site and of any facilities to which construction waste from the project is delivered as required.

A sample resource and waste inventory as included in the EPA Guidance is included in **Appendix F**.

6 Site Infrastructure

The following infrastructure requirements must be adopted by the contractor at construction stage:

- While earthworks are underway, sufficient space will be made available for wastes, by-products and material storage as necessary.
- Waste storage areas may include stockpiles (for soil and stone, aggregates, etc.), skips (for metals, wood, glass, etc.) or secure containers for hazardous materials. All waste storage areas should be assessed as fit for purpose and should be suitably contained, bunded or defined as required.
- The waste storage areas should be set out to reduce any potential for impact on sensitive human (e.g. residential) or natural (water courses, ecological sites, etc.) and a suitable buffer should be applied to mitigate any impact.
- Labelling and signage shall be used on site to inform personnel of key waste storage area requirements and restrictions with clear signage provided.
- Signage is also required to provide information to assist good resource practice across the site.
- In relation to resource storage, the Waste Management Act 1996, as amended, allows for the temporary storage of resources defined as ‘waste’ at the site where it was produced. The Act defines the phrase ‘the temporary storage of waste’ limiting it to having a six-month duration. As such, it is acceptable to store waste on the site of generation for up to six months without the need for any further waste permit/licence.

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Waste Management Acts, 1996 to 2011 and regulations made under the acts.

Waste Management (Collection Permit) Regulations, 2007 as amended.

Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007)

Appendix A

Responsibilities as set out in EPA Guidelines

The contractor procured by the Client to undertaker the construction operations is responsible for the following:

- Preparing, implementing and reviewing the Construction and Demolition Resource and Waste Management Plan (CDRWMP) through construction (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines;
- Identifying a designated and suitably qualified Resource Manager (RM) who will be responsible for implementing the CDRWMP;
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site. Note that any resource that is legally a ‘waste’ must only be transported by a haulier with a valid Waste Collection Permit (refer to Appendix F of the Guidelines for a resource to find a suitably permitted local haulier);
- Identifying all destinations for resources taken off site. As above, any resource that is legally a ‘waste’ must only be transported to a facility a valid Cert of Registration, Waste Permit or Waste/Industrial Licence (refer to Appendix F of the Guidelines for a resource to find a suitably authorised facility);
- Maintaining full records of all resources (both wastes and other resources) should be maintained for the duration of the project; and
- Preparing a CDRWMP Implementation Review Report at project handover.

Appendix B

Waste Management Legislation, Policy and Best Practice Review

European Legislation

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

Directive 2008/98/EC, known as the "Waste Framework Directive" came into force on 12th December 2008. It provides for a general framework of waste management requirements and sets the basic waste management definitions for the EU.

The Directive lays down the five-step hierarchy of waste management options, with waste prevention as the preferred option, followed by re-use, recycling, recovery and safe disposal, in descending order. In addition, the Directive deals with the issue of 'end of waste' and clarifies the definitions of recovery, disposal and by-product. The directive states that, *"The recovery of waste and the use of recovered material as raw materials should be encouraged in order to conserve natural resources."*

Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste

This Directive amends Directive 2008/98/EC. It provides a number of updated waste management definitions. The Directive allows Member States to use economic instruments including taxes and levies as an incentive for the application of the waste hierarchy. The Directive was transposed into Irish law in August 2020 by S.I. No. 322 of 2020.

The Directive sets targets for the preparing for re-use and the recycling of municipal waste as follows:

- By 2025, at a minimum 55% (by weight) will be prepared for re-use or recycling;
- By 2030, at a minimum 60% (by weight) will be prepared for re-use or recycling;
- By 2035, at a minimum 65% (by weight) will be prepared for re-use or recycling.

With regard to construction and demolition waste, Member States must take measures to promote selective demolition in order to enable removal and safe handling of hazardous substances, facilitate re-use and high-quality recycling. The Directive obliges Member States to take measures to prevent waste generation including reduction of waste generation in processes related to construction and demolition, taking into account best available techniques.

Commission Decision of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European parliament and of the Council (2014/955/EEC) and Commission Regulation (EU) No 1357/2014 of 18 December 2014, replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives.

This decision (referred to as 'the List of Waste' (LoW)) and regulation consolidate the legislation relating to waste classification and allow the generators of waste to classify the waste as hazardous or non-hazardous and in the process assign the correct List of Waste entry codes. Each list of waste entry is a six digit code which is closely linked to the list of the main characteristics which render waste hazardous contained in Annex III to the Waste Framework Directive. It is noted that *Council Regulation (EU) 2017/997 of 8 June 2017 amending Annex 111 to Directive 2008/98//EC of the European parliament and of the Council as regards the hazardous property HP 14 'Ecotoxic'* provides additional criteria in relation to determining whether the ecotoxicity of wastes would result in a hazardous classification.

National Legislation

Circular Economy Bill 2021

The draft Whole-of-Government Circular Economy Strategy provides a national policy framework for Ireland's transition to a circular economy. The Circular Economy Bill 2021, when enacted, aims to place that Strategy, and the commitment to a circular economy, on a clear statutory footing.

The Circular Economy Bill is a key step in the successful transition of Ireland's economy to a circular economy and is evidence of Government's commitment to the achievement of that goal.

Note: This Bill has not yet been enacted and the Circular Economy Strategy is still at draft stage. This is provided for informational purposes only.

Waste Management Acts, 1996 as amended and Regulations Made under the Acts

The Waste Management Act, 1996 sets out the responsibilities and functions of various persons in relation to waste. The 1996 Act has been amended by a number of subsequent acts including the Waste Management (Amendment) Act 2001 and the Protection of the Environment Act 2003. The Act:

- Prohibits any person from holding, transporting, recovering or disposing of waste in a manner which causes or is likely to cause environmental pollution.
- Requires any person who carries on activities of an agricultural, commercial or industrial nature to take all such reasonable steps as are necessary to prevent or minimise the production of waste.
- Prohibits the transfer of waste to any person other than an authorised person (i.e. a holder of a waste collection permit or a local authority).

- Requires the Environmental Protection Agency (EPA) to make a national plan in relation to hazardous waste.
- Requires local authorities to make waste management plans in relation to non-hazardous waste.
- Imposes certain obligations on local authorities to ensure that a service is provided for collection of household waste and to provide facilities for the recovery and disposal of such waste.
- Enables the Minister for Environment, Climate and Communications to make regulations for various purposes to promote better waste management.
- Provides for substantial penalties for offences including fines, imprisonment and/or liability for clean-up measures.

Waste Management (Collection Permit) Regulations, 2007, S.I. No 820 of 2007, as amended

A waste collection permit is required by anyone collecting waste on a commercial basis to ensure that the waste is gathered, sorted and transported correctly. Waste collection permits are granted in accordance with the Waste Management (Collection Permit) Regulations, 2007 as amended. All Waste Collection Permits are issued by the National Waste Collection Permit Office (NWCPO).

Waste Management (Shipments of Waste) Regulations 2007, S.I. No. 419 of 2007

Where waste is exported from Ireland for recovery or disposal the National Transfrontier Shipment (TFS) Office within Dublin City Council must be notified. Certain financial guarantees must be in place and a certificate issued by the National TFS Office prior to the waste movement taking place.

European Communities (Waste Directive) Regulations 2011, S.I. 126 of 2011

These regulations significantly changed the provisions of the Waste Management Acts, 1996 to 2008. The Regulations define “waste disposal” and “waste recovery”, as well as setting out tests which must be complied with in order for material to be described as a “by-product” or achieve “end of waste” status.

The Regulations formally set out the following waste hierarchy which must be applied as a priority order in waste prevention and management legislation and policy:

(a) prevention;

(b) preparation for re-use;

(c) recycling;

(d) other recovery (including energy recovery); and

(e) disposal

The Regulations require that all waste management plans and hazardous waste management plans in existence at the commencement of the Regulations to be evaluated by 31 December 2012 and where appropriate, be revised to be brought into line with Directive 2006/12/EC on Waste.

The Regulations also require the Environment Agency to establish a waste prevention programme by December 2013.

European Union (Waste Directive) Regulations 2020 S.I. No. 323 of 2020

These regulations give effect to Directive 2018/851/EC of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste. Directive 2018/851/EC provides new definitions for a number of key terms including “waste” and “non-hazardous waste”, “bio-waste”, “waste management”, “waste prevention”, “backfilling” and “construction and demolition waste”.

The Regulations give partial effect to the following: Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators as amended by Directive (EU) 2018/849, Directive 2000/53/EC on end-of-life vehicles as amended by Directive (EU) 2018/849, Directive 2012/19/EU on waste electrical and electronic equipment as amended by Directive (EU) 2018/849, Directive (EU) 2018/852 amending Directive 94/62/EC on packaging and packaging waste and Directive (EU) 2018/850 amending Directive 1999/31/EC on the landfill of waste. The Regulations set out additional measures to protect the environment and human health by preventing or reducing the generation of waste, the adverse impacts of the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such use, which are crucial for the transition to a circular economy and long-term competitiveness.

European Policy

7th Environmental Action Programme, European Commission (2014)

The 7th Environmental Action Programme came into force in January 2014 and will guide European environment policy until 2020. A key objective of the programme is to turn the Union into a resource-efficient, green and competitive low carbon economy. There is a special focus on turning waste into a resource, with more prevention, re-use and recycling, and phasing out wasteful and damaging practices like landfilling. By 2020 the European Union and member states are to ensure that:

- The environment and human health are protected by preventing or reducing the adverse impacts of the generation and management of waste.
- Per capita waste generation and waste generation in absolute terms are reducing.
- Landfilling is phased out for recyclables and recoverable wastes and limiting energy recovery to non- recyclable materials.

The European Commission published a proposal for an 8th Environmental Action Programme on 14th October 2020. The proposal supports the environment and climate action objectives of the European Green Deal and will form the EU's basis for achieving the United Nation's 2030 Agenda and its Sustainable Development Goals. It is expected that the 8th Environmental Action Programme will be adopted in 2021 – however, a date is yet to be confirmed.

European Commission Circular Economy Strategy (2015; 2018; 2020)

In December 2015 the European Commission adopted an ambitious Circular Economy Package, which includes revised legislative proposals on waste to stimulate Europe's transition towards a circular economy.

The Circular Economy Package consists of an EU Action Plan for the Circular Economy that establishes a programme of action, with measures covering the whole cycle: from production and consumption to waste management and the market for secondary raw materials. The annex to the action plan sets out the timeline when the actions will be completed.

The proposed actions will contribute to "closing the loop" of product lifecycles through greater recycling and re-use and bring benefits for both the environment and the economy.

The revised legislative proposals on waste set clear targets for reduction of waste and establish an ambitious and credible long-term path for waste management and recycling. Key elements of the revised waste proposal include:

- An EU target for recycling 65% of municipal waste by 2030;
- An EU target for recycling 75% of packaging waste by 2030;
- A target to reduce landfill to maximum of 10% of all waste by 2030;
- A ban on landfilling of separately collected waste;
- Promotion of economic instruments to discourage landfilling;
- Simplified, improved definitions and harmonised calculation methods for recycling rates throughout the EU;
- Concrete measures to promote re-use and stimulate industrial symbiosis - turning one industry's by-product into another industry's raw material;
- Economic incentives for producers to put greener products on the market and support recovery and recycling schemes (e.g. for packaging, batteries, electric and electronic equipment, vehicles).

The Circular Economy Package was updated in 2018 to comprise a new set of measures including:

- A Europe-wide EU Strategy for Plastics in the Circular Economy;
- A Communication on options to address the interface between chemical, product and waste legislation;
- A Monitoring Framework on progress towards a circular economy at EU and national level; and

- A Report on Critical Raw Materials and the circular economy.

Key legislative measures adopted to date under the plan include:

- Directive (EU) 2018/851 amending Directive 2008/98/EC on waste;
- Directive (EU) 2018/850 amending Directive 1999/31/EC on the landfill of waste;
- Directive (EU) 2018/852 amending Directive 94/62/EC on packaging and packaging waste; and
- Directive (EU) 2018/849 amending Directives 2000/53/EC on end-of-life vehicles, Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and Directive 2012/19/EU on waste electrical and electronic equipment.

European Commission, 2020. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A new Circular Economy Action Plan For a cleaner and more competitive Europe. COM (2020).

The European Commission has adopted a new Circular Economy Action Plan, which is one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth.

The new Action Plan announces initiatives along the entire life cycle of products, targeting for example their design, promoting circular economy processes, fostering sustainable consumption, and aiming to ensure that the resources used are kept in the EU economy for as long as possible.

The new Action Plan introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value.

The new Circular Economy Action Plan presents measures to:

- Make sustainable products the norm in the EU;
- Empower consumers and public buyers;
- Focus on the sectors that use most resources and where the potential for circularity is high such as: electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food; water and nutrients;
- Ensure less waste;
- Make circularity work for people, regions and cities; and
- Lead global efforts on circular economy.

European Commission (2019) European Green Deal

The European Green Deal, published by the European Commission in December 2019, provides an action plan to boost the efficient use of resources by moving to a clean, circular economy while cutting pollution and restoring biodiversity.

The plan outlines investments needed and financing tools available. It explains how to ensure a just and inclusive transition.

National Policy

Introduction

The first national waste policy statement was published by the Department of Environment and Local Government in 1998. A number of statements have been published since, each of which builds on the objectives of the previous policy statements to improve how waste is managed in Ireland and move waste away from landfill and towards a more sustainable option. The statements published in the past include:

- Department of the Environment and Local Government (1998). 'Waste Management - Changing Our Ways' – A Policy Statement.
- Department of the Environment and Local Government (2002). Preventing and Recycling Waste – Delivering Change – A Policy Statement.
- Department of the Environment, Heritage and Local Government (2004). Waste Management - Taking Stock and Moving Forward.
- Department of the Environment, Heritage and Local Government (2006). National Strategy on Biodegradable Waste Management.
- Department of the Environment, Heritage and Local Government (2012). A Resource Opportunity- Waste Management Policy in Ireland.

More recent policy documents and reports are summarised below.

EPA National Waste Statistics and Bulletins

The EPA publishes national statistics and bulletins relating to waste generation, management and disposal in Ireland. The published data provide information on key statistics and trends in waste as well as information on Ireland's progress in meeting EU waste collection, recovery and disposal targets. Key topics include municipal waste generation and management, packaging waste, waste electronic and electrical equipment, end of life vehicles, tyres, hazardous waste, construction and demolition waste and waste infrastructure. The data are available on the EPA website at *http://www.epa.ie/nationalwastestatistics/.*

Environmental Protection Agency (2014). National Hazardous Waste Management Plan, 2014-2020

The Third National Hazardous Waste Management Plan was published by the Environmental Protection Agency in 2014.

This Plan set out priority actions to be taken over the six-year life of the plan in relation to:

- Prevention of hazardous waste.
- Improved collection rates for certain categories of hazardous waste.

- Steps required to improve Ireland's self-sufficiency in hazardous waste management.
- Identification and management of certain legacy hazardous wastes such as historic unregulated waste disposal sites and contaminated soil.

The plan included eight key environmental objectives, as follows:

1. To protect water quality (rivers, lakes, marine and groundwater) from hazardous waste;
2. To protect air quality from hazardous waste and/or reduce air pollution or limit to levels that do not damage the natural environment or human health;
3. To minimise greenhouse gas emissions associated with hazardous waste management (including transport);
4. To safeguard soil quality and quantity from hazardous waste and reduce soil contamination;
5. To maximise use of material assets including the built environment, energy and raw materials;
6. To minimise the export of hazardous waste for treatment and/or disposal and reduce emissions due to transportation;
7. To conserve and enhance biodiversity, including flora and fauna, and integrate biodiversity considerations into actions relating to or arising out of any of the recommendations in the National Hazardous Waste Management Plan; and
8. To protect human health from hazardous waste.

EPA (2019) Waste Classification – List of Waste and Determining if Waste is hazardous or Non-Hazardous.

Waste classification is based on:

- Commission Decision of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European parliament and of the Council (2014/955/EEC);
- Commission Regulation (EU) No 1357/2014 of 18 December 2014, replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives; and
- Council Regulation (EU) 2017/997 of 8 June 2017 amending Annex 111 to Directive 2008/98//EC of the European parliament and of the Council as regards the hazardous property HP 14 'Ecotoxic'.

This waste classification system applies across the EU and is the basis for all national and international waste reporting obligations. This document consolidates the Decision and Regulations and provides guidance on how to follow them.

There are two main elements:

- List of Waste (LoW) (Appendix 1);
- Determining if waste is hazardous or non-hazardous (Appendix 2).

Government of Ireland (2020) A Waste Action Plan for a Circular Economy Ireland's National Waste Policy 2020-2025.

The 'Waste Action Plan for a Circular Economy' is an action focused plan that reflects the 2020 Circular Economy Action Plan 'For a cleaner and more competitive Europe' from the European Commission (see above).

The Waste Action Plan for a Circular Economy fulfils the commitment in the Programme for Government (2020) to publish and start implementing a new National Waste Action Plan. This new national waste policy will inform and give direction to waste planning and management in Ireland over the coming years.

The previous national waste policy, A Resource Opportunity – Waste management policy in Ireland, drove delivery on national targets under EU legislation, but the Irish and international waste context has changed in the years since its launch. The need to embed climate action in all strands of public policy aligns with the goals of the European Green Deal.

The policy document shifts focus away from waste disposal and moves it back up the production chain. To support the policy, regulation is already being used (Circular Economy Legislative Package) or in the pipeline (Single Use Plastics Directive). The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

The overarching objectives of this action plan are to:

- Shift the focus away from waste disposal and treatment to ensure that materials and products remain in productive use for longer thereby preventing waste and supporting reuse through a policy framework that discourages the wasting of resources and rewards circularity;
- Make producers who manufacture and sell disposable goods for profit environmentally accountable for the products they place on the market;
- Ensure that measures support sustainable economic models (for example by supporting the use of recycled over virgin materials);
- Harness the reach and influence of all sectors including the voluntary sector, R&D, producers / manufacturers, regulatory bodies, civic society; and
- Support clear and robust institutional arrangements for the waste sector, including through a strengthened role for Local Authorities (LAs).

The plan identifies opportunities for the application of circular economy principles across a range of areas in Ireland including:

- Municipal waste;
- Consumer Protection;
- Food waste;
- Plastic and packaging waste;

- Construction and demolition waste;
- Textiles; and
- Procurement.

Department of the Environment, Climate and Communications (2021) Climate Action Plan

The Government published its Climate Action Plan in 2021. The Plan sets out the actions the Government intends to take to address climate breakdown across sectors such as electricity, transport, built environment, industry and agriculture.

The Plan provides that the Government will lead the transformation from waste management to circular economy practice through delivery of a new national policy. The implementation plan for actions by Government and other actors in relation to waste and the circular economy are as follows:

- Publish a Whole-of-Government Circular Economy Strategy and promote the Circular Economy;
- Enact the Circular Economy Bill 2021;
- Establish a Circular Economy Innovation Scheme;
- Strengthen the regulatory and enforcement frameworks for the waste collection and management system, to maximise circular economy principles;
- Reduce demand for virgin raw materials and support re-use, by keeping material out of waste streams through streamlined End-of-Waste and By-Product decision-making processes and national End-of-Waste decisions for specific Construction and Demolition waste streams;
- Reconfigure the current National Waste Prevention Programme as a Circular Economy Programme for Ireland to drive the transition for business, citizens and the public sector;
- Continue to drive the rollout of CirculEire, the national circular economy platform;
- The High Level National Bioeconomy Implementation Group will report to Government and develop a detailed Bioeconomy Action Plan in 2022;
- The Bioeconomy will be reflected across circular economy strategies and policies where relevant, and regulatory barriers will be examined;
- Funding mechanisms for bioeconomy innovation at demonstration level will be explored, aiming to achieve coherence across national funds;
- Opportunities to increase skills in the bioeconomy will be explored;
- Develop a policy statement on mineral exploration and mining that supports the sustainable supply of minerals required to transition to a climate neutral economy;

- Develop a Food Waste Prevention Roadmap that sets out a series of actions to deliver the reductions necessary to halve our food waste by 2030 and promote our transition to a circular economy;
- Enhance food waste segregation, collection and treatment (anaerobic digestion and composting);
- Develop and implement a new Regional Waste Management Plans that will guide our transition to a circular economy;
- Develop new and expanded environmental levies to encourage reduced resource consumption and incentivise higher levels of re-use and recycling; and
- Identify opportunities to strengthen the regulatory and enforcement frameworks and structures for the waste collection and management system, to maximise the collection of clean, segregated materials for reuse and/or recycling from all households and businesses, and to incentivise consumers to reduce, reuse and recycle.

Regional Policy

The Southern Region Waste Management Plan 2015 - 2021

For the purposes of waste management planning, Ireland is now divided into three regions: Southern, Eastern-Midlands, Connacht-Ulster. The Southern Region Includes Cork City Council.

The Southern Region Waste Management Plan 2015 - 2021 was launched in 2015. The strategic approach of the plan places a stronger emphasis on preventing wastes and material reuse activities. Three strategic targets have been set in the plan which include:

- 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill in favour of higher value pre-treatment processes and indigenous recovery practices.

The plan looks to 2030 and includes a goal of reaching a recycling rate of 60%.

Cork City Development Plan 2015-2021

The Cork City Development Plan 2015-2021 sets out Cork City Council's policies and objectives for the development of the city over the Plan period.

The Council identifies a strategic environmental infrastructure objective to follow a waste hierarchy that starts with prevention, preparing for re-use, recycling, other recovery (e.g. energy recovery) and finally disposal (including landfill).

A draft Plan was also recently published which sets out the priorities for the city for a 6-year period from 2022 to 2028. The draft Plan seeks to ensure that

measures will be adopted to ensure sustainable waste management while it also aims to support provisional initiatives that will develop the circular economy through implementation of the Regional Waste Management Plan for the Southern Region 2015-2021 and its successor.

RPS (2020) Construction and Demolition Waste Soil and Stone Recovery/Disposal Capacity Eastern Midlands Region / Connacht Ulster Region / Southern Region Waste Management Plans 2015 – 2021.

This report was undertaken on behalf of the Irish regional waste management offices to analyse the national waste capacity market for safe treatment of waste soils. A review was undertaken of soil waste generation and available capacity to accept soil waste in authorised facilities within the three waste regions.

The report identifies that the future authorised capacity available to recover soil and stones is an issue in each waste region in the context of likely strong construction activity. Possible options recommended include expanding capacities at existing sites and the use of Article 27 By-Product notifications.

Guidance

Environmental Protection Agency (EPA) (2021) Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects – 2021.

These guidelines supersede the 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Waste Projects' which were published by the Government in July 2006. The replacement guidelines reflect current waste legislation and policy including *'A Waste Action Plan for a Circular Economy Ireland's National Waste Policy 2020-2025'* published in September 2020. Since the publication of the 2006 guidelines, waste management legislation and policy have evolved towards prioritising waste prevention and life-cycle thinking as follows:

- An increased emphasis on waste prevention, in line with the waste hierarchy, through established principles such as designing out waste and the use of green procurement.
- The guidelines have also been prepared to promote more circular design and construction principles in line with the EU Circular Economy Action Plan under the EU Green Deal. The circular economy model tries to avoid using unnecessary resources in the first place and keep resources 'in flow' by means of effective and smart reuse and recycling strategies reducing the use of virgin materials.

The guidelines provide a practical and informed mechanism to document the prevention and management of C&D wastes and resources from design to construction or demolition of a project. They provide clients, developers, designers, practitioners, contractors, sub-contractors and competent authorities with a common approach to preparing and determining Resource and Waste Management Plans (RWMP) for the construction and demolition sector in Ireland.

The guidelines address the best practice approach for the following phases of a project:

- Prior to Construction – including the stages of design, planning and procurement in advance of works on site; and
- During Construction – relating to the effective management of resources and wastes during construction or demolition operations.

Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects

These guidelines were published by the DoEHLG in July 2006. The guidelines were developed in conjunction with the National Construction and Demolition Waste Council (NCDWC) as part of the Voluntary Construction Industry Initiative and to give advice on planning for construction and demolition (C&D) waste management.

The guidelines also give guidance on source separation of waste and the diversion of waste from landfill and encourage construction companies to work towards achieving the national recycling target of 85% as outlined in the Government Policy Document Changing Our Ways (DoEHLG, 1998).

European Commission (2016) EU Construction & Demolition Waste Management Protocol

This protocol was published by the European Commission in September 2016.

The overall aim of the protocol is to increase confidence in the C&D waste management process and the trust in the quality of C&D recycled materials. This will be achieved by:

a) Improved waste identification, source separation and collection;

b) Improved waste logistics;

c) Improved waste processing;

d) Quality management; and

e) Appropriate policy and framework conditions.

EPA (2019) Guidance on Soil and Stone By-products in the context of Article 27 of the European Communities (Waste Directive) Regulations 2011

Article 27 of the European Communities (Waste Directive) Regulations, 2011, as substituted by article 15 of the European Communities (Waste Directive) Regulations, 2020, S.I. No. 323 of 2020, states the following:

> *"27. (1) the Agency shall take appropriate measures to ensure that a substance or object resulting from a production process the primary aim of which is not the production of that substance or object is considered not to be waste, but to be a by-product if the following conditions are met:*
>
> *(a) further use of the substance or object is certain;*

(b) the substance or object can be used directly without any further processing other than normal industrial practice;

(c) the substance or object is produced as an integral part of a production process; and

(d) further use is lawful in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

(2) (a) Where a natural or legal person holds a substance or object in accordance with paragraph (1) which he or she believes is to be considered as a by-product, he or she shall notify the Agency and seek a determination on the matter from the Agency

(b) He or she shall comply with relevant Agency guidance and submit information in a form and format as may be prescribed by the Agency in order to establish that the conditions in paragraph (1) are met.

(c) Where there is no notice given to the Agency under subparagraph (a) in respect of a substance or object and the substance or object, as the case may be, is discarded or otherwise dealt with as if it were waste, the substance or object, as the case may be, shall be presumed to be waste until the contrary is proved.

(3) The Agency—

(a) may determine, in consultation with the relevant local authority and the natural or legal person concerned, whether a substance or object notified to it as a by-product in accordance with paragraph (2)(a) should be considered as a by-product or as a waste, and

(b) shall notify the local authority and the natural or legal person concerned of the determination made.

(c) may attach reporting conditions to a determination, pursuant to regulation 31a.

(4) Nothing in this Regulation shall relieve a natural or legal person from his or her responsibilities under the Act of 1992 or the Act of 1996.

(5) The Agency shall establish and maintain a register of by-products to record substances or objects notified to it as by-products under paragraph (2)(a).

(6) Where the Agency makes a determination in accordance with paragraph (3) that a substance or object should be considered as waste and not as a by-product, the determination shall be final.

(7) Where criteria have not been set at Union level , the Agency may establish detailed criteria on the application of the conditions laid down in paragraph 1 to specific substances or objects. The Agency shall notify the Commission of those detailed criteria in accordance with Directive (EU) 2015/153513 of the European Parliament and of the Council where so required by that Directive."

Economic operators, who hold a substance, which they believe to be a by-product under Article 27, must notify the Environmental Protection Agency. Conditions (1) (a) to (1)(d) must be satisfied for an Article 27 notification to be successful.

The EPA has produced guidance on the notification process. The purpose of the guidance is to inform economic operators how to prevent waste soil and stone by classifying it as a by-product in accordance with the legislation and the EPA's regulatory approach to determinations on soil and stone by-products. This guidance document covers soil and stone only.

The guidance is aimed at local authorities, developers, the construction sector, the waste management sector and consultants.

Its environmental objective is that, by making certain excess uncontaminated soil and stone is beneficially used with no overall adverse impacts on the environment or human health, a material producer will ensure that the material is regarded as a by-product rather than a waste.

Environmental Protection Agency (2020) Draft End of Waste Guidance Part 1 and Part 2

The EPA has published guidance on the 'end-of-waste' concept under Article 28 of the European Communities (Waste Directive) Regulations, 2011. Part 1 of the guidance describes the context and benefits, and introduces the end-of-waste test, under Article 28, to potential applicants. Part 2 provides guidance for applicants on how to address the requirements of the end-of-waste test.

FÁS and CIF (2002) Construction and Demolition Waste Management – A Handbook for Contractors & Site Managers

This handbook was produced in conjunction with Fás and the CIF in 2002. It provides advice for contractors and site managers on how to manage construction and demolition waste to make financial savings in purchasing material and disposal costs in a sustainable manner.

Appendix C

Site Layout Plans

TRAMORE ROAD

TOP OF FLOOD LIGHTS=28.35

+13.0

+13.6

+12.0

+9.59

+9.37

+9.50

+10.35

+10.83

+11.3

+11

+9.3

+6.7

+5.6

+5.8

6.2

+5.89

Blue outline area does not form part of SHD

PCC BUILDING
Level 1

BUILDING E
CORE
Level 0

BUILDING E
Level 1

BUILDING C
Above

BUILDING F
Above

BUILDING G
Above

BUILDING H
Above

BUILDING B
Above

BUILDING J
Above

BUILDING I
Above

BUILDING L
Above

BUILDING N
Above

BUILDING M
Above

Generator
Above

KINSALE ROAD

BLACK ASH ROAD

TRAMORE ROAD

DO NOT SCALE FROM THIS DRAWING, USE FIGURED DIMENSIONS IN ALL CASES.
VERIFY DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECTS IMMEDIATELY.
THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTS SPECIFICATION.

REV.	DATE	BY	NOTES
REV.	DATE	BY	NOTES
REV.	DATE	BY	NOTES
REV.	DATE	BY	NOTES
REV.	DATE	BY	NOTES
REV.	DATE	BY	NOTES
REV.	DATE	BY	NOTES
REV.	DATE	BY	NOTES
REV.	DATE	BY	NOTES
REV.	DATE	BY	NOTES
REV.	DATE	BY	NOTES
REV	DATE	DRN	NOTES

ORIGINAL SHEET SIZE = A1

NOTES

JOB
Creamfields Residential Development
Kinsale & Tramore Roads, Cork

CLIENT
Watfore Limited

PLANNING

DRAWING
Site Layout Plan_Level -1

DATE	10.12.21	SCALE	1:500
DRN	M.STAPLETON	REVISION	P01
CHECKED	S.KEARNS		

DWG NUMBER
P19-195C-RAU-00-XX-DR-A-20001

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TRAMORE ROAD

Adjoining Property Sundays Well RFC

Blue outline areas do not form part of SHD application 98 parking spaces provided for Primary Care Centre (57 undercroft, 41 on surface).

Car Parking hatched in red will not be provided as part of this SHD application, but area will be constructed to support Town Square above

Adjoining Property Musgrave Retail Partners

Fire Tender Access Route

Adjoining Property Kinsale Rd. Retail Park

Escape Steps to Level 1

Access arrangement to lift will be agreed with **Fire Department** as part of the Fire Safety Certificate Application

Undercroft Car-park 147 residential spaces; 62 on surface residential spaces 209 total

3m Public Footpath and 2m Cycle lane

Community Hub & Creche to Kinsale Rd.

Creche Set down

Site Notice

Proposed Site Entrance

Mick Barry Road

Black Ash Park and Ride

Fire Tender Access Route

Own door townhouses at gnd. & 1st floor to Kinsale Rd.

Pedestrian and cyclist connection point

3m Public Footpath and 2m Cycle lane

Site Notice

Pedestrian and cyclist connection point

Adjoining Property

Court Garden

Meadow 02

Meadow 01

BUILDING A
BUILDING B
BUILDING C
BUILDING D
BUILDING E
BUILDING F
BUILDING G
BUILDING H
BUILDING I
BUILDING J
BUILDING K
BUILDING L
BUILDING M
BUILDING N
COMMUNITY
CRECHE

KINSALE ROAD

DO NOT SCALE FROM THIS DRAWING, USE FIGURED DIMENSIONS IN ALL CASES.
VERIFY DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECTS IMMEDIATELY.
THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTS SPECIFICATION.

REV	DATE	DRN	NOTES
P01	2022.01.31	CH	ISSUED_FOR_PLANNING

ORIGINAL SHEET SIZE = A1

NOTES

NOTE: FOR LANDSCAPE DETAILS PLEASE REFER TO LANDSCAPE MASTERPLAN BY CUNNANE STRATTON REYNOLDS
NOTE: FOR ENGINEERING DETAILS PLEASE REFER TO ARUP CONSULTING ENGINEERS DRAWINGS

JOB
Creamfields Residential Development
Kinsale & Tramore Roads, Cork

CLIENT
Watfore Limited

PLANNING

DRAWING
Site Layout Plan_Level 0

DATE	10.12.21	SCALE	1:500@A1
DRN	M.STAPLETON	REVISION	P01
CHECKED	S.KEARNS		

DWG NUMBER
P19-195C-RAU-00-XX-DR-A-20002

reddy architecture+urbanism
Reddy Architecture + Urbanism
Cork Office,
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Site Notice

Existing Vehicular Site Entrance retained for Primary Care Only
Pedestrian and cyclist connection point for all

TRAMORE ROAD

Adjoining Property Sundays Well RFC

Adjoining Property Kinsale Rd. Retail Park

Escape Steps from Basement Car Park

Blue outline areas; Primary Care, Pharmacy and parking do not form part of this application

Adjoining Property Musgrave Retail Partners

Fire Tender Access Route

3m Public Footpath and 2m Cycle lane

Site Notice

Proposed Site Entrance

Mick Barry Road

Black Ash Park and Ride

Fire Tender Access Route

Pedestrian and cyclist connection point

3m Public Footpath and 2m Cycle lane

Site Notice

Pedestrian and cyclist connection point

Adjoining Property

KINSALE ROAD

Pharmacy
Primary Care
ON SURFACE PARKING
Cafe
Retail
BUILDING E
GYM
Town Square
coffee kiosk
BUILDING C
Court Garden
BUILDING F
BUILDING G
BUILDING H
BUILDING B
Meadow 02
BUILDING J
BUILDING I
BUILDING L
Meadow 01
BUILDING N
BUILDING M

ORIGINAL SHEET SIZE = A1

DO NOT SCALE FROM THIS DRAWING, USE FIGURED DIMENSIONS IN ALL CASES.
VERIFY DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECTS IMMEDIATELY.
THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTS SPECIFICATION.

REV	DATE	DRN	NOTES
P01	2022.01.31	CH	ISSUED_FOR_PLANNING

NOTES

NOTE: FOR LANDSCAPE DETAILS PLEASE REFER TO LANDSCAPE MASTERPLAN BY CUNNANE STRATTON REYNOLDS
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JOB
Creamfields Residential Development
Kinsale & Tramore Roads, Cork

CLIENT
Watfore Limited

PLANNING

DRAWING
Site Layout Plan_Level 1

DATE	10.12.21	SCALE	1:500
DRN	M.STAPLETON	REVISION	P01
CHECKED	S.KEARNS		

DWG NUMBER
P19-195C-RAU-00-XX-DR-A-20003

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Appendix D

EPA – List of Waste Codes for Construction and Demolition Wastes

Relevant Waste EWC Codes and Corresponding Waste Descriptions

03	WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD
03 02	**wastes from wood preservation**
03 02 01*	non-halogenated organic wood preservatives
03 02 02*	organochlorinated wood preservatives
03 02 03*	organometallic wood preservatives
03 02 04*	inorganic wood preservatives
03 02 05*	other wood preservatives containing hazardous substances
03 02 99	wood preservatives not otherwise specified

13	OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)
13 07	**wastes of liquid fuels**
13 07 01*	fuel oil and diesel
13 07 02*	petrol
13 07 03*	other fuels (including mixtures)

15	WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED
15 01	**packaging (including separately collected municipal packaging waste)**
15 01 01	paper and cardboard packaging
15 01 02	plastic packaging
15 01 03	wooden packaging
15 01 04	metallic packaging
15 01 05	composite packaging
15 01 06	mixed packaging
15 01 07	glass packaging
15 01 09	textile packaging

16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 02	**wastes from electrical and electronic equipment**
16 02 09*	transformers and capacitors containing PCBs
16 02 10*	discarded equipment containing or contaminated by PCBs other than those mentioned in 16 02 09
16 02 11*	discarded equipment containing chlorofluorocarbons, HCFC, HFC
16 02 12*	discarded equipment containing free asbestos
16 02 13*	discarded equipment containing hazardous components[1] other than those mentioned in 16 02 09 to 16 02 12
16 02 14	discarded equipment other than those mentioned in 16 02 09 to 16 02 13
16 02 15*	hazardous components removed from discarded equipment
16 02 16	components removed from discarded equipment other than those mentioned in 16 02 15
16 06	**batteries and accumulators**
16 06 01*	lead batteries
16 06 02*	Ni-Cd batteries
16 06 03*	mercury-containing batteries
16 06 04	alkaline batteries (except 16 06 03)
16 06 05	other batteries and accumulators
16 06 06*	separately collected electrolyte from batteries and accumulators

17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 01	**concrete, bricks, tiles and ceramics**
17 01 01	concrete
17 01 02	bricks
17 01 03	tiles and ceramics
17 01 06*	mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 02	**wood, glass and plastic**
17 02 01	wood
17 02 02	glass
17 02 03	plastic

17 02 04*	glass, plastic and wood containing or contaminated with hazardous substances
17 03	**bituminous mixtures, coal tar and tarred products**
17 03 01*	bituminous mixtures containing coal tar
17 03 02	bituminous mixtures other than those mentioned in 17 03 01
17 03 03*	coal tar and tarred products
17 04	**metals (including their alloys)**
17 04 01	copper, bronze, brass
17 04 02	aluminium
17 04 03	lead
17 04 04	zinc
17 04 05	iron and steel
17 04 06	tin
17 04 07	mixed metals
17 04 09*	metal waste contaminated with hazardous substances
17 04 10*	cables containing oil, coal tar and other hazardous substances
17 04 11	cables other than those mentioned in 17 04 10
17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 03*	soil and stones containing hazardous substances
17 05 04	soil and stones other than those mentioned in 17 05 03
17 05 05*	dredging spoil containing hazardous substances
17 05 06	dredging spoil other than those mentioned in 17 05 05
17 05 07*	track ballast containing hazardous substances
17 05 08	track ballast other than those mentioned in 17 05 07
17 06	**insulation materials and asbestos-containing construction materials**
17 06 01*	insulation materials containing asbestos
17 06 03*	other insulation materials consisting of or containing hazardous substances
17 06 04	insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05*	construction materials containing asbestos
17 08	**gypsum-based construction material**
17 08 01*	gypsum-based construction materials contaminated with hazardous substances
17 08 02	gypsum-based construction materials other than those mentioned in 17 08 01
17 09	**other construction and demolition wastes**
17 09 01*	construction and demolition wastes containing mercury

20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	**separately collected fractions (except 15 01)**
20 01 01	paper and cardboard
20 01 02	glass
20 01 08	biodegradable kitchen and canteen waste
20 01 11	textiles
20 01 21*	fluorescent tubes and other mercury-containing waste
20 01 25	edible oil and fat
20 01 27*	paint, inks, adhesives and resins containing hazardous substances
20 01 33*	batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries
20 01 36	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 39	plastics
20 01 40	metals
20 03	**other municipal wastes**
20 03 01	mixed municipal waste
20 03 07	bulky waste

Appendix E

Typical Content – Detailed Construction and Demolition Resource and Waste Management Plan

The detailed Construction and Demolition Resource and Waste Management Plan (CDRWMP) and the requirements to be adopted by the contractor will include the following:

- A named Resource Manager (RM) of the CDRWMP with responsibility for implementation at construction phase must be identified by the contractor;
- The CDRWMP must be included in the site induction training;
- Tool box talks and all other training on the CDRWMP must be provided in line with EPA Guidance Section 5.4;
- There must be appropriate procedures for identifying suitably permitted waste collection operators and waste destination sites implemented – a resource for this task is included in Appendix F of the EPA Guidance;
- Resource efficient supply chains should be implemented as appropriate in line with EPA Guidance Section 5.5;
- There must be appropriate procedures for record keeping and reporting of all off site export of resources implemented;
- There must be procedures for record keeping and reporting of all on site resource uses – this may include measures such as the use of an on-site a mobile crusher for producing aggregate from suitable residual concrete (subject to the appropriate waste consent) – in line with EPA Guidance Section 5.7;
- There must be appropriate procedures for audits and inspections of resource management practices in line with EPA Guidance Section 5.6;
- There must be appropriate procedures for engagement with the Local authority and other stakeholders in line with EPA Guidance Section 5.8;
- There must be a final report prepared summarising the outcomes of resource management processes adopted and the final inventory and cost for the project in line with EPA Guidance Section 5.8;
- Procedures for audits and inspections of resource management practices.
- There should be appropriate site signage on resource management put in place;
- There should be appropriate resource storage implemented on site (i.e. dedicated skips, hazardous materials storage, stockpile management, etc.). Note there are specific requirements on stockpiling more than 50kg of certain persistent organic pollutants (from a construction perspective these may include some chlorinated hydrocarbon contaminants in ground contamination, EPS/XPS insulation building material containing brominated flame retardant (HBCDD) or polychlorinated biphenyls from removal of electrical equipment) under Article 5 of EU Regulation (EU) 2019/1021;
- There must be appropriate procedures for handling and export of resources in line with EPA Guidance Section 5.3.

Appendix F

Resource and Waste Inventory Template

LoW Code	Description	Volume Generated (tonnes)	Prevention (tonnes) (non-waste)	Reused (tonnes (non-waste)	Recycled (tonnes) (waste)	Recovered[6] (tonnes) (waste)	Disposed (tonnes) (waste)	Unit Cost Rate (€/tonne)	Total Cost (€)
17 01 01	Concrete								
17 01 02	Bricks								
17 01 03	Tiles and Ceramics								
17 02 01	Wood								
17 02 02	Glass								
17 02 03	Plastic								
17 03 02	Bituminous mixtures								
17 04 01	Copper, Bronze, Brass								
17 04 02	Aluminium								
17 04 03	Lead								
17 04 04	Zinc								
17 04 05	Iron and Steel								
17 04 06	Tin								
17 04 07	Mixed Metals								
17 04 11	Cables								
17 05 04	Soil and Stone								
17 06 04	Insulation Material								
17 08 02	Gypsum								
17 09 04	Mixed C&D Waste								
*17 01 06**	*Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances*								

LoW Code	Description	Volume Generated (tonnes)	Prevention (tonnes) (non-waste)	Reused (tonnes (non-waste)	Recycled (tonnes) (waste)	Recovered[6] (tonnes) (waste)	Disposed (tonnes) (waste)	Unit Cost Rate (€/tonne)	Total Cost (€)
*17 02 04**	*Glass, plastic and wood containing or contaminated with hazardous substances*								
*17 03 01**	*Bituminous mixtures containing coal tar*								
*17 04 09**	*Metal waste contaminated with hazardous substances*								
*17 05 03**	*Soil and stones containing hazardous substances*								
*17 06 05**	*Construction materials containing asbestos*								
	Other resources (non-waste materials) (specify as needed)								
	Other Wastes (specify as needed)								