



Proposed Development at Ballyowen / Ramsfortpark, Gorey Co. Wexford

CWMP – Construction and Demolition Waste Management Plan

Client: Strutec Ltd,
Garryhill, Bagenalstown
Co. Carlow, R21 KP44, Ireland.

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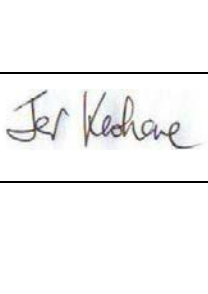
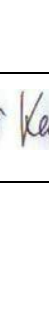
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Appendix C	Cut and Fill Report DRAFT 20180917
Appendix D	Excavation Plan

1. INTRODUCTION

1.1. Project Contractual Basis & Parties Involved

IE Consulting Ltd. was requested by *Strutec Ltd* to commission a *Construction and Demolition Waste Management Plan (CWMP)* with respect to the proposed development at Ballyowen / Ramsfortpark, Gorey Co. Wexford (please see the regional location map of *Figure 1 in Appendix A*). This *CWMP* will accompany a planning application for the site.

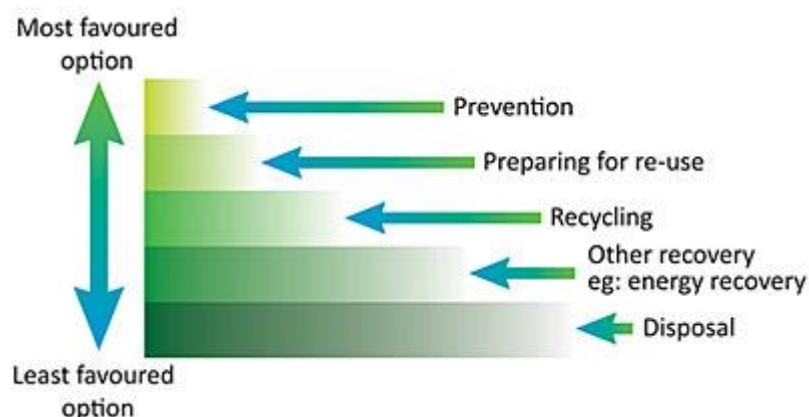
This report was also prepared to include a detailed response to item 5 of An Bord Pleanála's Opinion, which sought further detail on the excavation methods used on site, (in particular having regard to the brownfield nature of the site, as well as volumes of soil to be extracted).

1.2. The Requirement for a CWMP

The purpose of this *CWMP* is to ensure that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 - 2013 are complied with. The *CWMP* will also ensure that practical waste reduction, re-use and recycling are achieved.

Waste generated during the construction phase will be administered in such a way to give precedence to waste prevention, preparing for reuse and recycling over other recovery and finally disposal to landfill. This management of waste will be in accordance with the *EU Waste Hierarchy* (please see *Figure 1 below*).

Figure 1: EU Waste Hierarchy

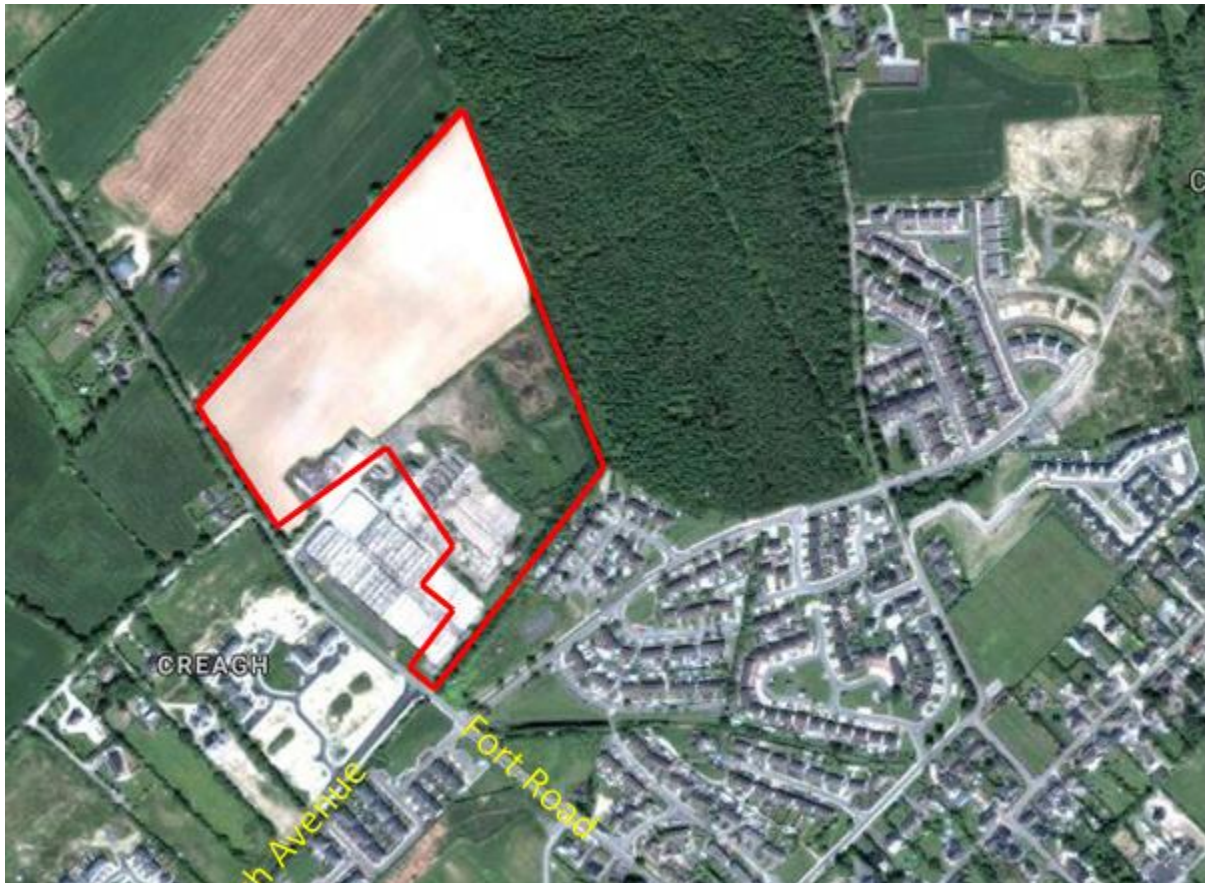


1.3. Description of the Site

The existing site comprises of greenfield agricultural land located to the north of the site and

brownfield land located to the southwest of the site (please see [Figure 2 of Appendix A](#)). The brownfield area of the site once comprised of five (5) no. mushroom tunnels and two (2) no. site buildings which were once part of *Wexford Mushrooms*. [Plate 1](#) below outlines the area of the former *Wexford Mushrooms* production area pre-closure and pre-demolition.

Plate 1: Aerial Photo Ramsfortpark Site (2010) (Ref. 1).



The former buildings were constructed using concrete, masonry, steel frame, and metal cladding. It is understood that the former mushroom production facility was constructed in 1988.

1.4. Description of the Development

Prior to the development, the former mushroom production facility was demolished to just above ground level. The facility consisted of tunnels with a floor area of 10,500 m² and other site buildings with an approximate gross floor area of 4,300 m².

A steel portal frame building had a floor area of 1,024 m². The steel portal frame of the portal frame building and the floor remains in-situ.

The proposed scheme comprises the development of 297 dwellings and an associated childcare facility on a site of 9.57 hectares at Ballyowen / Ramsfortpark, Gorey, Co Wexford. The proposal includes

units in a variety of house sizes, types and designs, with corner sites defined by small (2- 3 unit) apartment/duplex blocks. The site forms part of the Creagh Key Development Site, with the layout based on the urban block typology, all as referenced under the Gorey Town & Environs Local Area Plan 2017-2023. The site layout and arrangement of buildings is also generated by the sloping topography of the site and the intended landscape strategy.

The gross floor area of the development is approximately 36,428 m² consisting of 35,874 m² of houses and apartments and 554 m² of a creche area.

A full description of the scheme is outlined in the *Design Statement Report* prepared by *Strutec Ltd* which is attached in [Appendix B](#) to this report.

2. CONSTRUCTION ACTIVITIES

2.1. Method Statement for Construction

An *Environmental Management Plan* and *Construction Health and Safety Plan* will be developed to include all aspects of the project. These plans and construction activities must be in agreement with *Strutec Ltd.* policies such as environmental health and safety requirements for contractors.

2.1.1. Site Preparation Works

The site will be securely fenced, and a construction compound will be established. The site for the proposed development may include foundations of former buildings, some overgrown green areas and agricultural grass land.

The existing site slopes in a southerly direction leading to the requirement for a cut and fill excavation process on the site in order to locate the buildings on a flat profile. The level of the proposed buildings has been selected taking the following into account:

- Connectivity and linkage between the new buildings such that the gradient of roads and footpaths etc. is within acceptable limits.
- Requirement to connect the proposed wet services such as foul and storm to the existing local authority networks.
- The cut and fill plan will be optimised to limit the volume exported and imported (please see the *Cut and Fill Report in Appendix C*).

Having carried out a detailed review of the scheme and taking the above points into consideration, it is estimated that a net requirement of approximately 11,712.71 m³ of excavated material will need to be imported to site to a suitable source. The details of the net cut and fill requirements are attached in *Appendix C* and *Figure 3 of Appendix A*.

All excavated material that will required to be cut from the site area will be utilised for landscaping and site levelling purposes. Although it is not expected that contaminated soil will be encountered, in the event that it is, it will be quantified, managed and disposed of in accordance with all relevant statutory requirements. Please see *Appendix D* for a proposed excavation plan for the site.

2.1.2. Construction Compound

A temporary construction compound will be constructed and located within the existing site boundary. The temporary construction compound will likely be located at the former *Wexford Mushrooms* area of the site where suitable surfaces are located.

The temporary construction compound will include a site office for the construction management team and site facilities for the construction staff. The compound will be serviced with electrical power, water supply and toilet facilities. The compound will be used as a storage area for the various components, fuels and materials required for construction. The compound will be fenced off to ensure site security is maintained. The area of the compound will be reinstated to its original condition or incorporated into the development at the end of the construction period.

2.1.3. Construction of New Buildings

The development comprises the construction of new residential buildings and an associated childcare facility. All of the of the former *Wexford Mushrooms* buildings have been demolished.

Some of the foundations of the former *Wexford Mushrooms* buildings will need to be demolished and removed from site. Some of the historical site drains will need to be demolished.

It is presently envisaged that in general the new structures will be constructed using in-situ concrete ground floor, concrete masonry walls, internal timber frames and roof. There will be some steel and pre-cast concrete in structures. The Creche will be constructed with masonry walls with steel frame roof and metal cladding.

2.1.4. Material Sources and Transportation

The selection and specification of construction materials will be informed by local availability of these materials. Within the necessary constraints of performance, durability and cost, construction materials will be sourced from local suppliers and manufacturers, where possible.

2.1.5. Construction of Services

2.1.5.1. Electrical Connections

A connection to the existing network will be available at the site. Power will be required for the construction compound, for temporary lighting, and for temporary signals required during the works.

2.1.5.2. Surface Water

No existing surface water services pipes are available to discharge to. Surface water will discharge to the Ballyowen Stream directly, the Ballyowen Stream is located approximately 80 metres southeast of the proposed development.

As part of the proposed development a new surface water drainage system will be constructed to collect, convey, treat and attenuate the surface water runoff generated by the proposed

development. The drainage network will be a traditional piped gravity system to convey the flow. The road drainage will be collected by road gullies.

Two new storm water attenuation facilities will be constructed such that the surface water discharge from the site will be limited to a pre-development greenfield discharge rate. All runoff will be treated for possible hydrocarbon contamination in two (2 No.) class 1 hydrocarbon interceptor prior to discharge to the public sewer.

2.1.5.3. Foul Water

As part of the new development a new foul water drainage system will be constructed to collect and convey the foul water flow generated by the development. The foul network will be a combination of 150mm, 225mm and 300mm diameter pipework. The pipework has been sized to cater for the peak flow generated by the proposed development. It is proposed that the foul sewers will discharge to the existing 525 mm diameter sewer located approximately 1.2km from the site at the R772 regional road (Arklow Road).

2.1.5.4. Watermain

A mains water connection exists on-site. A connection to the to the construction compound will be made for staff welfare facilities and other uses associated with the compound. It is proposed that the watermain connection will be taken from the existing 225 mm watermain located on Fort Road. A new 150mm main will be brought into the site to supply the development.

The potable supply to each building as well as the fire hydrants will be fed from a new site ring main that will be constructed in the development.

2.2. Potential for Residual Soil Contamination On-Site

An *Environmental Management Plan and Construction Health and Safety Plan* will be developed to include all aspects of the project. An excavation plan for the proposed soil cut and fill works is attached in [Appendix D](#) of this report. The plan outlines that there is a net requirement for the Article 27 by-product designation or potential disposal of 4,470 m³ of soil and subsoil to be exported from the site.

In recognition of the waste hierarchy and the prevention of waste, there is at this time no significant barriers that would prevent the excess soil from being classified as a by-product under the under the Article 27 of the Waste Directive Regulations 2011. If a local use for the material could be identified, if use was certain, and if the proposed end use site met the requirements of the Article 27 regulations, there would be no need to send this material to a waste facility.

2.2.1. Site History

The southwest corner of the site is a brownfield area which was previously developed as a mushroom production facility. Contaminated soil may be encountered during the soil cutting phase of the development due to the brownfield nature. In the event of any evidence of soil contamination being found during work on site, appropriate remediation measures will be employed, in full compliance with all relevant waste legislation. Suspected contaminated soil will not be cut and filed without prior assessment. Any work of this nature would be carried out in consultation with, and with the approval of the *Environmental Department of Wexford County Council*.

2.2.2. Health and Safety

Hoarding / security fencing will be erected along all boundaries with the purpose of restricting access to the work area for health and safety reasons.

A Health and Safety Plan will be prepared (required by the *Safety, Health and Welfare at Work (Construction) Regulations 2013*) to address health and safety issues from the design stages through to the completion of the construction and maintenance phases. The Health and Safety Plan will comply with the requirements of the Regulations and will be reviewed as the development progresses.

Safety on site will be of paramount importance. Only contractors with the highest safety standards will be selected. During the selection of the relevant contractor and the respective subcontractors their safety records will be investigated.

Prior to working on site, each individual will receive a full safety briefing and will be provided with all of the safety equipment relevant to the tasks the individual will be required to perform during employment on site.

Safety briefings will be held regularly and prior to any onerous or special task. 'Toolbox talks' will be held to ensure all workers are fully aware of the tasks to be undertaken and the parameters required to ensure the task will be successfully and safely completed.

All visitors will be required to wear appropriate personal protective equipment prior to going on to the site and will undergo a safety briefing by a member of the site safety team.

Regular site safety audits will be carried out throughout the construction programme to ensure that the rules and regulations established for the site are complied with at all times.

At any time that a potentially unsafe practice is observed, the site safety manager will have the right as well as the responsibility to halt the work in question, until a safe system of working is again put in place.

2.2.3. Employment and Accommodation

Through the construction phase there will be some variation in the numbers working on site. It is anticipated that over 50 construction workers could be employed during the peak construction periods.

Temporary office accommodation and other construction facilities will be installed on site for the construction phase. All temporary units will be of a high standard, as a minimum in accordance with statutory regulations.

The co-ordination of people and materials on-site will be one of the key activities throughout the construction phases. A construction management plan will be put in place prior to the commencement of the works. This plan will designate traffic routes, timings and parking arrangements.

Typical working hours during the construction phase have been outlined in [Table 1](#) below.

Table 1: Working Hours

<i>Start</i>	<i>Day</i>	<i>Finish</i>
07:00	Monday to Friday	19:00
07:00	Saturday	14:00

3. WASTE GENERATED BY THE PROPOSED DEVELOPMENT

3.1. Waste Management Hierarchy

The *Waste Management Hierarchy* will be implemented by identifying opportunities to firstly prevent waste from being produced, and secondly minimise the amount of waste produced.

Waste shall be recycled or re-used on-site and off-site in instances where waste prevention and minimisation is not practicable.

If waste cannot be recycled or re-used, waste will be sent to landfill for disposal.

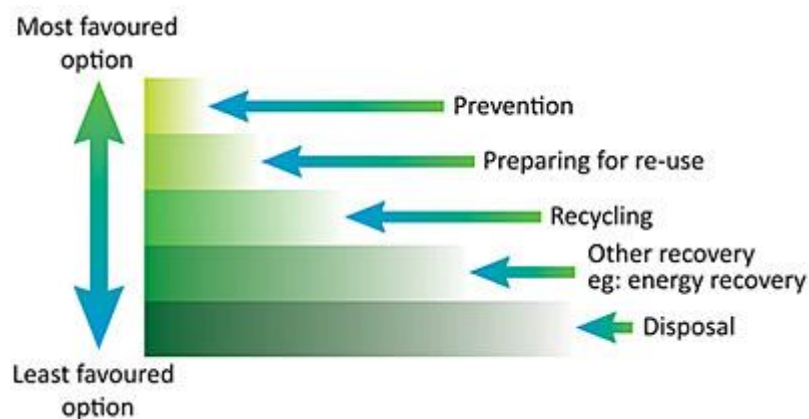
To achieve the disposal as per the *Waste Management Hierarchy*, the *National Waste Prevention Programme* will be referenced (implemented by the *Environmental Protection Agency*).

3.2. Waste Collection Permits

All waste removed from the site will be collected only by contractors with valid waste collection permits (under the *Waste Management (Collection Permit) Regulations 2001* as amended).

An audit of proposed contractors waste licences or permits will be completed prior to the movement and shipment of any waste. The audit shall confirm that the appropriate waste licences or permit are in place for the end of life waste facilities.

The generation of Hazardous waste will be minimised. Disposal of hazardous waste will only be undertaken if recovery is not feasible. Hazardous waste will be managed in accordance with the relevant hazardous waste regulations.



3.3. Waste Management Hierarchy Roles and Responsibilities for Management of Construction and Demolition Waste

The Main Contractor (Contractor) will be required to manage waste generated on site in accordance with this *Construction Waste and Demolition Management Plan* and also in accordance with the

requirements of the developer.

Methods for managing waste on site will be agreed by the Contractor with the developer advance of work commencing on site.

The contractor will nominate a senior manager as “C&D Waste Manager” to take responsibility for all aspects of waste management at the different stages of the Project and will be responsible for implementation of the *C&D Waste Management Plan*.

The C&D Waste Manager will be competent in waste management and will receive training, where necessary, such as the *CIF/FÁS Construction and Demolition Waste Management* module.

Contractors will be responsible for ensuring all sub-contractors and employees are made aware of their responsibilities in relation to waste management on site, source separation of wastes and the content of this *Construction and Demolition Waste Management Plan*. Training such as waste management toolbox talks will be provided as required.

3.4. Waste Arisings

The practice of excessive purchase of materials and equipment to allow for anticipated wastage will be avoided. Construction waste materials such as general construction debris, scrap timber and steel, machinery oils and chemical cleaning solutions.

Soil which is not re-used will be disposed of to an appropriate permitted site. The Cut and Fill Report has outlined that there will be a net requirement of 11,712.71 m³ of fill to be imported into the site. An estimated 3,0291.76 m³ of soil will require excavation on-site, and the entire volume of this material will be re-used on-site.

In the unlikely event of evidence of soil contamination being found during work on site, the appropriate remediation measures will be employed. Any work of this nature would be carried out in consultation with, and with the approval of the *Environmental Protection Agency* and the *Environmental Department of Wexford City Council*.

The EPA issued the European Waste Catalogue in January 2002 and this system was used to classify all wastes and hazardous wastes into a consistent waste classification system across the EU. [Table 2](#) below outlines the typical construction waste EWC codes and waste descriptions which will likely require disposal from the site.

Table 2: Construction Waste EWC Codes

EWC Code	Waste Categories	Hazardous
17 01 01	Concrete	
17 01 02	Brick	
17 01 03	Tiles and ceramics	
17 02 01	Wood	
17 02 02	Glass	
17 02 03	Plastic	
17 03	Bituminous mixtures, coal tar and tarred products	Potentially
17 04 05	Iron and steel	
17 04 07	Mixed Metals	
17 05 04	Soil and stones other than those mentioned in 17 05 03	
17 05 03	Soil and stones containing dangerous substances	Yes
17 06	Insulation materials and asbestos containing construction materials	
17 06 01	Insulation materials containing asbestos	Yes
17 06 03	Other insulation materials consisting of or containing dangerous substances	Yes
17 06 04	Insulation materials other than those mentioned in 17 06 01 and 17 06 03	
17 08	Gypsum-based construction materials	Potentially
17 09	Other Construction and Demolition Waste	Potentially
16 02	WEEE	
16 06	Batteries	
03 02	Wood Preservatives	
13 07	Liquid Fuels	

3.4.1. Soils and Stones

The proposed of foundations will generate soil and stones that will be filled elsewhere on the site. Any soil which is not re-used will be recovered or disposed of at an appropriate permitted or licensed site (based on the current calculations, there will be no excess soil generated from site development).

In the unlikely event of any evidence of soil contamination being found during work on site, the appropriate remediation measures will be employed. Any work of this nature would be carried out in consultation with, and with the approval of the Environmental Protection Agency and the

Environmental Department of Wexford County Council.

An excavation plan attached in [Appendix C](#) has outlined the requirement for investigations and assessment of potential contamination located at the brownfield area of the proposed development. The proposed excavation plan site investigations will facilitate the assessment of the suitability of the on-site soils to be re-used as fill. Both the greenfield and the brownfield areas of the development area shall be assessed by soil sampling.

3.4.2. Concrete

Surplus concrete will be generated due to excess concrete and washings from ready mix trucks. An impermeable concrete washout area (separate to vehicle wheel wash) will be installed by the Contractor. Excess concrete and washings from ready mix trucks will be deposited in the designated contained area only. The main contractor will arrange for removal from site of concrete at regular intervals.

3.4.3. Wood

Surplus wood will be generated from off cuts and packaging waste. Wood waste will be segregated for recycling off site.

3.4.4. Glass

Small quantities of surplus glass are expected to be generated from the proposed development. Excess glass can contaminate other segregated waste streams and reduce potential for re-use or recycling. Segregated glass has a recycling value, therefore glass waste on site will be source separated for recycling off site.

3.4.5. Metal

Surplus metal will be generated from use of steel reinforcing rods in the concrete foundations, packaging waste and other construction works. Source segregated metal has an recycling value therefore metal waste on site will be source segregated for recycling off site.

3.4.6. Food Waste

Food waste on site will arise from any catering and food consumption by construction staff. The *Waste Management (Food Waste) Regulations, S.I. No. 508 of 2009* require that food waste arising on site is source-segregated and kept separate from other wastes.

Suitable food waste bins will be provided by the contractor in the construction compound and the contractor will ensure that these are regularly removed and emptied.

3.4.7. Other Non-Hazardous Waste

All packaging waste will be segregated at source and recycled. The contractor will investigate the possibility of returning packaging to material suppliers on a delivery and “take back” basis.

Small quantities of paper and cardboard waste are expected to be generated from contractors offices and packaging. These will be segregated at source and recycled.

It is likely that small quantities of waste will be generated on site which it is not possible to source separate or recycle. This waste will be placed in the appropriate residual waste container. The contractor shall arrange for removal and segregation off site.

3.4.8. Hazardous Wastes

Hazardous waste will be managed in accordance with the *Waste Management (Hazardous Waste) Regulations 1998 and 2000*.

Small quantities of hazardous wastes are expected to be generated on site. Examples of potentially hazardous wastes include paints, adhesives and sealants.

Hazardous waste generation will be minimised, and such waste will be recovered. Where hazardous materials are being specified, alternatives with a lower environmental impact should be sought wherever possible.

Any *Waste Electronic and Electrical Equipment (WEEE)* will be source separated and the contractor will arrange for its removal from site for recovery or disposal. WEEE can contain hazardous components such as batteries and mercury containing fluorescent tubes. All hazardous wastes will be stored in appropriate secure bunded containers prior to removal from site. Some hazardous wastes may not be stored with other wastes. This will be determined by the contractor and appropriate precautions taken.

3.4.9. Demolition Waste Estimates

The former mushroom facility is currently demolished to just above the ground level. The gross floor area of the concrete areas yet to be demolished is approximately 15,824 m² (10,500 Tunnel area + 4,300 Other Building Area + 1,024 Steel Portal Frame Area). These areas will generate crushed concrete for recovery or classification as 6F2. The total volume of concrete based on 0.3 metre average depth of concrete over the 15,824 m² area is estimated at 4,742.2 m³. This corresponds to an estimated tonnage of 12,8173.44 tonnes of concrete based on an average concrete specific gravity of 2.7.

3.4.10. Construction Waste Estimates

The BRE Waste Benchmark Data as of June 2012 (Ref. 2) provides guidance on the construction waste estimates based on the gross internal floor area. Please see [Table 3](#) below for the typical construction

industry waste generation per 100 m² floor area (Ref. 2). These calculations are based upon the proposed 307 dwelling at 165 m² floor area (Ref. 4, CSO Average floor size per unit (sq metres) by type of dwelling). It has been assumed that the 307 dwellings will utilise the CSO average floor area of 165.05 m² (Q1 2017 - Q2 2018) to subtotal to approximately 50,670 m² floor area for the entire residential development.

The BRE Waste Benchmark Data as of June 2012 (Ref. 2) provides guidance on the demolition waste estimates based on the gross internal floor area. Please see [Table 3](#) below for the typical construction industry waste generation per 100 m² floor area (Ref. 2).

Table 3: BRE Waste Benchmark June 2012

<i>Project Type</i>	<i>Number of projects data relates to</i>	<i>Average Tonnes/100m²</i>	<i>Number of projects data relates to</i>	<i>Average Tonnes/£100K</i>
Residential	256	16.8	260	12.3
Public Buildings	23	22.4	24	11.2
Leisure	21	21.6	20	10.5
Industrial Buildings	23	12.6	24	5.7
Healthcare	22	12.0	22	9.9
Education	60	23.3	60	11.8
Commercial Other	4	7.0	2	3.6
Commercial Offices	14	23.8	11	6.3
Commercial Retail	48	27.5	47	11.6
Total number of	471		470	

For a total building area of 50,670 m² and an average of 16.8 tonnes of waste per 100 m² of floor area, the construction waste generated translates to approximately 8,512 tonnes. [Table 4](#) below outlines the typical breakdown of construction and demolition waste type expected to be generated from a typical site such as this (Ref. 3, EPA 2014 Dataset)

Table 4: Waste Materials generated on a typical Irish construction site (EPA Ref. 3)

<i>Waste Types</i>	<i>Percentage (EPA) Based on 2014 Data (Latest As of March 2018)</i>
Metal waste	5.24%
Glass waste	0.09%

<i>Waste Types</i>	<i>Percentage (EPA) Based on 2014 Data (Latest As of March 2018)</i>
Paper and cardboard waste	0.01%
Plastic waste	0.01%
Wood waste	1.57%
Waste containing PCBs	0.00%
Mixed waste	0.08%
Mineral waste	12.11%
Asbestos waste	0.19%
Soil and stones	74.35%
Residue from treatment of mixed waste	6.35%
<i>Sub Total Waste</i>	<i>100</i>

Table 5 is a preliminary estimate of the construction waste (breakdown) which might be generated based on information currently available.

Table 5: Estimated Construction Waste Quantities

<i>Waste Types</i>	<i>Percentage (EPA)</i>	<i>Waste Tonnes (EPA Data Only)</i>	<i>Waste Tonnes (EPA Data – Minus Soil Data)</i>
Metal waste	5.24%	451.95	451.95
Glass waste	0.09%	7.76	7.7625
Paper and cardboard waste	0.01%	0.86	0.8625
Plastic waste	0.01%	0.86	0.8625
Wood waste	1.57%	135.41	135.4125
Waste containing PCBs	0.00%	0.00	0
Mixed waste	0.08%	6.90	6.9
Mineral waste	12.11%	1044.49	1044.4875
Asbestos waste	0.19%	16.39	16.3875
Soil and stones	74.35%	6412.69	Article 27 By-Product Designation Proposed
Residue from treatment of mixed waste	6.35%	547.69	547.6875
<i>Sub Total Waste</i>	<i>100</i>	<i>8,625</i>	<i>2,212</i>
<i>Total Waste</i>			<i>2,212</i>

The development will require the excavation of approximately 30,292 m³ of soil/subsoil for foundation construction. The proposed cut and fill plan has outlined that there will be an estimated net excess volume of 4,470 m³ of soil/subsoil once the on-site foul and storm water cut and fill drainage network is constructed after the balance of these soils filled into the proposed development.

In recognition of the waste hierarchy and the prevention of waste, there is at this time no significant barriers that would prevent the excess soil from being classified as a by-product under the under the Article 27 of the Waste Directive Regulations 2011. If a local use for the material could be identified, if use was certain, and if the proposed end use site met the requirements of the Article 27 regulations, there would be no need to send this material to a waste facility. It is the **intent of the development** (as required by the EPA Regulatory Position on Article 27 By-Product Designations) to classify this material as a by-product and to re-use this material. Until such a time that a by-product designation is approved, it has been assumed that the excess material may require off-site disposal.

3.5. Mitigation Measures – Construction Stage

A site-specific *Construction and Development Waste Management Plan (C&D WMP)* for the demolition and construction of the development will be employed to ensure effective waste management and recycling of waste generated at the site.

Mitigation measures proposed are summarised in [Table 6](#) below:

Table 6: Construction Stage Mitigation Measures

Mitigation Measures
On-site segregation of all waste materials into appropriate categories including:
<i>Made ground, soil, subsoil, bedrock</i>
<i>Concrete, bricks, tiles, ceramics, and plasterboard</i>
<i>Metals</i>
<i>Dry recyclables e.g. cardboard, plastic, timber</i>
All waste materials will be stored in skips or other suitable receptacles in a designated area of the site.
An asbestos survey will be completed in the buildings. Asbestos will be removed by qualified and registered asbestos removal contractors, in accordance with the requirements of the <i>HSA (Health and Safety Authority)</i> .
Wherever possible, left over materials (e.g. timber off cuts) and any suitable demolition materials

<i>Mitigation Measures</i>
shall be re-used on-site.
There is potential for soil contamination. As such, any potentially contaminated soil to be removed from site will be tested to confirm its contamination status and subsequent management requirements.
All waste leaving the site will be transported by suitable permitted contractors and taken to suitably licensed or permitted facilities.

These mitigation measures will ensure the waste arising from the demolition and construction of the development is dealt with in compliance with the provisions of the *Waste Management Act 1996 (as amended 2001)*, and associated Regulations, the *Litter Act of 1997* and the *Southern Region Waste Management Plan (2015 - 2021)*, and achieve optimum levels of waste reduction, re-use and recycling.

3.6. Methods Proposed for Prevention, Reuse and Recycling of Wastes

The EU waste hierarchy will be implemented by identifying opportunities to firstly prevent waste from being produced. The following purchasing procedures will be implemented where feasible to reduce excessive material wastage from site:

- Ordering of appropriate quantities of materials, with a just-in-time philosophy,
- Immediate and careful storage of materials delivered to the site to minimise generation of damaged materials/waste e.g. keeping deliveries packaged until they are ready to be used,
- Storing materials which are vulnerable to damage by rain under cover and raised above the ground,
- Careful handling of materials, using appropriate equipment, to avoid undue damage,
- Designation of separate storage areas for different types of waste, in order to maximise the reuse and recycling potential of the waste,
- Ensuring correct sequencing of operations, and
- Assigning individual responsibility (through appropriate contractual arrangements) to sub-contractors for the purchase of raw materials and for the management of wastes arising from their activities, thereby ensuring that available resources are not expended in an extravagant manner at the expense of the main contractor.

Where prevention is not feasible, ways to reuse or recycle waste will be sought, preferably on-site to

avoid the impacts arising from transportation. Excavation works below the existing ground level will be required during the construction of the development. Excavated soils and stones will be re-used as engineered fill on site. The re-use of this material will be subject to testing to establish suitability for its proposed re-use.

Where on site re-use is not feasible, opportunities to reuse or recycle the waste off-site will be investigated. If this is not feasible, then waste will be sent to an energy recovery facility, and only where there is no alternative, will waste be disposed of to landfill. To achieve this, existing waste management programmes and networks will be used such as the *National Waste Prevention Programme* (implemented by the *Environmental Protection Agency*) and material exchange networks. Construction wastes arising from construction at the site will be appropriately segregated to facilitate recycling.

All waste removed from the site will be collected only by contractors with valid waste collection permits (under the *Waste Management (Collection Permit) Regulations 2001 as amended*).

4. RECORD KEEPING AND WASTE AUDITING PROCEDURES

The contractor is responsible for ensuring the following:

- Waste from the proposed development will be transported by authorised waste collectors in accordance with the *Waste Management (Collection Permit) Regulations, 2007* and the *Waste Management (Collection Permit) (Amendment) Regulations, 2008*.
- Waste from the proposed development will be delivered to authorised waste facilities in accordance with the *Waste Management Acts 1996-2010*.
- Any interim storage facilities have the appropriate waste licences or waste facility permits in place.

All facilities to which waste will be taken will be audited in advance by the contractor, to ensure that they have appropriate waste licences or permits allowing them to accept the type of waste that is to be sent there (under the *Waste Management Act 1996* as amended).

The construction site will be subject to regular inspections to ensure that waste segregation is being implemented at source and that cross contamination of wastes does not occur. These inspections will be recorded.

Records of the nature and quantity of wastes and materials taken from site by each waste collector will be kept by the Contractor. Records of the nature and quantity of wastes and materials taken from site to each waste facility will be kept by the Contractor.

Copies of relevant waste collection permits, certificates of registration, facility permits and waste licences will be retained on site. Where these have expired an up to date copy will be obtained from waste collectors by the Contractor.

The contractor will ensure that waste management requirements as set out above are included in the terms of all sub-contractors contracts.

The Construction Manager will ensure that fully detailed records are maintained of any “incident/event” likely to cause harm to the environment. Contractors who report an incident will ensure details are identified and recorded.

Environmental incidents will be recorded on an appropriate form.

Complaints and Follow up Actions on the construction site will be managed by the Construction Manager in liaison with Strutec Ltd. and contractors will ensure that all complaints are recorded according to Strutec Ltd. requirements. A complaints log will be kept, and any complaint from interested parties will be actioned and recorded.

Each contractor will be responsible for ensuring that a full record and copy of all Safety Data Sheets (SDS) pertaining to their works is kept on file and up to date in their site offices. Contractors will also retain a duplicate copy of all SDSs held by the contractors.

The waste manager shall perform audits at the site during the complete construction phase of the works.

This shall ensure that all records are being maintained for all movements of all materials.

Records shall also be readily available for comparison with the sites targets. At completion of the Construction phase a final report will be prepared outlining the results of the Waste Management process and the total reuse, recycling and recovery figures for the site.

5. WASTE GENERATED BY THE OPERATIONAL PHASE OF THE DEVELOPMENT

Typical municipal waste streams are expected to be produced during operation of the proposed development. This includes:

- Food wastes
- Cardboard and paper
- Plastics (including bottles and other containers)
- Glass (including green, brown, clear)
- Metals (including aluminium cans and tin cans)

Periodic maintenance and repair activities will generate small quantities of waste such as green waste, inert building materials (e.g. textiles) and certain chemicals (cleaning products, paints, pesticides etc).

The residential component of the development consists of 307 residential dwellings comprised of houses, duplex apartments and apartments.

The 2016 EPA Publication, Ireland's Environment – An Assessment 2016, states,

“Household waste is a core component of municipal waste. Preliminary data indicate that 1.52 Mt of household waste was generated in 2014 (331kg per person), which is similar compared to the EU-28 average”.

A value of 0.907 Kg of waste generated per person per day has been therefore assumed for the purposes of this report to estimate the volume of waste to be generated at the proposed development. A occupancy of 1593 household occupants has been calculated by Strutec Ltd based upon the unit type and numbers. A value of 0.26 m³/m²/year of waste is likely to be generated per occupancy per day. The total waste arising from the operation of the proposed development was estimated and summarised in [Table 7](#) below.

Table 7: Estimated Operational Waste Quantities (Strutec 30th November 2018)

<i>Waste type</i>	<i>% Waste</i>	<i>Waste kg/day</i>	<i>m³/day</i>	<i>m³/week</i>
Residential				
Organic Waste	34.5	497.7	0.312	0.96
Cardboard	5.6	81	0.051	0.41
Paper	16.8	242.7	0.152	1.18
Plastic	11.3	163.3	0.103	4.07
Glass	5	72.3	0.045	0.07
Metals	3.6	52	0.033	0.02
Textiles	4.1	59.2	0.037	0.64
Mixed Non-Recyclable	19.2	276.7	0.174	1.39
Total	100	1,444.9	0.907	8.75

Per year		52,7386.9		
Per occupancy per day		0.907028		

Creche				
Organic Waste	34.5	497.7	0.312	0.96
Cardboard	4.7	0.467	0.005	0.019
Paper	3.5	0.35	0.003	0.014
Plastic	2	0.034	0	0.008
Glass	3.3	0.056	0.001	0.013
Metals	38	17.81	0.175	0.15
Textiles	0.3	0.016	0	0.001
Mixed Non-Recyclable	4	0.597	0.006	0.016
Total	100	34.118	0.334	0.394

Per year		12,453.19		143.962
Per occupancy/day		0.334494		
Per year/m ² floor area				0.26

5.1. Mitigation Measures – Operational Stage

A site specific *Construction and Development Waste Management Plan (C&D WMP)* for the demolition and construction of the development will be employed to ensure effective waste management and recycling of waste generated at the site.

This hierarchy will be implemented by identifying opportunities to firstly prevent waste from being produced, and secondly minimise the amount of waste produced. Where prevention and minimisation will not be feasible, ways to reuse or recycle waste will be sought, preferably on-site to avoid the impacts arising from transportation. If this is not feasible, opportunities to reuse or recycle the waste off-site will be investigated. If this is not feasible, then waste will be sent to an energy recovery facility, and only where there is no alternative, will waste be disposed of to landfill. To achieve this, existing waste management programmes and networks will be used such as the *National Waste*

Prevention Programme (implemented by the *Environmental Protection Agency*).

As with the construction phase, waste materials will be generated during the operational phase of the proposed development. Again, careful management of these, including segregation at source, will help ensure acceptable local and national waste targets are met. It is expected that some waste e.g. mixed non-recyclables will still be required to be disposed of to landfill.

Assuming appropriate on-site storage is provided, environmental impacts (e.g. litter and to a lesser extent contamination of soil and water etc.) arising from waste storage are expected to be minimal. The use of suitable licenced waste contractors will ensure compliance with the relevant legal requirements and appropriate off-site managements of waste.

6. CONSULTATION WITH RELEVANT BODIES

Typical municipal waste streams are expected to be produced during operation of the proposed development are listed below.

Wexford County Council will be consulted throughout the construction phase to ensure that all available waste reduction, reuse and recycling options are being explored and utilised and that compliant waste management is being carried out at the site.

Specialist companies, wherever required, will be contacted to determine their suitability and each company's record reviewed to ensure relevant current collection permits / licenses are held.

Companies will also be contacted to gather information regarding treatment of hazardous materials, if required (although not anticipated for this site), costs of handling and the best methods of transportation for recycling or reuse when hauling off site.

References

No.	Reference
1.	Google Earth Pro, [Accessed 07 September 2018].
2.	BRE Waste Benchmark Data as of June 2012, Available at: http://www.smartwaste.co.uk/filelibrary/benchmarks%20data/Waste Benchmarks for new build projects by project type 31 May 2012.pdf [Accessed 07 September 2018].
3.	EPA - Construction & Demolition Waste Statistics For Ireland: http://www.epa.ie/nationalwastestatistics/constructiondemolition/ [Accessed 07 September 2018].
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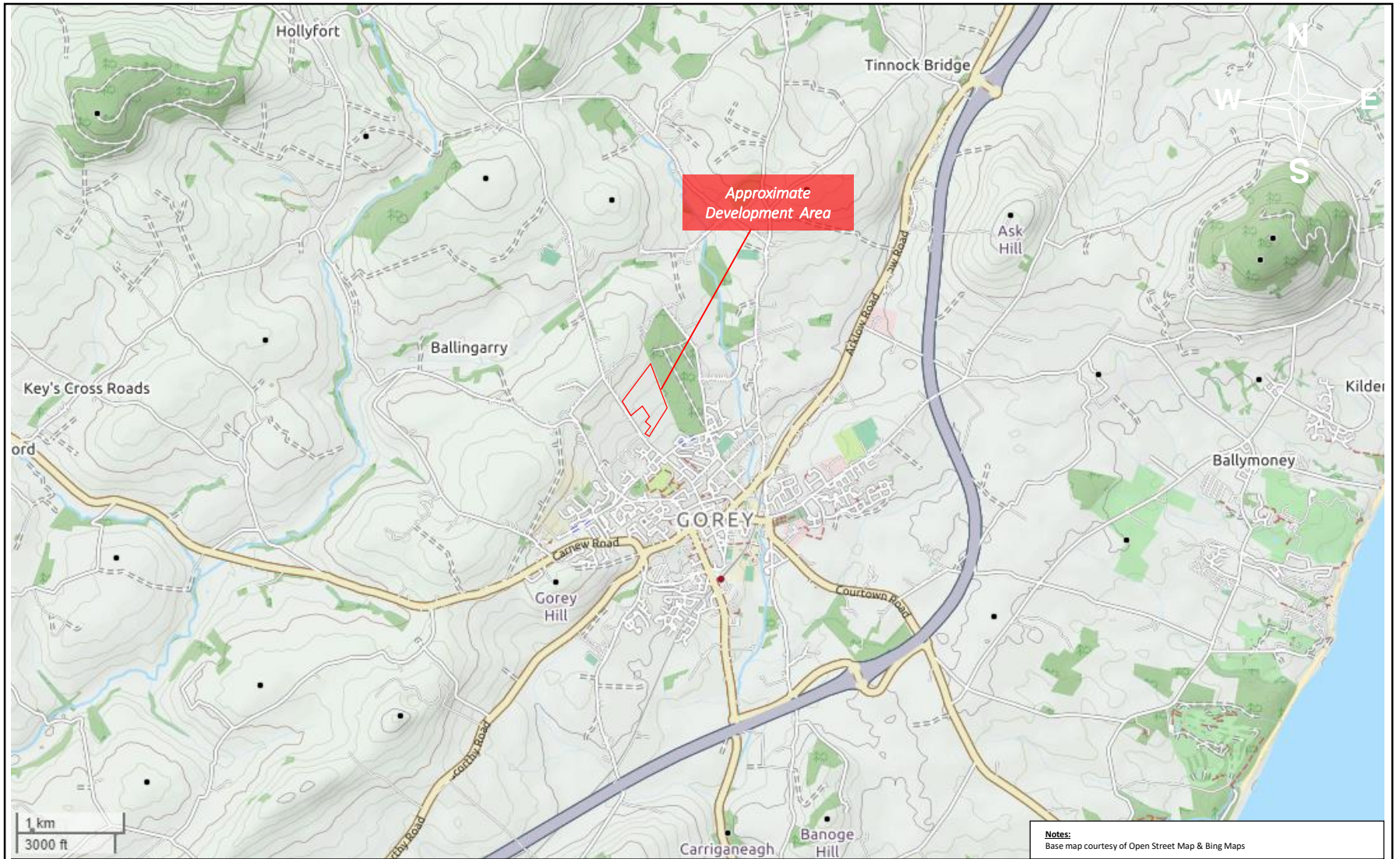


APPENDIX A

**Figure 1: Drawing IE1539-2-001
Regional Location Map**

**Figure 2: Drawing IE1539-2-002
Site Map Aerial Photograph**

**Figure 3: Drawing PL050
Cut and Fill Diagram**



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Project Title: CWMP - Proposed Housing Development

Project Address: Ballyowen / Ramsfortpark, Gorey Co. Wexford

Client: Strutec Ltd

Drg. Title: Figure 1: Regional Location Map

Drg. Scale:	Date:	Dwg No:	Job No:	Revision:	Dwg. By :
NTS	21/09/2018	IE1539-2-001	IE1539-2	A	EF



Notes:
Base map courtesy of Open Street Map & Bing Maps

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Project Title: CWMP - Proposed Housing Development						
Project Address: Ballyowen / Ramsfortpark, Gorey Co. Wexford						
Client: Strutec Ltd						
Drg. Title: Figure 2: Site Location Map						
Drg. Scale:	Date:	Dwg No:	Job No:	Revision:	Dwg. By :	
NTS	21/09/2018	IE1539-2-001	IE1539-2	A	EF	



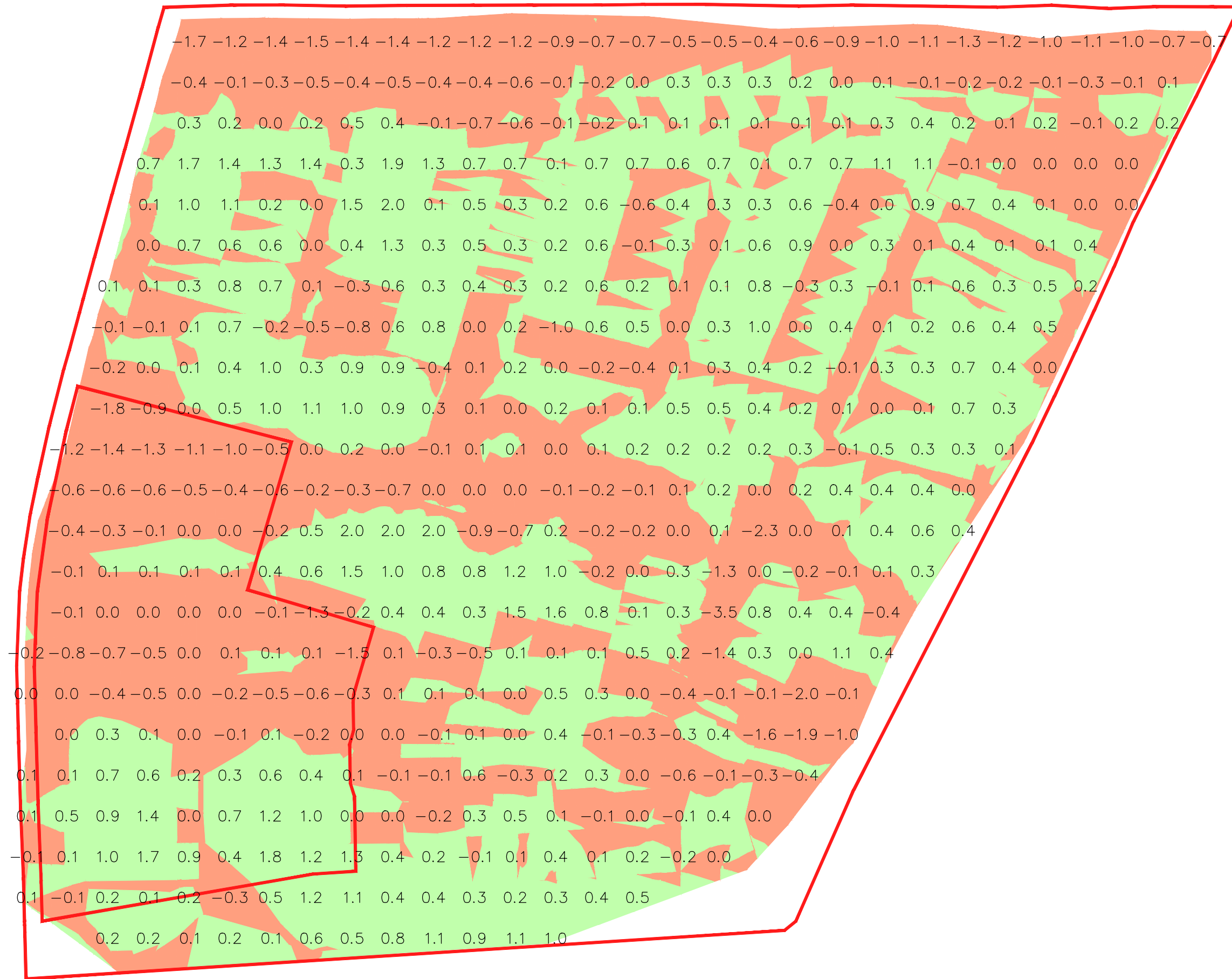
APPENDIX A

Figure 3


All dimensions to be checked on site. Figured dimensions take preference over scaled dimensions. Any errors or discrepancies to be reported to the Architects. This drawing may not be edited or modified by the recipient.

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Cut and Fill Diagram

REV	DATE	REV BY	DESCRIPTION
-	-	-	-
STATUS PLANNING			
PROJECT		PROPOSED RESIDENTIAL DEVELOPMENT	
PROJECT ADDRESS		BALLYOWEN/RAMSFORTPARK, GOREY, CO. WEXFORD	
DWG TITLE CUT AND FILL DIAGRAM			
-			
DWG NO		PL-050	REV -
JOB NO		1725	SCALE @ A3 1:1500
DATE		17.9.2018	DRN Liam Minogue
		STRUTEC, Architectural & Engineering Consultants, Garryhill, Bagenalstown, Co. Carlow, R2 KP44 Ireland Tel +353 (0)59 97 27623 W www.strutec.ie E info@strutec.ie	



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APPENDIX B

Design Statement Draft 17jan18

OCTOBER 24, 2018



PROPOSED RESIDENTIAL DEVELOPMENT
AT BALLYOWEN / RAMSFORTPARK,
GOREY, CO WEXFORD
FOR AMIL DEVELOPMENTS LTD.

DESIGN STATEMENT

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1. EXECUTIVE SUMMARY

1.1 The Proposal

The proposed scheme comprises the development of 297 dwellings and an associated childcare facility on a site of 9.57 hectares at Ballyowen / Ramsfortpark, Gorey, Co Wexford. The proposal includes units in a variety of house sizes, types and designs, with corner sites defined by small (2- 3 unit) apartment/duplex blocks. The site forms part of the Creagh Key Development Site, with the layout based on the urban block typology, all as referenced under the Gorey Town & Environs Local Area Plan 2017-2023. The site layout and arrangement of buildings is also generated by the sloping topography of the site and the intended landscape strategy.

The scheme as now proposed and this Design Statement takes fully into account the contents of the Pre-Application Consultation Opinion (ABP-301472-18), with specific reference to the following:

- **Urban Design & Layout**
 - The main 'avenue' (as identified under the hierarchy of streets in the Gorey Town & Environs Local Area Plan 2017-2023) has been substantially revised in its treatment to clarify and strengthen its role and identity.
 - The layout and design of the apartments have been substantially revised throughout the development. Each individual site has been re-planned, with the buildings moved to the street edge/urban block corner to lend clarity and definition to the streetscape and urban realm, as well as appropriately sheltering the communal open spaces.
 - The terrace at the southern end of the development has been revised, with the addition of an apartment block in the centre and eastern end, which breaks up the run of a single house type.
 - The architectural language used for both houses and apartments has been considerably revised and developed, both in relation to materials and details such as consistency of windows. The design as now proposed provides an attractive visual variety and sense of place through variation in house types, while retaining a unifying sense of identity through a common architectural language and palette of high-quality materials. There are no longer any blank elevations or large areas of render, other than certain gables that are closely located beside and covered by adjacent dwellings.
 - An indicative masterplan for the adjacent Community & Education zoned lands is included, which reflects the applicant's development intentions and also a layout that will be supportive of the high-quality urban realm that is envisaged for the residential lands within the current application.

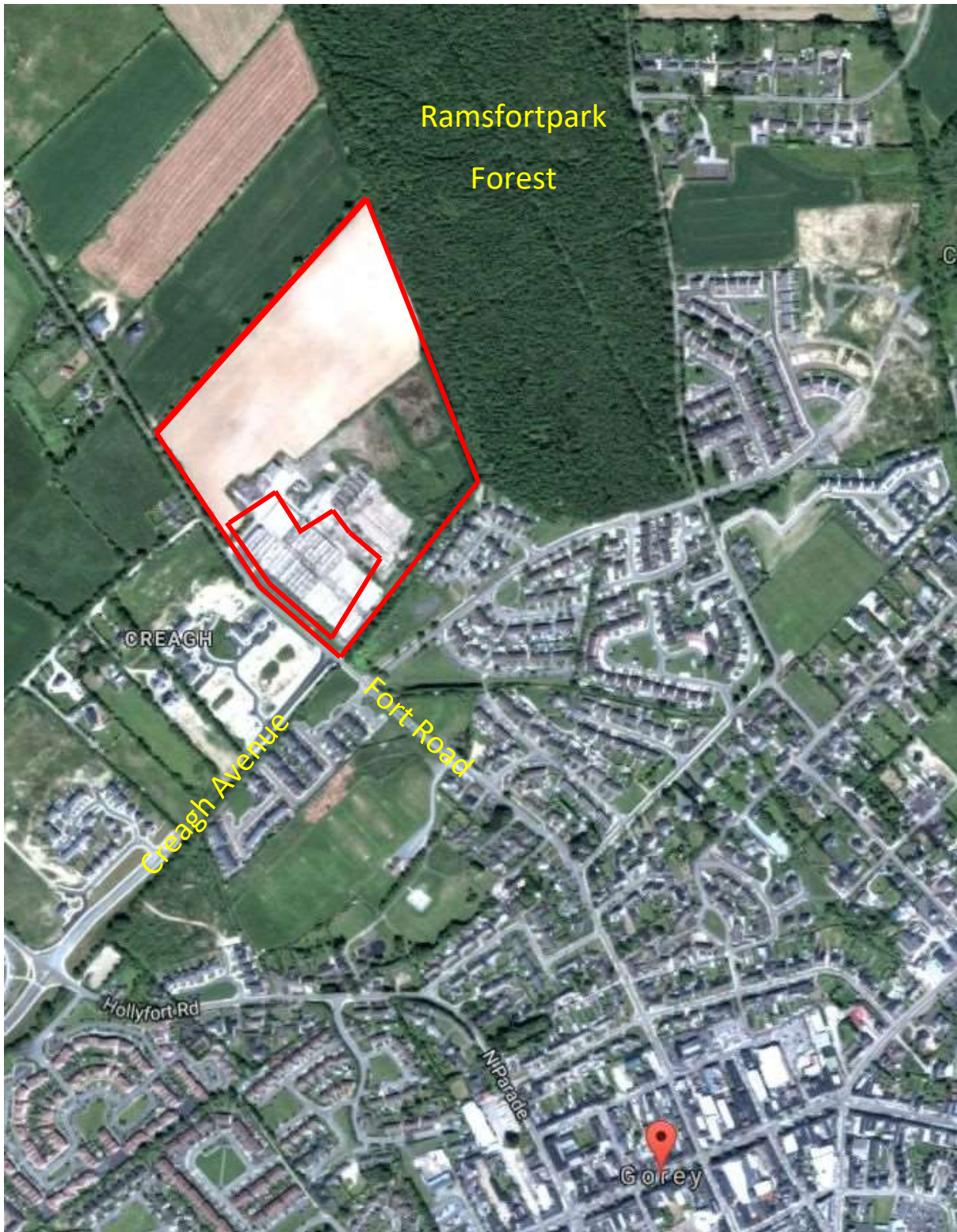
- **Connectivity & Permeability**
 - The documents and design proposals have been revised to allow for a second vehicular and pedestrian/cyclist connection through to the residential lands to the north of the site, giving thee connections in total.

- The documents and design proposals have been revised to allow for a vehicular connection through to the open space area to the south of the site, as a continuation of the main 'avenue'. This connection was already designed to allow for pedestrian/cyclist access. In addition to these revised proposals, additional landscape design has been undertaken for this area by Murray Associates, including an indicative layout for the Public Open Space immediately to the south of development site.
 - Particular provision has been made for cycle access and circulation along the Fort Road, as well as all along the periphery of the Community & Education zoned lands, thus encouraging safe and easy cycle usage into the heart of the development. The other streets are treated as shared surface home zones and therefore inherently accommodate cycle access.
- **Public Open Space**
 - While the Neighbourhood Park (defined in the Gorey Town & Environs Local Area Plan 2017-2023) is the central landscape feature within the development, the mosaic of open spaces gives every resident easy and convenient access to recreational amenity and allows distinct landscape treatments and elements to be applied to different spaces. This aids wayfinding and contributes towards giving the development a recognisable character.
 - It can be seen from the cross sections provided that the central Public Open Space enjoys passive surveillance from ground and first floor levels on the north side and from first floor level on the south side, with revisions made to the landscape design and documents with regard to specific planting and mounding to support this. Additional cross sections have been provided on both the architectural and landscape drawings.

2. INTRODUCTION & GENERAL DESCRIPTION

2.1 Site Location

The site is located on the north-west edge of Gorey town, just under 1km from the town centre. It is accessed from the Fort Road, which runs along its western boundary. The other side of Fort Road is currently under residential development at the town end, with some single detached houses further north. To the north of the site is agricultural land, although that immediately adjacent is zoned residential and forms part of the Creagh Key Development site, as defined in the Gorey Town & Environs Local Area Plan 2017-2023. To the east lies Ramsfortpark Forest and to the south of the site is the existing residential development of Ashwood Grove / Willow Park. The adjacency of the forest and Gorey Town Park offers excellent amenity, while the new schools accessed via Creagh Avenue provide excellent facilities, with the main street also just over 1km from the main site access.



Site Location shown relative to Town Centre

2.2 Site Description & Zoning

The site measures 9.57 hectares in area and is roughly diamond-shaped on a north – south axis. The terrain rises from south-east towards north-west, with levels ranging from approximately 55m OD at the southern end of the site to 74m OD at the northern boundary. The site is zoned for residential use, but includes two areas zoned for Open Space, the larger being across the centre and running from east to west (effectively connecting Fort Road with Ramsfortpark Forest), with the smaller Open Space located in the south-west corner and intended to link with an existing equivalent space outside the application site. An adjacent portion of lands under the same ownership, to the south west of the application site, is zoned for Community & Education uses – the proposed childcare facility will be located on a portion of these lands and an indicative masterplan for the balance is also included, which indicates a layout that is supportive of and integrated with the proposed residential development, both in terms of design and intended uses. These Community & Education lands were so zoned on the basis of a previous request to Wexford County Council from the Department of Education, who have subsequently confirmed that they will not be required by them (we refer the Board to the enclosed Schools Provision Report prepared by J Spain Associates). These lands do not form part of the application site, but an indicative masterplan has been included.

3.0 PROPOSED DEVELOPMENT

3.1 Objectives of Development

The proposed development seeks to create a distinct place within the locality, by responding to the site's features in the layout, and by reflecting the vernacular in its details, materials and finishes. The design objective is to establish a character area that is easily identified and distinguishable from neighbouring developments, with a clear, legible and pleasing layout. The overall design is intended to contribute strongly to the coherence of the neighbourhood.

The development aims particularly to provide a broad range of dwellings to accommodate a varied mix of residents, in a legible and pleasant environment. The scheme will achieve as sustainable a density as possible within the constraints of the site, in line with development and local area plan policies, whilst providing residential accommodation to meet market demands.

3.2 Description of Development

The proposed scheme comprises 297 dwellings, consisting of 232 two, three, four and five bedroom houses and 65 two and three bedroom apartments and duplexes. The dwellings

are arranged in a wide variety of units of both two and three storeys, depending on their location and its relationship to the urban setting.

The design of the development has been closely based on the precepts and specific layout indicated under the Gorey Town & Environs Local Area Plan 2017-2023, which identifies the Creagh locale as a Key Development Site. In particular, the residential layout is based on twelve distinct urban blocks, each of which includes a variety of unit types and sizes, which provide both choice of location and accommodation. This approach also facilitates the permeability that is missing from many traditional housing estates, which are 'hermetically' sealed off from their surroundings, inhibiting the connectivity that enables pedestrians and cyclists to travel safely in and around the town.

The western edge of the site contains the main vehicular entrance, as well as pedestrian entrances from the Fort Road, leading to the town centre and schools established on Creagh Avenue. The southern boundary is shared with the existing Ashwood Grove/Willow Park development, linked through the landscape spaces and with pedestrian/cycle and vehicular access. The eastern boundary connects through the central landscape space into Ramsfortpark Forest, while the northern boundary includes pedestrian/cycle and vehicular links into the adjacent site. Gorey Town Park is situated immediately to the south of the site.



Site Layout with Zoning (from Gorey Town & Environs Local Area Plan 2017-2023)

3.3 Proposed Layout

Urban blocks form the basis of the site and residential layout, with each incorporating a range of unit types and sizes, while ensuring good movement around them and permeability through the development.

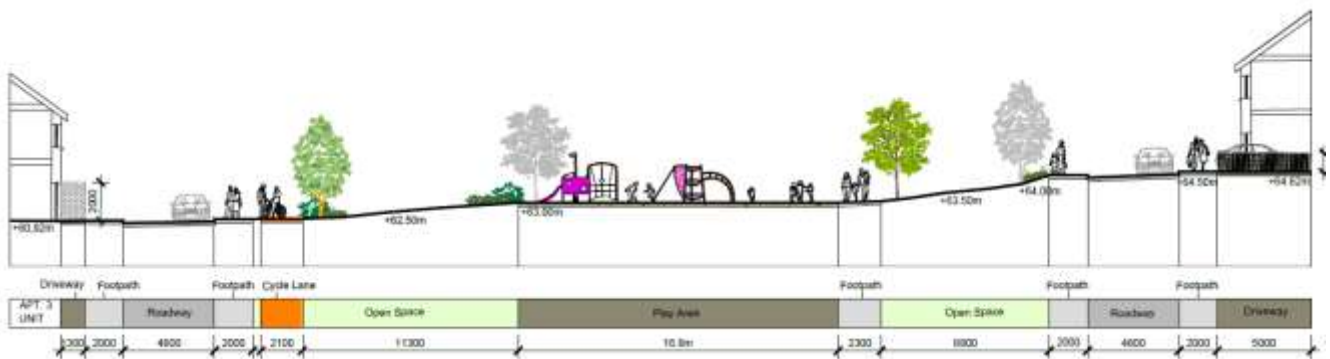
A particular feature of the layout is the individual design of the block corners, which typically contain a variety of two and three bedroom apartments and duplexes in units of two and three storeys. These corners are vital in establishing and defining the urban blocks, as well as adding a variety that reinforces the particular character of the development.

In response to the Board’s Opinion, the scheme has been further developed to reflect the clear vision for the subject lands contained in the Gorey Town & Environs Local Area Plan 2017-2023, which indicates a clear hierarchy of streets, with a main ‘spine’ avenue running north-south and connecting to the adjacent sites. The dwellings facing this avenue edge it with an appropriate scale and treatment, supported by structured landscape design and the masterplan layout for the Community & Education zoned lands. The subsidiary streets adopt a Home Zone shared surface low speed strategy, to provide an appropriate environment. The new streets and open spaces proposed are continuously and adequately enclosed by buildings of an appropriate scale, providing clearly defined edges.



Part west-facing elevation onto main north-south avenue

The proposed open spaces form significant new features and provide a coherent and distinctive new landscape structure for the site. This structure is designed to connect to both existing landscape/amenity features (such as Ramsfort Park Forest) and existing developments, as well as being functional, safe and attractive. The landscape design has been carefully considered and developed to ensure meaningful passive surveillance of all open and shared spaces is available, taking into account the topography and slope of the site.



Cross section through main Play & Open Space



Site Layout highlighting Open Space provision, Areas & Residential Density, with indicative masterplan for Community & Education zoned lands

3.4 Compliance with Urban Design Criteria

Below are the urban design qualities of the proposal related to the twelve criteria set out in the “Urban Design Manual, A Best Practice Guide”:

Context

The proposed development forms a significant part of the Creagh Key Development Site identified in the Gorey Town & Environs Local Area Plan 2017-2023. As such, it is seen as reflecting the natural evolution of the neighbourhood from low density outer suburban residential to a more structured and sustainable urban edge. The development of the Community & Education zoned lands will also give the opportunity to enhance the amenities of the area and surrounding developments, thus contributing to their collective viability as a neighbourhood in its own right. The density of the proposed development is appropriate to

its context and respects that of the emerging area, while being sensitive to existing adjacent lower density precincts.

The existing sloping topography and sylvan character informs the form, architecture and landscaping of the scheme, reinforcing the character and identity of the neighbourhood. The boundaries reflect adjacent activities, with open green areas connecting to existing adjacent spaces, while private rear gardens protect adjacent existing gardens.

Connections

Based on the Gorey Town & Environs Local Area Plan 2017-2023, the development is highly connected to its environs on all edges and in a number of ways. These links provide safe access particularly for pedestrians, but also for cyclists and (where appropriate and in a controlled manner) for vehicles. In response to item 2 of the Board's Opinion:

- The southern edge connects through its green space to the existing open space in the residential development of Ashwood Grove / Willow Park. A strong vehicular, pedestrian and cycle connection is also planned here, to align with the new main avenue, while Murray Associates have included an indicative layout for the open space to the south outside the applicant's ownership (lands owned by Wexford County Council).
- The northern boundary allows for pedestrian, cycle and vehicular links to the future adjacent development, as indicated in the Gorey Town & Environs Local Area Plan 2017-2023. The major link is via the main 'spine' avenue, but a further vehicular, pedestrian and cycle connection is also proposed from the open space located in the north east, along with a pedestrian and cycle connection from the north west corner.
- The eastern boundary is shared with Ramsfortpark Forest and the central landscape space in the development is aligned on a pedestrian access to this important amenity. It is intended that uncontrolled access to the forest be discouraged and this will be addressed through the boundary treatment.
- The main vehicular access is from the Fort Road, which forms the western boundary. A single point of access is proposed, entering alongside the main central landscape space. It is also proposed to carry a footpath along the Fort Road, immediately bounding the development, which will also be linked through to the development to the north. The main pedestrian and cycle access to the development is proposed in the south western corner of the site, as part of the proposed connecting open space.

Particular provision has been made for cycle access and circulation along the Fort Road, as well as all along the periphery of the Community & Education zoned lands, thus encouraging safe and easy cycle usage into the heart of the development. The other streets are treated as shared surface home zones and therefore inherently accommodate cycle access. With regard to public transport, it is intended that the development will be served by a community shuttle bus, linking it with the town centre. This bus will enter through the Fort Road vehicular accesses and exit to the southern avenue connection, with a stop to be located adjacent to the Community & Education zoned lands.



Site Layout indicating Connectivity

Inclusivity

A very broad range of new homes is proposed. These range from two bedroom to five bedroom houses, in terraced, semi and detached arrangements. Generously-sized apartments/duplexes are proposed in two and three bedroom configurations, Wexford County Council having indicated that one bedroom and studio apartments are not appropriate in this location. There is a mix of house types throughout the development, with the apartments/duplexes also evenly distributed, as they form the urban block corners. Overall, the larger houses are predominantly located in the northern part of the site, with

the smaller units mostly located in the southern part. Mixed tenure will include social housing under Part V as well as houses for owner occupation. At least 10% of the units will conform fully to LTH standards, to ensure long-term adaptability and inclusivity.

The layout provides for universal access, with a variety of spaces for the use of residents of all ages and stages. Open spaces are well defined and contribute to sense of place in themselves and as parts of the wider development. The development and its open spaces will provide a positive aspect from the adjacent existing and future residential areas, as well as from Fort Road.

Variety

In accordance with the zoning and detailed provisions of the Gorey Town & Environs Local Area Plan 2017-2023, the provision of new activities other than residential usage would not be indicated or appropriate within the application site lands. However, the Community & Education zoned lands within the applicant's ownership offer the opportunity to include a range of complementary uses and activities to service the development and surrounding residential areas. Additionally, the proposed mix of housing type and tenure will add to the choice of home available in the area and as designed the buildings will present a tenure-blind development. Both Part V and private apartments are proposed in the same buildings, while Part V housing will be indistinguishable from private housing.

Efficiency

The net density of the site, at 37 units/ha derives from a highly efficient layout in this edge of town location, where the market demand is largely for traditional housing, thus validating the urban block strategy. The landscaped areas give focal points to the layout, providing amenity and biodiversity within the scheme, with SUDS incorporated into these spaces. Buildings and spaces are arranged to exploit good solar orientation. Houses with north-south orientations are generally larger, have south facing private open space or feature dual aspect rooms at ground floor level, allowing south light to enter from either the front or rear. The apartment/duplex buildings are designed with living areas and private balconies generally facing south, south west or south east. The majority of houses have independent rear garden access facilitating the storage of bins, while mid-terrace houses have screened storage for three bins at the front of the house.

Distinctiveness

The location of the site adjacent to Ramsfortpark Forest immediately creates the potential for distinctiveness in the development, together with the views back over the town provided by the sloping topography. These factors have been built upon in two particular ways, based on the layout indicated in the Gorey Town & Environs Local Area Plan 2017-2023:

1. The central Neighbourhood Park links the Fort Road with access to Ramsfortpark Forest, while also connecting the northern and southern areas of the site and the Community & Education zoned lands. Following the feedback contained in the Board's Opinion, the design of this key space has been further developed to strengthen the linkages through and around it, including passive surveillance.
2. The dominant direction of the new streets, including the main avenue, is north – south, thus making the most of the primary views to the south.

Furthermore, the Community & Education zoned lands (for which an indicative layout is included) give the opportunity to provide facilities to be shared by the surrounding new and existing residential developments, which lends distinctiveness both within the application site and the neighbourhood. Finally, the highly structured layout provides a new edge for the town, which also serves to terminate the recently established Creagh Avenue.

Layout

The layout closely follows that set out in the Gorey Town & Environs Local Area Plan 2017-2023 and provides active frontages and passive surveillance throughout the site. Urban blocks form the basis, without dead ends or cul de sacs, thus encouraging ease of movement and permeability, especially for pedestrians and cyclists.

A clear hierarchy of streets is reflected in the development, with a main 'spine' avenue running north-south and connecting to the adjacent sites to the north and south. The largely 3 storey dwellings (houses and apartments) facing this avenue edge it with an appropriate scale and treatment which, together with the specific landscape design, combine to establish the necessary structure. In addition, a strong and continuous edge has been achieved by locating the proposed crèche building plus the other masterplan buildings (subject to a separate future planning application) proposed under the Community & Education zoned lands to define its eastern and southern frontages. The subsidiary streets adopt a Home Zone shared surface low speed strategy, to provide an appropriate environment.

In response to the Board's Opinion, blank gables are avoided (only occurring where covered by immediately adjacent buildings) by employing the specifically designed apartments/duplexes to form the block corners and by using, in some locations, house types that turn the corner with entrance doors and glazing on the gable side of the terrace. The apartments/duplexes are located on the street edge/urban block corner to lend clarity and definition to the streetscape and urban realm. This arrangement also shelters the communal open spaces within the sites, as well as shared facilities such as bike and bin storage. As well as forming clear streets, houses are also arranged around the green spaces to ensure activity and overlooking and thus safety for users. Streets are generally shared surface areas to calm traffic and create distinct spaces.

An indicative masterplan for the Community & Education zoned lands is included, which reflects the applicant's development intentions and also a layout that will be supportive of the high-quality urban realm that is envisaged for the residential lands within the current application. This consists of a crèche (part of the current application), two storey nursing home, sheltered housing and a medical centre. It can be seen that the anticipated future uses are compatible with and supportive of the residential use, as well as being laid out in a way that contributes to a permeable but structured and attractive environment.

Public Realm

Public and private spaces within the site are designed to create a legible layout for residents and visitors alike, as well as according with the layout and zoning indicated in the Gorey Town & Environs Local Area Plan 2017-2023. The public areas benefit from extensive natural surveillance from surrounding dwellings and passers-by. Semi-private zones at the front of houses define the edge of the public realm, and provide a buffer to the houses from the public space. These zones are landscaped to define the curtilage of each house and accommodate parking. This encourages residents to take ownership of their immediate surroundings and will help to keep these areas maintained. The shared surface finishes and detailing of materials make the roads and parking spaces integral elements of the landscaping scheme.

A formal play area for children is located in the main Neighbourhood Park open space which defines the central axis of the development, visually and physically linking Fort Road with Ramsfortpark Forest. Two further areas of local open space are allowed for; the southern open space acts as a pedestrian link with Gorey town and a gateway space to the development. The design language of this space is more formal as befits an entranceway to the development. The northern open space is a smaller local space for adjacent units and incorporates natural play elements.

The public and private realms are clear, and streets are considered an integral part of the place and of the spatial experience.

Adaptability

There is a very good range of dwelling types in the proposal. Houses are adaptable in various ways and can be expanded into the roof for bedrooms, or into the back garden for additional living area. A ground floor extension could also allow for an additional bedroom for any wishing to adapt their home. At least 10% of the units will conform fully to LTH standards, to ensure long-term adaptability.

All dwellings, houses and apartments/duplexes, are designed to be energy efficient, with external walls sized to anticipate NZEB standards.

Privacy / Amenity

All dwellings have access to usable private outdoor space meeting Development Plan standards. Houses have private rear gardens while the apartments have balconies that are sited such that they do not interfere with adjoining units.

All houses and apartments/duplexes in the scheme are dual (or triple) aspect. Dwellings are designed to accommodate appropriate acoustic insulation and by their layouts to prevent sound transmission. Windows are located and sized appropriately to avoid views into the home from other houses and from the street. Landscaped parking curtilages at the front of houses offer a privacy buffer from the public realm, with ground floor apartments carefully planned and sited to maximise privacy. For houses, windows are generally larger onto private gardens than they are onto the street and for ground floor apartments larger windows and balconies to living areas look onto the landscaped communal area.

Adequate and usable internal storage is provided to all dwellings. Most houses have direct access to rear gardens for bin storage, while mid-terrace units have screened areas to the front for storing bins. Apartments/duplexes are in small blocks of either two or three units and are set back from the street within their own communal realm. This includes shared bin storage and bicycle parking, as well as storage sheds.

Parking

Parking for house types A – E and J is provided to the front of each house within its curtilage, and as such, is always close to the dwelling entrance and in view from the house. Parking for the apartments/duplexes and house types F - H is on-street but well overlooked and immediately adjacent. On-street parking areas will be landscaped and designed to avoid long stretches of relentless parking. Secure and sheltered bicycle parking to serve the apartments/duplexes is also provided.

The following table provides a summary of the parking provision:

No. Houses	Min. Rate	Required	Provided	Shortfall/Surplus	
232	2	464	464	+/-	0
No. Apartments	Min. Rate	Required	Provided		
65	1.5	98	122	+	24.5
Other					
-	-	-	4	+	4 spare
Totals					
Required	562				
Provided	590				
Balance	+ 29				
Rates Provided					
Houses	2.0 per house				
Apartments	1.9 per apartment				
Spare	4 spaces				

Detailed Design

In order to address both inclusivity and an appropriate range of market demands in a development of this size, a considerable number of dwelling and apartment types are proposed, with different types located in each row and street, giving a distinct sense of place and neighbourhood. However, a consistent and appropriate architectural language has been evolved and applied throughout, with improvement and development of materials throughout, in response to the Board's Opinion. The apartments are finished with high-quality materials deployed in a way that is consistent with the architectural language of the dwelling houses, but displays a distinction that fits with their scale and urban role. High-quality brick is the predominant material, with zinc cladding used to highlight entrances, bay windows and dormers, presenting an attractive street frontage and distinctiveness to the proposed development. High-quality self-finished low-maintenance render is used in small discrete areas, with a dark slate finish to roofs. A consistent set of window sizes has been used throughout, with very large areas of glazing to living areas. Likewise, main entrance doors are also consistent. Particular attention has been paid to the design of the external duplex access stairs, which are all located to the rear of the apartment buildings in the communal spaces. These stairs form solid and integrated parts of the buildings, finished in a charcoal brick that compliments the overall design. Furthermore, the entrances to the apartments and duplexes (all of which have 'own door' access) have been carefully considered, with sheltering canopies and zinc cladding marking and highlighting them. Materials for the houses are shared with the apartments, as well as the use of standard window sizes and doors, especially in relation to generous glazing to living areas. While the apartments strike an appropriately urban note, the houses are generally more modest in scale and their elevations reflect this, apart from the taller dwellings that reinforce the edge of the main 'avenue'. Overall, the design proposed provides an attractive visual variety and sense of place through variation in house types, while retaining a unifying sense of identity through a common architectural language and palette of high-quality materials.

The proposed materials allow for variety in the scheme, while aiding orientation and providing visual interest. External wall finishes will combine with landscaping finishes in semi-private and public areas to present an integrated scheme that will make a positive contribution to the locality. Good quality durable materials proposed for the buildings and public realm, along with the layout design, will facilitate easy and regular maintenance, while parking spaces will appear integrated into the overall scheme. A particular feature of the design is the mix of unit types throughout the layout, which ensures visual variety and a distinct character to each block and street.

Bin stores to mid terraced units have been carefully designed to sit inconspicuously into scheme. The landscape design is integrated with the use of the public spaces and movement through the site. Parking, streets and movement are all considered together in how the scheme is used.

4.0 RESIDENTIAL DENSITY AND DWELLING MIX

4.1 Density

The total number of dwellings proposed is 297, including 65 apartments/duplexes in dispersed two and three storey units. The apartments/duplexes typically form the individually distinctive urban block corners. The overall gross site area is 9.57 ha including the Open Space zoned lands, giving an overall density of 31 units per hectare. The density of the net site area (8.10 ha, excluding open space areas) is 37 units per hectare.

4.2 Dwelling Mix

A wide variety of unit options are included in the proposal, ranging from 1 bed to 5 bed. These are arranged in terraces, semi-detached and detached configurations, with small sets of apartments/duplexes defining the key corner sites of the residential blocks.

The following table indicates a breakdown of the unit types:

Block No.	A	B	C	D	E	F	G	H	J	Apartments			Block Total Units		
	4-bed Detached	4-bed Detached	4-bed Semi-D	3-bed Semi-D	3-bed Semi-D	3-bed Terraced	3-bed Terraced	2-bed Terraced	5-bed Detached	1-bed	2-bed	3-bed			
1			7	6								4	2	19	
2			9	6								2	1	18	
3			2	6						1				9	
4	5			4	5	4				1		2	2	23	
5	6	2			3	4	6	4				3	2	30	
6	6			2	2	5	4	4				2	2	27	
7	5	2			11	9				2		2	1	32	
8	9				12	13								34	
9					8	4			9			5	4	30	
10					5	8			8			4	4	29	
11									9			8	6	23	
12								14				4	5	23	
Type Totals	31	22	24	46	47	10	22	26	26	4	4	0	36	29	297
% of Overall Units	10.4%	7.4%	8.1%	15.5%	15.8%	3.4%	7.4%	8.8%	1.3%	0.0%	12.1%	9.8%			
	25.9%			42.1%				8.8%	1.3%	21.9%					
% of Floor Area	8.2%	10.2%	11.1%	14.5%	14.0%	3.4%	7.2%	6.1%	1.0%	0.0%	9.3%	9.4%			
	34.1%			39.1%				6.1%	1.0%	18.6%					
Total No. Units														297	

Gross Site Area	9.57 ha	23.6 ac
Gross Density	31 units/ha	12.6 units/ac
Net Site Area	8.10 ha	20.02 ac
Net Density	37 units/ha	15 units/ac
Plot Ratio (Net Site Area)	0.44	
Total Area of Individual Sites	5.83 ha	14.4 ac
Site coverage (Individual Sites)	0.35	
Public Open Space Main	0.89 ha	9.3%
Public Open Space Pocket	0.50 ha	5.2%

5.0 PUBLIC OPEN SPACE

5.1 Public Open Space Description

In response to item No 3 of the Board's Opinion, the site layout proposal has been further developed to create a unifying streetscape which is rich in detail and diverse in textural and spatial qualities, with open spaces and boundary planting lending a verdant and visually attractive atmosphere. The open spaces are directly over-looked by dwellings, providing passive surveillance for safety – please refer particularly to the architectural and landscape site sections that are included with this application.

Within all open spaces there are areas for informal play, casual recreation and passive leisure. The quality of these spaces is enhanced by the inclusion of features such as natural play elements, seating, paths, native planting and landform, and the utilisation of environmentally appropriate materials. The palette of materials will also be used to integrate the proposed architectural forms and materials within the landscape.

The neighbourhood Park is the central landscape feature within the development. This continuous green spine links Fort Road, through the development, with Ramsfort Park Forest. Although vehicular roadways cross the park in two locations, the open space reads as a continuous element, due to the raised tables and pedestrian crossings at each of the roadways. This continuity is also emphasised with similar structural planting species to the road edges of the three spaces and differing species within the park.

The central, wider area of the neighbourhood park allows for an informal grassed kickabout area and a formal playground space. Landforms are incorporated within the open space to further enhance the feeling of enclosure and privacy from the existing development, while still allowing for safe sightlines. This central open space has a natural, rural feeling, with informal grouping of native trees and areas of meadow planting. This acts as a link with the wider rural landscape of the surrounding area.

Two further areas of local open space are allowed for. The southern open space acts as a pedestrian link with Gorey town and a gateway space to the development. The design language of this space is more formal as befits an entranceway to the development.

The northern open space is a smaller local space for adjacent units and incorporates natural play elements.

5.2 Public Open Space Provision

There are three areas of open space identified for passive recreation within the development, totalling 13,857 square metres (1.38 hectares). This mosaic of open spaces gives every resident easy and convenient access to recreational amenity, and allows distinct landscape treatments and elements to be applied to different spaces. This aids wayfinding and contributes towards giving the development a recognisable character. The Neighbourhood Park element of the development sits at the centre of the site, a maximum

of 210 metres from the furthest housing unit. This is 8,896 square metres, or 9.3% of the developable area. The remaining local areas spaces to both north and south cumulatively account for 4,960 square metres, or 5.2% of the developable site area. These quantum of open space count for a total of 14.5% of open space within the development.

This shortfall of 0.5% (in relation to the 15% Open Space objective within the Local Area Plan) should be considering in relation to the close proximity of the Town Park to the south (185 metres) and Ramsfort Park Forest immediately adjacent to the east. Both of these open spaces are considered Hub Open Spaces (Gorey Local Area Plan 2017-2023, pg 55). These are the highest level of open space within the environs of Gorey and are intended as destination spaces for all residents of the town. The Town Park will be redeveloped into a high quality public park and recreational area, while Ramsfort Park Forest (in consultation with Coillte and local groups) will potentially be developed into an amenity area with associated trails for pedestrians and cyclists. There will be a direct pedestrian linkage with Ramsfort Park Forest from the neighbourhood park within the development.

Highly usable communal amenity space has been provided for all of the apartment buildings which exceeds the minimums set out in Appendix 1 of Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2018. Wherever possible, this has a southerly aspect and is also sheltered behind the apartment building to create a true shared semi-private domain. These spaces are also well passively supervised.

6.0 BUILDING DESIGN

As well as meeting the requisite standards and regulations, each unit is particularly planned to offer maximum utility and efficiency of space. The site and street layouts feature a mix of unit types that serve to enliven the public realm through variation in elevational treatments and carefully considered set-backs. Rather than repetitive and identical units in rows, the approach has been to include different units alongside one another, which also allows for a distributed and wider choice throughout the development and its various phases.

6.1 House Type Design

The houses are designed as two and three storey family dwellings, in detached, semi-detached or terraced configurations. The three storey houses are designed in 2.5 level format, with bedrooms partially occupying the roof space, apart from type F, which has been designed to give particular definition to the main avenue. Individual plot layouts provide good separation to ensure privacy and minimise overlooking. The end-row and end-terrace house types have been used to turn corners, with front doors and windows giving activity and passive supervision to the sides and avoiding large blank gables.

The variety of house types provides for a wide choice to suit all potential occupiers and many household types, as well as permitting a very efficient site layout. The mix of house type in any one row creates visual interest and contribute to the specific character of the development, both overall and in each street.

The house types are designed to suit a range of family sizes, with nine types:

Type A:

This is a 2 storey four bedroom detached house. This type occurs across the northern part of the development and is also used as a corner house, where the entrance façade is at right angles to the main row. Type A has off-street parking.

Type B:

Type B is a four bedroom detached house planned over 2.5 levels, with the uppermost floor partially occupying the roof space. This type is proposed for various locations in the northern part of the development. Type B has off-street parking.

Type C:

This is a four bedroom 2.5 storey semi-detached house, with the uppermost floor partially occupying the roof space. This type is has a similar plan to type B (although the formal treatment is different) and is proposed for various locations along the northern boundary of the development. Type C has off-street parking.

Type D:

Type D is a three bedroom 2 storey semi-detached house, which occurs throughout the development. There are a small number of locations where it is also used in a terraced format. Type D has off-street parking.

Type E:

This type is a three bedroom 2 storey semi-detached house, which occurs throughout the development. To suit its positions, this has a deeper plan than type D and there are also some locations where it is used in a terraced format. Type E has off-street parking.

Type F:

Type F is a three bedroom shallow plan 3 storey house. Living accommodation at ground floor level is dual aspect to front and rear, overlooking rear gardens. This type is used along the main avenue, to lend appropriate scale and definition to the street edge of the main 'spine' of the development. Type F has on-street parking.

Type G:

Type G is a three bedroom 2 storey terraced house with private access from front to rear, also giving a wider plan at first floor level. This type is located along the southern boundary of the development and in some locations along the main avenue. Type G has on-street parking.

Type H:

This type is a two bedroom 2 storey terraced house, with a dual aspect living space. Type H is located in the southern part of the development and has on-street parking.

Type J:

This type is a large five bedroom 2.5 storey detached house and occurs in a small number of locations in the northern part of the development. Type J is designed to address its corner and end of row positions and has off-street parking.

6.2 Apartment Design

A particular approach to suit the location has been taken to the design of the apartments and duplexes, which are dispersed and integrated throughout the development to form the urban block corners, rather than concentrated into large blocks. Each corner site is individually designed with a scale of either two or three storeys, composed of two or three units, depending on location. This approach lends a distinctive and particular character to the proposal, giving variety as well as reinforcing the urban strategy in a location where large blocks of apartments are unlikely to be successful. Consisting of both two and three bedroom units, the apartments and duplexes are generously sized, to facilitate comfortable and generous living. Entry to the ground floor apartments is from the street side, while entry to the upper floor apartments and duplexes is from the communal space to the rear, with all units having own door access. The shared spaces to the rear are private to each set of units, containing generous communal open space plus bike and bin storage, as well as additional enclosed storage. Balconies and patios are generous, with a southerly or westerly aspect in the majority of locations.

All apartments and communal amenity areas are designed in compliance with Design Standards for New Apartments - Guidelines for Planning Authorities 2018. It is noted that Wexford County Council have indicated that one bedroom and studio apartments are not appropriate in this location.

6.3 Materials and Finishes

Proposed external wall finishes to the buildings comprise a mix of durable brick with smooth and textured high quality self-coloured render, with zinc cladding highlighting particular features such as entrances. Window finishes will be timber or uPVC and entrance doors & screens will be solid or glazed painted composite construction. Roof finishes to all dwellings will consist of dark slates, with careful attention paid to the eaves detail and downpipe positions. Balconies to apartments/duplexes will have glass balustrades when facing the street with galvanized & powder coated steel balustrades to the rear, all with solid floors. Garden walls and duplex access stairs will be finished in brick to the public side and screening to bin-stores will have a brick or render finish.

7.0 PHASING OF DEVELOPMENT & PART V PROVISION

7.1 Phasing of Development

It is envisaged that the development will be constructed over five phases, realistically reflecting the size and scale of the residential market in Gorey. While the pace and timing of this phasing is highly dependent on unpredictable market conditions, the overall site design and phasing strategy takes account of the infrastructure and open space provisions associated with each phase, together with the proportional provision of Part V dwellings. The phases range in floor area from 10105 sqm to 3936.5 sqm.

7.2 Part V Dwellings

A variety of semi-detached and terraced houses, together with own-door apartments and duplexes, are proposed as part of each phase of the development's construction. The overall percentage is 10.01% and the breakdown of the proposed provision is as follows:

Phase	Total area	Part V area	Part V %	Apartments/Duplexes	House Types
1	9475.5sqm	938.2sqm	9.9	Type B x 2	3B terraced x 3
2	10105sqm	1057.8sqm	10.5	Type A, Type B	3B terraced x 3 & 3B semi x 2
3	5588sqm	558.8sqm	9.6		3B terraced x1 & 3B semi x 4
4	3936.5sqm	393.7sqm	10.5	Type A	3B terraced x 1 & 2B terraced x 1
5	6826sqm	682.6sqm	9.9	Type C, Type D	2B terraced x 2

The Part V proposals offer a wide and inclusive provision, spread across the development.



Site Layout indicating phasing and Part V provision (Part V sites are in yellow)

8.0 SITE & DWELLING VISUALISATIONS



Site Layout indicating high (in red) and low (in green) level view points



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APPENDIX C

Cut and Fill Report (1725-PL2 Cut and Fill Report)

**AMIL Properties Ltd.
Creagh Housing SHD**

Cut/Fill Report

27-Nov-18



Buildings		
Cut	m3	18579
Fill		30292
Fill Provided by Subbase etc.		7425
Balance		4288 of fill required

Foul Drainage		
Initial Excavation / Trench Volume	m3	7784
Pipe and Bed Volume		2378
Backfill		5406 from excavated material
Balance		2378 excess created

Storm Drainage		
Initial Excavation / Trench Volume	m3	18076
Pipe and Bed Volume		2180
Attenuation System		4200
Backfill		11696 from excavated material
Balance		6380 excess created

Total Fill Remaining	m3	4288
Total Excess Created		8758 goes to fill required
Balance	m3	4470 excess for disposal

Cut/Fill Report

Buildings Cut and Fill	m3
Cut of Material Required	18,579
Fill of Material Needed	30,292
Fill To Be Provided by Subbase etc	7,425
Balance of Fill Needed for Buildings	4,288
Foul Drainage Cut and Fill	m3
Initial Excavation /	
Trench Volume	7,784
Pipe and Bed Volume	2,378
Backfill (Reinstatement of excavated material above pipe and bed)	5,406
Balance Excess Created Due to Placement of Pipe and Bed	2,378
Storm Drainage Cut and Fill	m3
Initial Excavation /	
Trench Volume	18,076
Pipe and Bed Volume	2,180
Attenuation System Excavation	4,200
Backfill (Reinstatement of excavated material above pipe and bed)	15,896
Balance Excess Created Due to Placement of Pipe and Bed	6,380
Total Fill Needed for Buildings	4,288
Total Excess Created From Foul and Storm Drainage	8,758
Balance of Material for Article 27 or Off-Site Disposal	4,470



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APPENDIX D

Proposed Excavation Plan



Proposed Development at Ballyowen / Ramsfortpark, Gorey Co. Wexford

Excavation Plan

**Client: Strutec Ltd,
Garryhill, Bagenalstown
Co. Carlow, R21 KP44, Ireland.**

December 2018



Document Control Sheet

Project Title Excavation Plan

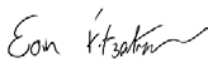

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1. INTRODUCTION

1.1 Project Contractual Basis & Parties Involved

IE Consulting Ltd. was requested by *Strutec Ltd* to commission an *Excavation Plan* with respect to the proposed development at Ballyowen / Ramsfortpark, Gorey Co. Wexford (please see Plate 2 and Plate 3 below). This Excavation Plan will accompany a planning application for the site.

1.2 General Introduction

It is proposed to develop the former Walsh Mushrooms Facility and adjoining greenfield land site of 9.57 hectares at Ballyowen / Ramsfortpark, Gorey Co. Wexford for the construction of 297 dwellings and an associated childcare facility.

1.3 Current Description of the Site

The former mushroom production facility was demolished to just above ground level. The facility consisted of tunnels with a floor area of 10,500 m² and other site buildings with an approximate gross floor area of 4,300 m². A steel portal frame building had a floor area of 1,024 m². The steel portal frame of the portal frame building and the floor remains in-situ.

1.3.1 Topography

The proposed development site is located in the northern outskirts of Gorey Town and approximately 6 km from the coast which lies to the east. The surrounding land slopes from the hilly area at Creagh Lower (at 120 mOD approximately 1 km to the northwest) towards the valley of the Banogue River located at 40 mOD approximately 750 m to the southeast. The proposed development site itself slopes from c. 75 mOD in the northwest to 55 mOD in the southeast.

1.3.2 Potentially Contaminated Land & EPA Licensed Sites

The proposed development site was previously used as a mushroom growing facility. Mushroom growing commenced on the site in the 1970's. It was subsequently closed and most of associated buildings and infrastructure were demolished in 2007. The mushroom growing facility may have included an on-site ESB electrical substation and on-site septic tank (located close to the north-eastern area of the proposed development site). Polychlorinated Biphenyls (PCBs) are substances that may

occur in older electrical equipment such as transformers, capacitors and fluorescent lighting ballasts. PCBs are persistent organic pollutants and are extremely harmful to the environment and at higher levels, human health. No reports on the presence, or not, of any PCB containing equipment/contamination, or of the decommissioning/remediation of same was available. A former bund was noted in the north-eastern corner of the former factory area. This bund may or may not have housed on-site ESB electrical substation.

There are no EPA licensed sites within the immediate vicinity of the site. The nearest licensed site is for a waste transfer station (IED licence no. W0220-01) operated by Starrus Ecco Holdings Ltd. at Ramstown c. 1.8 km to the south/southwest of the proposed development site.

1.3.3. Conceptual Model

The hydrological and hydrogeological conceptual model for the site is described below;

- Made ground is located in the south-eastern area of the proposed development site where the former mushroom facility was located. The depth of Made Ground ranges from 0.15-1.0 m;
- The subsoils underlying the Made Ground comprises of stiff brown sandy gravelly CLAY with some cobbles. Subsoils are at least 10 m thick in the south-eastern area of the site;
- The subsoils in the remaining undeveloped area are mapped as Till derived from Lower Palaeozoic Shales' (TLPS) and are assumed to be similar in composition to those investigated in the south-eastern area of the site;
- Some perched groundwater/seepages was recorded in the clay subsoils in the south-eastern area of the site at depths ranging from 2.9 m to 4.70 m;
- The bedrock immediately beneath the site is green, red or purple, buff and occasionally grey slates, usually interbedded with siltstones (Oaklands Formation (OA)). Volcanic rocks comprising are located c. 100 m to the south of the proposed development site;
- The slates/siltstone bedrock immediately beneath site is classified as a Locally Important bedrock (LI) aquifer. Groundwater flow in this type of aquifer is expected to be confined to the fractured/weathered zone in the top 15-30 m of the bedrock. Groundwater flow paths will be short and groundwater is expected to discharge to the nearest stream or river;
- The volcanic rock to the south is classified as a Regionally Important bedrock (Rf) aquifer;
- Groundwater flow direction will be to the southeast towards the Ballyowen Stream (which is a tributary of the Banogue River). Therefore, a small area of the Rf aquifer will be hydraulically

downgradient of the site;

- A spring occurs to the south of the site along the mapped location of the fault. It is considered likely that the spring is related to this fault, with groundwater being forced upwards where it encounters the fault which acts as an impermeable hydraulic barrier;
- The groundwater vulnerability in the south-eastern area of the site (where the former mushroom facility was) proposed extension area of the site is mapped by the GSI as High (H), although site investigation indicates that it is in fact Low (L);
- Diffuse recharge occurs over most of the land surface through the permeable till. Estimates are in the order of 315 mm yr⁻¹;
- There is the potential for PCB contaminated soils/subsoils in the area of the former ESB substation on the proposed development site. Given the thick, low permeability subsoils there is unlikely to be a pathway for PCB contamination to percolate downwards into the bedrock aquifer. PCBs could be transmitted via overland run-off to nearby surface water bodies (the drain on the site and the nearby Ballyowen Stream).

As outlined, the south and southwestern part of the site was once part of the Walsh Mushrooms factory area. Please see [Plate 1](#) and [Plate 2](#) below for Google Maps satellite aerial photography from June 2010 and April 2018. The April 2018 aerial photography demonstrates that the majority of the above ground structures of the former factory have been demolished. Much of the former factory area can be delineated by the apparent absence of topsoil and the brown colouration of bare subsoils.

[Plate 1: The Proposed Site Area with Respect to the Walsh Mushrooms Factory April 2010 \(Ref. 1 Google Earth Pro\).](#)



Plate 2: The Proposed Site Area with Respect to the Walsh Mushrooms Factory April 2014 (Ref. 1 Google Earth Pro).



1.4 Rationale for the Excavation Plan and Proposed objectives

An Bord Planála have outlined in a briefing note a requirement for an Excavation Plan which will

address the full extent of the proposed 'cut and fill' activities, excavation methods, calculations on the volumes of soil to be excavated/extracted, re-used and/or removed off site, calculations on the proposed traffic movements into and out of the site, and potential mitigation measures that may be required to separate, handle, and dispose of any contaminated or hazardous materials that may be associated with the brownfield area of the site.

The objectives of this report are as follows;

1. Propose soil site investigations and laboratory soil analyses to determine the suitability for soil re-use and waste disposal;
2. Set out a soil analyses schedule of soil samples;
3. Set out an outline plan and positioning of proposed site investigations point;
4. Set out the proposed schedule of assessment and interpretation of the soil analyses;

The briefing note Point No. 5 as set out by An Bord Planála is outlined below;

5. Details of the full extent of 'cut and fill' activities proposed. Such details should also provide for inter alia, excavation methods to be used on site particular having regard to the brownfield nature of part of the lands, volumes of soil to be excavated/extracted, re-used and/or removed off site, associated traffic movements to and from the site. Such details should be included in the Environmental Impact Assessment Report.

2. EXCAVATION METHODOLOGY

2.1 Cut and Fill Volumes

The proposed development of the site will require the cut and fill of certain area of the site to develop the site at the proposed topographic levels. An outline cut and fill plan has been drawn up to estimate a cut and fill materials mass balance. The proposed cut and fill plan is attached in [Appendix C](#) to this report. The plan outlines that there is a net requirement for the Article 27 by-product designation or potential disposal of 4,470 m³ of soil and subsoil to be exported from the site.

The cut and fill report attached in [Appendix C](#) has outlined that there is a balance of 4,288 m³ of soil/fill required for the levelling of the site to suitable topographic levels. An excess of 8,758 m³ of soil will be generated from the construction of off-site drainage infrastructure which shall generate a balance of 4,470 m³ of soil.

2.2 Article 27 Declaration of By-Product

In recognition of the waste hierarchy and the prevention of waste, there is at this time no significant barriers that would prevent the excess 4,470 m³ of soil and subsoil from being classified as a by-product under the under the Article 27 of the Waste Directive Regulations 2011. If a local use for the material could be identified, if use was certain, and if the proposed end use site met the requirements of the Article 27 Regulations, there would be no need to send this material to a waste facility.

The recent EPA Consultation Document *Guidance on Soils and Stone By-Products* (October 2018) on the Article 27 process has outlined four conditions which must be met for the declaration of a by-product.

- 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;
- Further use is lawful in that the soil and stone fulfils all relevant requirements for the specific use and shall not lead to overall adverse environmental or human health impacts.

It is the intention of the development (as required by the EPA Regulatory Position on Article 27 By-Product Designations) to classify this material as a by-product and to re-use this material.

The EPA Regulatory Position on natural Soil and Stone By-products encourages the prevention of waste including the lawful and beneficial use of excess **uncontaminated** soil and stone. Due to the

intention to re-use soils on-site and to declare the excess soils as a by-product, some relevant site investigations and soil analytical data must be gathered to demonstrate that the soils of both the greenfield and the former factory area of the development are suitable for re-use and that these soils are uncontaminated with respect to naturally occurring concentrations.

2.3 Proposed Site Investigations

2.3.1. Health and Safety

A Health and Safety Plan shall be developed by the sampler to illustrate that sampling shall be completed in accordance with the Safety Health and Welfare at Work (Construction Regulations 2013 (SI No. 291 of 2013) and the Safety Health and Welfare at Work (Exposure to Asbestos) (amendment) 2010 (S.I No. 589 of 2010).

Personal Protective Equipment appropriate to the potential risk of exposure from any waste or contaminated materials shall be required and shall include: Hard hats, safety glasses, reflective high visibility jackets/vests, steel toe boots, half face masks, nitrile disposable gloves shall be worn at all times when sampling on-site.

The site investigations crew shall at all times comply with the Health & Safety rules for the Site. All personnel shall be aware of any working machinery and be aware of the trial pit stability during the sampling on-site.

All personnel visiting the site shall have current Safe Pass cards and shall undergo any site induction training as required by the site.

2.3.2. Sampling Methodology

The site investigations and sampling methodology employed by the site investigations crew should be carried out in general accordance with the guidance documents provided below to enable representative samples to be obtained from the site investigation. Best practice should be followed when planning the site investigation and detection of sampling locations.

It is best practice to obtain representative samples from the proposed cut and fill excavation within both the brownfield and the greenfield areas of the proposed development as well as the proposed trenches for site drainage.

- *BS5930:1999 Code of practice for site investigations, as modified by BS14688 for soil and rock descriptions (Ref. 4);*
- *BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites (Ref. 5);*

- *Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination, 2001 (Environment Agency) (Ref. 6).*
- Environment Agency (2015). Technical guidance WM3 – Guidance on the Classification and assessment of waste. Last updated 21 July 2015 (Ref .2)
- The UK Environment Agency (2004), Model Procedures for the Management of Land Contamination, Contaminated Land Report 11 and BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites.
- The Model Procedures for the Management of Land Contamination (CLR 11), have been developed to provide the technical framework for applying a risk management process when dealing with land affected by contamination. These procedures are intended to assist all those involved in dealing with land contamination, including landowners, developers, professional advisors, regulatory bodies and financial providers.
- Synopsis of Data and the Assessment of Soil with Reference to EU Council Decision 2003/33EC (for proposed waste soil only) and the EPA Assessment of Hazardous Properties (using Hazardous Waste Online).

2.3.3. Quality Control Procedures

Representative soil samples should be obtained based on the proposed cut and fill plan. All sampling equipment, hand tools, and handling gloves should be decontaminated or disposed of prior to re-use or further sampling.

Field duplicate samples can be obtained for Quality Control.

2.3.4. Note Taking and Field Records

All soil samples obtained should be noted on the field trial pit/drilling logs, field site maps, field notes, or any similar field record at the time of sampling. Field notes should be supported by photographic records and GPS positioning.

Field notes and trial pit records shall contain descriptions if the presence of any debris, staining, odours and the percentage estimation of potential wastes por materials that may be present with the trial pits.

2.3.5. Marking, Packaging, Preservation & Transport

Sample containers should be suitable sized and designed for the proposed suite of analyses. Sample containers shall be made of appropriate materials for the suite of analyses.

All sample containers shall be marked with an agreed nomenclature. All samples shall be stored within suitably sized cooler boxes in accordance with laboratory requirements.

The chain of custody form concerning all samples shall be generated, maintained and shall accompany the samples to the laboratory. The samples chain of custody form shall outline the samples to be included for analyses and identify the parameters for laboratory testing.

All cooler boxes shall be sealed for transportation to the laboratory. All samples shall be protected during transportation by using the accompanying bubble-wrap packing provided with the sample jars.

2.3.6. Trial Pitting

The site investigations and sampling methodology employed by the third party should be carried out in general accordance with the guidance documents provided below to enable representative samples to be obtained from the site investigation. Best practice should be followed when planning the site investigation and detection of sampling locations.

It is proposed that each trial pit is marked with a temporary marker and the locations fixed using a GPS unit. The locations of each trial pit shall also be surveyed to ordnance datum also. The base of all trial pits shall be a minimum of 1 meter below the existing ground level.

2.3.7. Sample Collection

Sampling of all soils shall employ best practice environmental sampling techniques. These techniques minimize the risk of cross contamination between any different sampling locations. Single-use disposable nitrile gloves, shall be used and changed following the collection of each sample. Composite samples from intervals can be created onsite by cone and quartering relevant sub-samples.

Appropriate sampling tools and equipment shall be used for the sampling of the soils to provide confidence that the materials sampled area representative of the in-situ soils to be cut and filled or declared as a by-product. All samples selected for analyses shall be placed into correct laboratory supplied sample containers. Each trial pit shall be sampled at least once vertically at representative depths to correspond the proposed cut depth. Additional soil samples shall be obtained from representative depths which correlate to the proposed depth of the site drainage excavation (greater than one-meter depth).

2.3.8. Laboratory Analyses of Soils

The following suites of analyses listed in **Table 1** will be used for waste characterisation and assessment of suitability of all soil samples obtained:

Table 1: Chemical Analysis of Soils & Laboratory Leachate

<i>Analysis Suite</i>		
<i>Parameter</i>	<i>Soil</i>	<i>Soil Leachability</i>
Metals and non-metals suite: - Arsenic, antimony, barium, cadmium, chromium, hexavalent chromium, copper, molybdenum, nickel, lead, mercury, nickel, selenium, zinc, boron, mercury	Yes	Yes
Cyanide	Yes	
Asbestos screen, Asbestos quantification	Yes	
Speciated polyaromatic hydrocarbons (PAH 17)	Yes	
Total Petroleum Hydrocarbons Criteria Working Group (TPHCWG)	Yes	
Benzene, toluene, ethylbenzene, xylene (BTEX)	Yes	
MTBE, Polychlorinated biphenyls (PCB)	Yes	
Soil Organic Matter (SOM), Total Sulphate, Sulphide, Elemental Sulphur	Yes	
Phenols, PAH 17	Yes	Yes
Moisture content as % wet weight, pH using Matron	Yes	
Total Dissolved Solids, Dissolved Organic Carbon, Ammoniacal Nitrogen as N, Chloride Fluoride Sulphate		Yes
VOCs	Yes	
SVOCs	Yes	

2.3.9. Brownfield Lands

Prior to the development of the site, it is proposed to undertake shallow site investigations in the area of the former Walsh Mushrooms Factory area of the site. These lands were previously developed upon and may contain some residual impacted or contaminated soils due to the former site usage. The potential risk of soil contamination associated with Mushroom farming is considered to be low. None the less, it is proposed to carry out sufficient on-site investigations and environmental sampling to scientifically assess the potential environmental risk associated with the future use of the in-situ soil.

Sampling of in-situ soils on-site shall be completed by trial pitting. It is proposed that approximately ten (10 No.) trial pits shall be excavated and sampled to a maximum depth of one metre from the ground surface across the proposed “brownfield” cut and fill area. Approximately five of these investigation points could be sampled at sufficient depths greater than one metre to obtain representative soil samples from the proposed site drainage excavations. Please see the proposed trial pits TP101-TP110 in **Figure 1 of Appendix A**.

2.3.10. Greenfield Lands

Prior to the development of the site, it is proposed to undertake shallow site investigations in the “Greenfield” previously un-developed area of the site. These lands are unlikely to contain residual impacted or contaminated soils due to the former usage as agricultural lands. It is proposed to carry out sufficient on-site investigations and environmental sampling to scientifically assess the potential environmental risk associated with the future use of the in-situ soil.

Sampling of in-situ soils on-site shall be completed by trial pitting. It is proposed that approximately four (4 No.) trial pits shall be excavated and sampled to a maximum depth of one metre from the ground surface across the proposed “greenfield” cut and fill area. Approximately three of these investigation points could be sampled at sufficient depths greater than one metre to obtain representative soil samples from the proposed site drainage excavations. Please see the proposed trial pits TP111-TP114 in [Figure 1 of Appendix A](#).

2.3.11. Existing Stockpiles

There are existing stockpiles of crushed stone, crushed concrete and topsoil/subsoil on the site, that will be assessed for their suitability for re-use during construction. Their use will depend on the specification required, and how this material meets the required specification. The methodology for the assessment of this material shall mitigate the potential for contamination of these stockpiles and assess the suitability for re-use on-site.

Prior to the development of the site, it is proposed to undertake site investigations in the “Existing Stockpiles” identified during the IE Consulting Walkover Survey. These stockpiles are unlikely to contain residual impacted or contaminated soils due to the former usage as a Mushroom Factory. Nonetheless, It is proposed to carry out sufficient on-site investigations and environmental sampling to scientifically assess the potential environmental risk associated with the future use of these materials.

Sampling of stockpiles on-site shall be completed by trial pitting and composite sampling. It is proposed that approximately six (6 No.) trial pits shall be excavated and sampled to a depth of one each stockpile to ground level. Six no samples shall be obtained in total. Two samples shall be gathered from the three soil and fill stockpiles each. Please see the map of the existing stockpiles in [Figure 2 of Appendix A](#).

2.4 Cut/Fill Associated Traffic Movements

The proposed excavation plan cut and fill of soil and subsoil on-site along with the excess soil by-product transfer off-site will generate traffic movement.

For the proposed housing development and the associated surface water and foul water pipeline connection to the site, it is estimated that 1,332 truck movements will be required to transport the net soil and fill required to the site. This estimate includes the fill required to be moved to the proposed pipelines to form the pipeline beds as well as the excess soil/subsoil that shall be hauled through the gates of the development site to be placed as filled soil.

It is estimated that 1,858 truck movements will be required to transport the cut and filled soil within the site boundary (does not leave the site).

It is estimated that 447 truck movements will be required to transport the soils and stones by-product away from site.

All assumptions assume a soil density of 1.8 and average truck tonnage load of 18 tonnes.

3. MITIGATION

3.1 Soil Analyses

The proposed soil sampling and laboratory analyses will facilitate the assessment of the suitability of the on-site soils to be re-used as fill. Both the greenfield and the brownfield areas of the development area shall be assessed by soil sampling.

Soil which may be contaminated above natural levels shall be risk assessed or disposed off-site at a suitable waste disposal facility. Un-suitable soils shall not be re-used onsite within the cut and fill plan.

The outline cut and fill plan shall be revised following the site investigations and assessment of the soil suitability. The site investigations in this way shall mitigate the potential for elevated or contaminated ground and the potential risks that such material may pose to human health and to controlled waters.

3.2 Hazardous or Contaminated Soils

In the unlikely event of evidence of soil contamination being found during the site investigations and assessment, appropriate remediation measures should be employed.

Contaminated or soils that contain hazardous properties shall be delineated laterally and vertically to facilitate the excavation and disposal of these soils at a suitable waste disposal facility.

All hazardous soils that require the frontier shipment of waste from the Republic of Ireland shall ensure that the appropriate documentation and notification(s) are in place prior to the movement of the waste from the site. A record of any hazardous wastes removed from the site shall be maintained as the development excavations proceed.

The removal of any hazardous or contaminated soils shall mitigate the potential risk of exposure to human health and to controlled waters. Off-site disposal of hazardous wastes is typically the most appropriate mitigation method for handling and dealing with hazardous waste in Ireland. Any work of this nature would be carried out in consultation with, and with the approval of the Environmental Protection Agency and the Environmental Department of Wexford City Council.

3.2.1. European Waste Catalogue Codes

Table 2 outlines the potential waste categories that may be encountered if contaminated or hazardous soils are identified during the site investigations.

Table 2: Potential Waste Classifications of Soil Subject WAC (Ref.3) and Hazardous Waste Assessment

<i>Classification</i>	<i>EWCode</i>	<i>No. of Samples</i>	<i>Sample Ref.</i>
Non-Hazardous Waste containing Asbestos Fibres	17 05 04	1	SPA-1
Hazardous Waste	17 05 03	0	
Inert Waste	17 05 04	0	

3.3 Article 27 Risk Assessment

The proposed development of the site will require the by-product declaration of 4,470 m³ of soil/subsoil for off-site re-use.

In accordance with Article 27 of the Waste Directive Regulations 2011, and the recent EPA Consultation regarding the Article, soil and stone may be suitable for use if the soil meets generally accepted standards for the management of soil contamination such as the LQM/CIEH Generic Assessment Criteria (2nd Edition) and the EPA's Management of Contaminated Land & Groundwater at EPA Licenced Sites. The Article 27 application can be supported where necessary by a site-specific use risk assessment that will assess the risk of the proposed soils re-use at the proposed end point. The risk assessment process allows mitigating factors concerning the re-use of the material to be highlighted or addressed prior to the movement and placement of the soils at the end user site. The Article 27 Risk Assessment would be site specific to the receptor site.

3.4 Construction Stage Mitigation Measures

The following construction stage mitigation measures listed in **Table 3** shall also be utilised to limit the generation of hazardous wastes:

Table 3: Construction Stage Mitigation Measures

<i>Mitigation Measures</i>
On-site segregation of all waste materials into appropriate categories including:
<i>Made ground, soil, subsoil, bedrock</i>
<i>Concrete, bricks, tiles, ceramics, and plasterboard</i>
<i>Metals</i>
<i>Dry recyclables e.g. cardboard, plastic, timber</i>
All waste materials will be stored in skips or other suitable receptacles in a designated area of the

<i>Mitigation Measures</i>
site.
An asbestos survey will be completed in the buildings. Asbestos will be removed by qualified and registered asbestos removal contractors, in accordance with the requirements of the <i>HSA (Health and Safety Authority)</i> .
Wherever possible, left over materials (e.g. timber off cuts) and any suitable demolition materials shall be re-used on-site.
All waste leaving the site will be transported by suitable permitted contractors and taken to suitably licensed or permitted facilities.

These mitigation measures will ensure the waste arising from the demolition and construction of the development is dealt with in compliance with the provisions of the *Waste Management Act 1996 (as amended 2001)*, and associated Regulations, the *Litter Act of 1997* and the *Southern Region Waste Management Plan (2015 - 2021)*, and achieve optimum levels of waste reduction, re-use and recycling.

References

No.	Reference
1.	Google Earth Pro
2.	Environment Agency (2015). Technical guidance WM3 – Guidance on the Classification and assessment of waste. Last updated 21 July 2015.
3.	2003/33/EEC. Establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:011:0027:0049:EN:PDF
4.	BS5930:1999 Code of practice for site investigations, as modified by BS14688 for soil and rock descriptions;
5.	BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites;
6.	Environment Agency (2000), Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination.



APPENDIX A

**Figure 1: Drawing IE1539-4-201
Proposed SI – Brownfield & Drainage**

**Figure 2: Drawing IE1539-4-202
Existing Stockpiles**



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<u>Project Title:</u>		Excavation Plan Site Investigations				
<u>Project Address:</u>		Site at Ballyowen / RamsfortPark, Gorey Co. Wexford				
<u>Client:</u>		Structec				
<u>Drg. Title:</u>		Figure 2: Proposed SI – Existing Stockpiles				
<u>Drg. Scale:</u>	<u>Date:</u>	<u>Dwg No:</u>	<u>Job No:</u>	<u>Revision:</u>	<u>Dwg. By :</u>	
NTS	07/12/2018	IE1539-202	IE1539	A	EF	



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APPENDIX B

Photo Log

Walkover Survey

Description of Photo

Greenfield area of the proposed development.

Concrete for potential re-use on-site.

Potential former bunded area of the former Mushroom Factory.

Soil stockpile for potential re-use.

Mass concrete for potential re-use.

Crushed fill stockpile for potential re-use.

Former mushroom growing shed.

Soil stockpile for potential re-use.

Photograph

1

2

3

4

5

6

7

8

Photographic Records



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



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APPENDIX C

Cut and Fill Plan

**AMIL Properties Ltd.
Creagh Housing SHD**

Cut/Fill Report

27-Nov-18



Buildings		
Cut	m3	18579
Fill		30292
Fill Provided by Subbase etc.		7425
Balance		4288 of fill required

Foul Drainage		
Initial Excavation / Trench Volume	m3	7784
Pipe and Bed Volume		2378
Backfill		5406 from excavated material
Balance		2378 excess created

Storm Drainage		
Initial Excavation / Trench Volume	m3	18076
Pipe and Bed Volume		2180
Attenuation System		4200
Backfill		11696 from excavated material
Balance		6380 excess created

Total Fill Remaining	m3	4288
Total Excess Created		8758 goes to fill required
Balance	m3	4470 excess for disposal

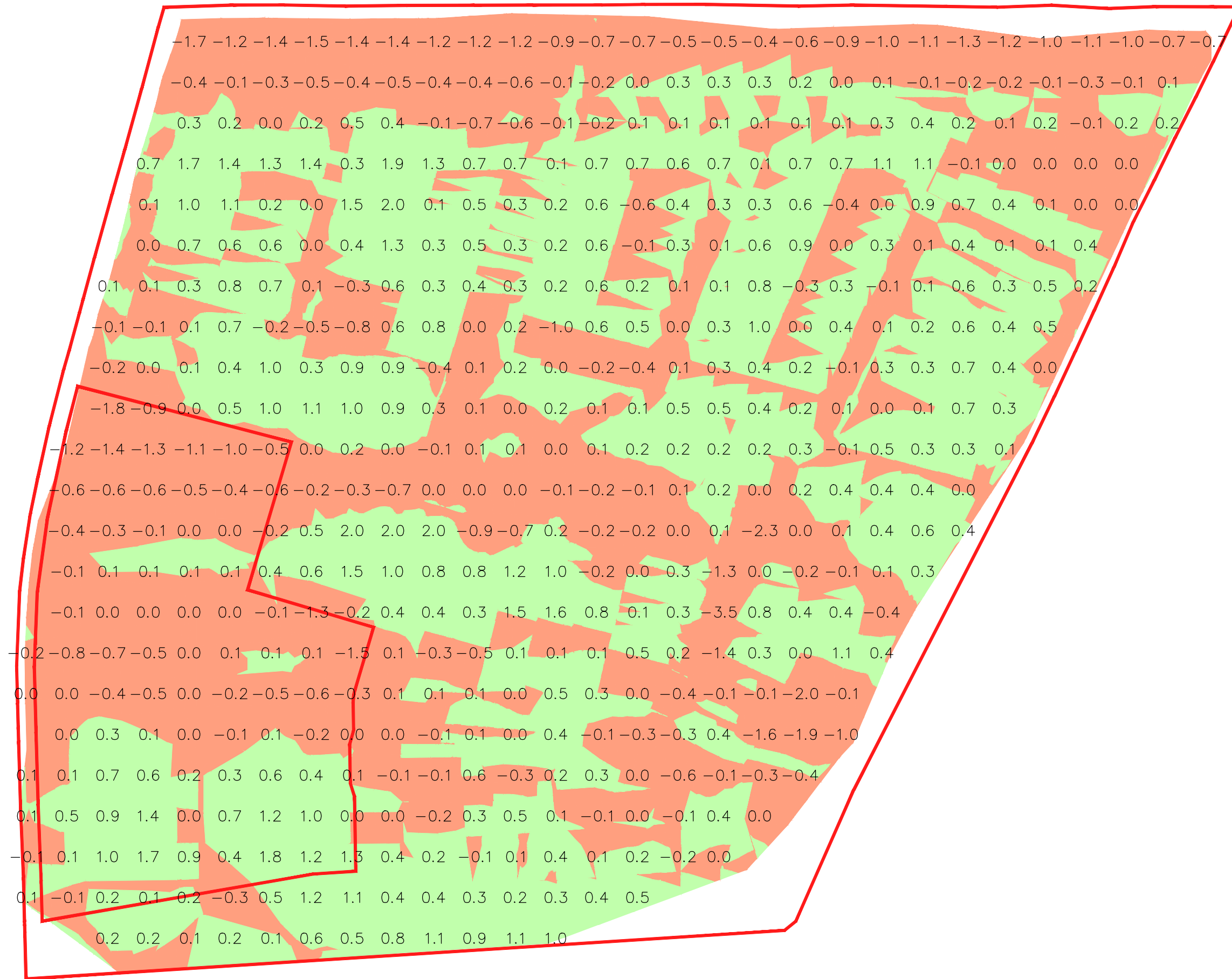
Cut/Fill Report

Buildings Cut and Fill	m3
Cut of Material Required	18,579
Fill of Material Needed	30,292
Fill To Be Provided by Subbase etc	7,425
Balance of Fill Needed for Buildings	4,288
Foul Drainage Cut and Fill	m3
Initial Excavation /	
Trench Volume	7,784
Pipe and Bed Volume	2,378
Backfill (Reinstatement of excavated material above pipe and bed)	5,406
Balance Excess Created Due to Placement of Pipe and Bed	2,378
Storm Drainage Cut and Fill	m3
Initial Excavation /	
Trench Volume	18,076
Pipe and Bed Volume	2,180
Attenuation System Excavation	4,200
Backfill (Reinstatement of excavated material above pipe and bed)	15,896
Balance Excess Created Due to Placement of Pipe and Bed	6,380
Total Fill Needed for Buildings	4,288
Total Excess Created From Foul and Storm Drainage	8,758
Balance of Material for Article 27 or Off-Site Disposal	4,470

All dimensions to be checked on site. Figured dimensions take preference over scaled dimensions. Any errors or discrepancies to be reported to the Architects. This drawing may not be edited or modified by the recipient.

A3

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Cut and Fill Diagram

REV	DATE	REV BY	DESCRIPTION
-	-	-	-
STATUS			PLANNING
PROJECT			PROPOSED RESIDENTIAL DEVELOPMENT
PROJECT ADDRESS			BALLYOWEN/RAMSFORTPARK, GOREY, CO. WEXFORD
DWG TITLE			CUT AND FILL DIAGRAM
DWG NO			PL-050
JOB NO			1725
DATE			17.9.2018
SCALE @ A3			1:1500
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APPENDIX D

Proposed Reference Database

