FEBRUARY 12, 2019

CREAGH STRATEGIC HOUSING RESIDENTIAL DEVELOPMENT AT BALLOWEN/RAMSFORTPARK, GOREY, CO WEXFORD FOR AMIL PROPERTIES LTD.

OUTLINE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

STRUTEC
Architectural and Engineering Consultants

Contents

1.0 INTRODUCTION

1.1 This document is an Outline Construction Environmental Management Plan for the works required to construct the residential development proposed for lands at Ballyowen/Ramsfort Park, Gorey, Co Wexford. It contains a description of these works, together with proposals as to how they will be managed, as well as incorporating the Preliminary Construction Management Traffic Plan, which is included in section 10.

1.2 This project is currently at pre-planning stage and as such input from the Contractor has not been incorporated into the Plan. On appointment of a contactor this preliminary document will be issued to them to be further developed into their final Construction Management Plan for the project.

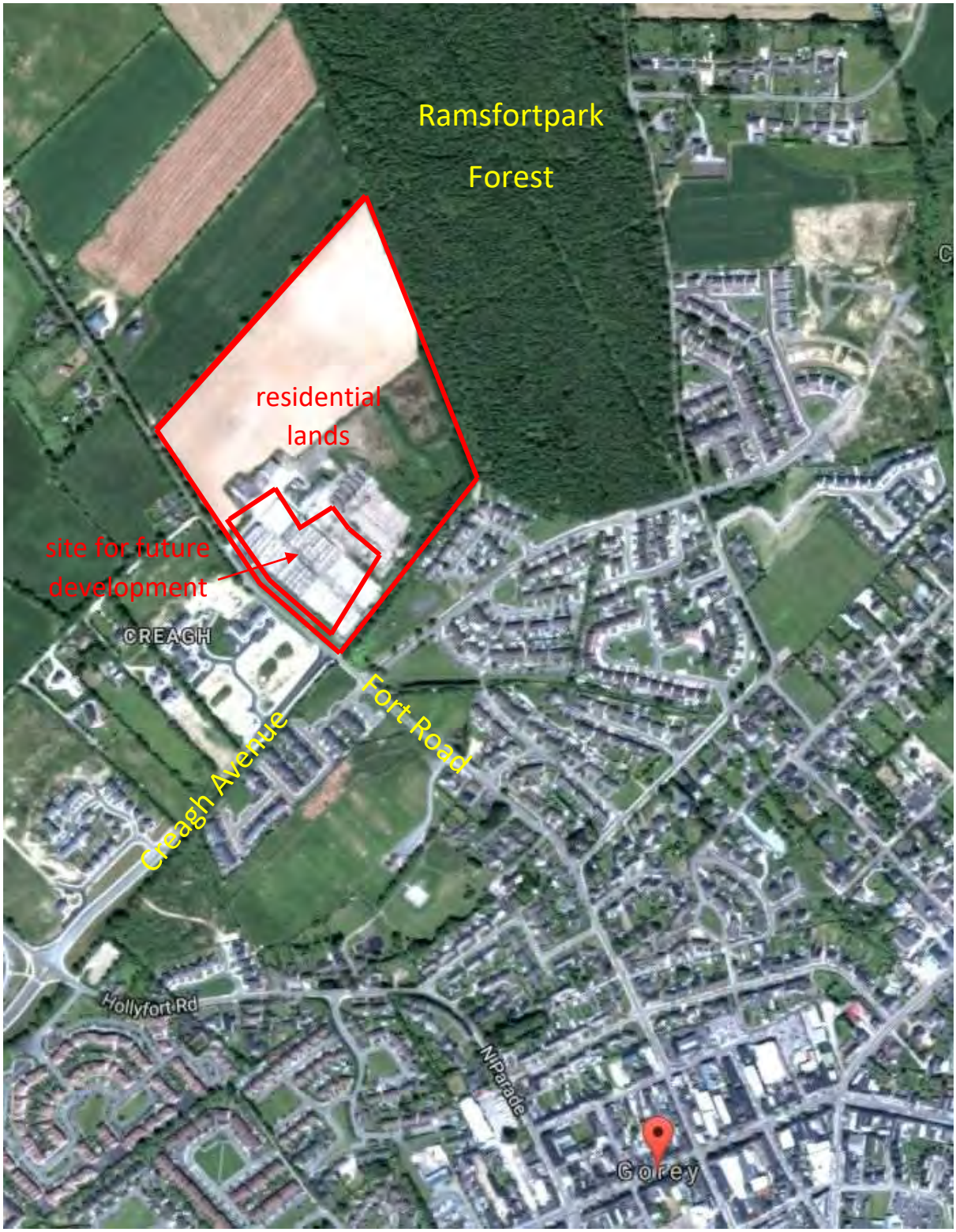
1.3 The Outline Plan seeks to demonstrate how the works can be delivered in a logical, sensible and safe sequence, with the incorporation of specific measures to mitigate the potential impact on people and the surrounding environment.

1.4 Nothing stated in this document shall supersede or be taken to replace the terms of the Contract or the detailed design description issued with the Contract tender or the conditions of planning. Similarly, the issues covered within this document may be amended or added to by the Main Contractor or in accordance with his specific works proposals, sequencing and procedures.

1.5 When read by the Contractor, this document should be considered carefully in conjunction with all drawings, specifications and survey information provided. Any consequences that result through failure to implement measures in this Outline Construction Plan, or inadequate development of this Plan by the Contractor, are the sole responsibility of the Contractor and not Strutec.

2.0 SITE DESCRIPTION & EXISTING CONDITIONS

2.1 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 western side of Fort Road is currently under residential development at the town end, with some single detached houses located further to the 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 southern/south-western part of the site has an exposed steel frame and concrete hardstandings that remain from the previously existing mushroom sheds that occupied that section of the site. A portion of this area is zoned for Community & Education uses and is not part of the current proposal. The general location of the subject site in relation to the town centre and surrounding road network is illustrated in Figure 2.1.



2.1 Site Location shown relative to Gorey town centre & access roads

2.2 The proposed scheme comprises of 297 dwellings, consisting of 232 two, three, four and five bedroom houses and 65 two & three bedroom apartments & duplexes and a single storey crèche, as well as all associated site development works. Additionally, a foul drainage outfall pipe is to be laid approximately 800m from the southern boundary of the site through public roads and lands to the

closest adequately sized public main, which runs along Gorey's main street, together with a surface water outfall to the adjacent watercourse to the south, alongside Fort Road.

2.3 Full details of the proposed development are included in the drawings and documentation submitted with the associated planning application. In summary they consist of the following;

• Removal of existing exposed steel frame and concrete hard standings

• Construction of 297 dwellings, consisting of 232 two, three, four and five bedroom houses and 65 two & three bedroom apartments & duplexes'

• Construction of single storey crèche

• External Hard / Soft Landscaping for the development.

• Associated new site services and drainage including foul and surface water sewer connections and internal network, water supply pipework & connection, electrical and comms cabling.

• Surface water attenuation/SUDS (phased) installations within the open space areas.

3.0 CONSTRUCTION PROGRAMME & PHASING

3.1 GENERAL

3.1.1 The project is currently at pre-planning stage and subject to approval and detailed design. It is estimated that the works would be tendered during 2019 with commencement in late 2019. A total site programme of 54 months is envisaged, but this could be spread over several years, depending on market conditions. The proportion of open space completed will relate to Wexford County Council standards and attenuation requirements.

3.1.2 A construction phase plan has been included in appendix A and an extract is shown below.

3.1.3 The proposed order of construction of key elements is as follows; however this is subject to detailed review by the Contractor at construction stage and specifics may require adjustment once the Contractor has been appointed. Note that the construction of the apartments is small scale and is not differentiated from that of the houses.

All phases will contain the following activities, in approximately the following sequence:

• Site setup & construction compound, vegetation removal and top soil stripping;

• Erection of Protection zones for services to enable earthworks in vicinity of same;

• Erection of fencing to protect hedgerows and watercourses;

• Earthworks to formation level, including cut and fill and storing of excess material on site;

• Construction of main drainage services & foul sewers, water supply, electrical & comms network;

• Construction of road capping and sub-base layers;

• Construction of attenuation basins and tanks;

• Construction of utilities and street lighting;

• Construction of street asphalt layers to binder course level;

• Construction of footpath and cycle path works;

• Construction of foundations for dwellings;

• Construction of superstructure for dwellings;

• Construction of street surface course and road markings;

• Hard & soft landscaping and grass seeding to all areas;

• Final completions to taking in charge standards.

In addition to the above, the phases will consist of the following quanta of construction and include the following specific activities:

Phase 1 (approximately 72 dwellings)

- Form site access
- Connect incoming water supply, electrical & comms
- Construct required foul & surface water sewer outfalls outside the site
- Partial construction of main avenue
- Construct main central landscape open space

Phase 2 (approximately 77 dwellings)

- Construction of crèche/childcare facility (required for 75 dwellings or more)

Phase 3 (approximately 43 dwellings)

- Extension of central landscape place to edge of Ramsfort Park forest

Phase 4 (approximately 59 dwellings)

- Construct southwestern open space
- Complete main avenue

Phase 5 (approximately 46 dwellings)

- Some hardstandings and the exposed steel frame (remaining from the previously existing mushroom sheds) may need to be removed

Additionally, the development of the Community & Education zoned lands (which will be subject to a future planning application) may constitute a further phase of construction on the site.

3.2 SITE SETUP

3.2.1 Immediately after access to the site is established and made secure, the site compound will be installed. Pre-existing site services related to the previously existing mushroom sheds need to be checked and decommissioned (if required) in conjunction with the ESB, together with the provision of temporary builder's power & water supplies.

3.2.2 The site will be secured with hoarding on all open sides and accessible approaches. The site boundary will be established as indicated by the red-line on drawing 1725 – PL - 030 Phasing Plan.

3.3 DEMOLITIONS

3.3.1 The southern/south-western part of the site has an exposed steel frame and concrete hardstandings that remain from the previously existing mushroom sheds that occupied that section of the site. Any demolitions will be carried out by a competent Demolition Subcontractor in accordance with the current code for demolition and the consulting engineer's specification'

3.3.2 It is anticipated that the vast majority of the waste generated from demolitions will be segregated wherever possible for reuse or recycling in accordance with the relevant legislation and guidelines and the project's Construction Waste Management Plan.

3.4 EARTHWORKS

3.4.1 Earthworks will consist of top soil stripping and cut and fill associated with providing the alignment and level of the proposed streets which have to cut across the existing topography. Insofar as is practical, the streets follows the existing topography to minimise cut.

3.4.2 Earthworks will also consist of topsoil strip, cut and fill related to the finished floor levels of the proposed dwellings and childcare facility.

3.4.3 Large volumes of excavated material will also be generated from the attenuation storage basins / tanks which will be used on site where possible (depending on classification) or removed off-site, although topsoil will be retained for replacement in these areas.

3.4.4 Excess material will be disposed offsite in a suitably licensed facility, in accordance with the project's Construction Waste Management Plan.

3.4.5 Stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development.

3.4.6 Topsoil stockpiles will also be located on site so as not to necessitate double handling.

3.4.7 Topsoil will be re-used where possible in gardens and the open spaces.

4.0 WORKING HOURS

4.1 Working hours will be strictly in accordance with the granted planning conditions with no works on Sundays or Bank Holidays. If work is required outside of these hours, written approval will be sought by the contractor from the Local Authority.

4.2 It is anticipated that normal working hours will be 7am to 7pm Monday to Friday and 8am to 5pm on a Saturday. Working outside these hours will be subject to agreement with the Local Authority.

4.3 Deliveries of material to site will be planned to avoid high volume periods. There may be occasions where it is necessary to have deliveries outside these times. The Contractor will develop, agree and submit a detailed Traffic Management Plan for the project prior to commencement.

5.0 DUST & DIRT GENERATION

5.1 The Contractor shall put in place a regime for monitoring dust levels in the vicinity of the site during the works. The level of monitoring and implementation of mitigation measures will vary throughout the construction works, depending on the type of activities being undertaken and the prevailing weather conditions at the time. However, it is recommended that monthly dust deposition survey be carried out along the boundary of the proposed site in order to monitor the effectiveness of dust management for the duration of the construction phase. The TA Luft (German Government Technical Instruction on Air Quality) states a guideline of 350mg/m2/day for the deposition of non-hazardous dusts. This value should not be exceeded beyond the site boundary and any breaches will require a review of operations and dust mitigation measures.

5.2 The Construction team will monitor the Contractor's regime on an ongoing basis throughout the project, to endeavour to minimise impacts on the surrounding community.

5.3 If dust levels become an issue, then all dust generating activities on site will cease until such time as weather conditions improve (e.g. wind levels drop or rain falls) or mitigation measures such as damping down of the ground are completed. If required, protective hoarding screens will be erected around specific construction activities, to reduce dust-blow from the site, in particular where the sensitive receptors are in close proximity (i.e. along the south-eastern and western boundaries).

5.4 If the site conditions require it, wheel wash facilities will be provided at the egress point from the site. During peak vehicle movements, where there is a likelihood of dirt on construction vehicles exiting the site, a dedicated road sweeper will be put in place until these works are competed.

5.5 If dirt generation extends onto public roads, road sweeping will be carried out as well, including (if necessary) cleaning of silt from road gullies.

5.6 Bulk fine-sized aggregates and other similar building materials that may easily become airborne by the wind will not be stored in uncovered stockpiles.

5.7 Vehicles and plant machinery operating on-site will be properly maintained to prevent excessive emissions of particulates and other pollutants from the exhaust pipes.

5.8 All site vehicles and machinery will be switched off when not in use (i.e. no idling).

5.9 Dust control measures will be active on equipment used for drilling, pavement cutting, grinding of block surfaces and similar types of stone finishing, as significant fine particulate emissions can be generated which may cause a local nuisance.

6.0 NOISE & VIBRATION

6.1 It is not envisaged that any significant or prolonged noise and vibration producing activities will be carried out on site.

6.2 The Contractor shall ensure that the level of noise and vibration resulting from the construction of the works does not constitute a nuisance, and that noise and vibration emissions conform to the requirements of BS 5228: 2009 Code of Practice for Noise and Vibration Control on Construction Sites, Part 1 and Part 2.

6.3 Plant with low inherent potential to generate noise and vibration will be used on site and all plant shall be adequately silenced to conform to the requirements of BS 5228.

6.4 Short-term vibration levels and continuous vibration guideline levels as measured in buildings shall be less that the guideline values in BS 5228.

6.5 Vibration limits to be applied for infrastructure works are those specified in the NRA document Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA, Revision 1, 2004). Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of;

Allowable vibration velocity (Peak Particle Velocity) at the closest part of any sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
8 mm/s	12.5 mm/s	20 mm/s

Table 2: Allowable vibration during road construction in order to minimise the risk of building damage

6.6 A site representative responsible for matters relating to noise shall be appointed. If significant noise and vibration activities are to be carried out on site, the Contractor will ensure that there is prior liaison with adjacent residents / local businesses etc. with a view to ensuring that excess noise is not generated by the works beyond the site curtilage and that contract details are available along with agreed protocols. Noise/acoustic barriers shall be erected between noise sensitive location and noise sources, if required.

6.7 The Contractor is to use the Best Management Practice and mitigation measures to prevent or minimise noise levels from the works through the provision and proper maintenance, use and operation of all machinery. Items of plant which create high noise levels should not be used on the periphery of the site and activities with the potential to create noise should be scheduled so as not to be carried out simultaneously. The Contractor shall operate in accordance within the Safety, Health and Welfare at Work (General Application) Regulations 2007, part 5 Noise and Vibration.

7.0 BIODIVERSITY

7.1 A Biodiversity assessment has been prepared by Lorraine Wyse of Panther Environmental Solutions Ltd. and has identified the following measures:

7.2 Biodiversity

- Regular site inspections should be undertaken to ensure that no growth of invasive species has taken place;
- The construction works contractor should ensure that all equipment and plant is inspected for the presence of invasive species and thoroughly washed prior to arriving to the development site. All construction plant should pass through a wheel-wash system prior to entering or leaving the development site;
- All relevant construction personnel should be trained in invasive flora species identification and control measures;
- In the event any soils excavated as part of the proposed development, in particular in the south-eastern portion of the site, require removal off-site, they must first be confirmed to be free of Japanese Knotweed;
- In the event of any invasive species listed in Part 1 of the Third Schedule appearing onsite, works within the immediate vicinity should cease until the invasive plant has been appropriately treated and disposed of, in accordance with Regulation 49 of the European Communities (Birds and Natural Habitats) Regulations 2011;
- Cognisance should be taken of National Roads Authority's Guidelines on "The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads";
- No hedgerow or treeline removal works would be conducted during the 1st of March to the 31st of August so as not to disturb nesting bird species.
- In the event a protected species such as Badger or Common Frog are found during demolition, construction or vegetation removal works, an officer of the National Parks and Wildlife Services would be notified prior to the resumption of construction works.

7.3 Bat Mitigation Measures

Lighting Impacts

All areas of hedgerows and treelines not previously identified for removal will be protected from site operations. The majority of existing hedgerow to the north and woodland to the east will be retained.

The lighting design principles will be avoidance of lighting within particularly sensitive areas. Measures to mitigate the impact of lighting disturbance on bats during the construction period will include:

- Avoid lighting of retained habitats i.e. boundary treelines/hedgerows, mature trees and the woodland edge. This will ensure that important foraging and commuting corridors are maintained;
- Lighting if required shall be of a low height (as low as possible without compromising safe working standards) to ensure minimal light spill and, where practicable, timers or motion sensors shall be used to ensure areas are retained in darkness as much as possible. Lighting shall be directed to where it is required only and this can be achieved by fitting louvres to the lighting; and
- White Light Emitting Diode (LED) will be used as this is considered to be relatively low impact in comparison to other lighting types, as it is less attractive to insects, has a sharp cut-off and is of lower intensity.

Construction works in the hours of darkness when bats are active (April – October) will be kept to a minimum.

Loss of potential roosts

Given that the initial daytime assessments of the trees for bat roost potential was undertaken when the trees were in full leaf (potentially obstructing a view of the entire tree trunk/branches which could support potential roost features) and given that a number of the mature trees were covered in dense ivy, which could also obscure potential roost features, it is recommended that **all trees classed as having moderate potential (7 No. trees)** to support a bat roost are either:

- re-assessed by a suitably qualified ecologist prior to felling;
- soft-felled under supervision of a suitably qualified ecologist.

It is recommended that the ivy on these trees is cut and killed off at the earliest convenience and well in advance of any feeling/re-assessment, to enable all or any potentially features to be fully observed. If the ecologist identifies further potential suitable features they will advise on whether further survey is required prior to felling.

7.4 Water Quality

- All plant machinery and equipment should be maintained in good working order and regularly inspected;
- Regular visual inspections of the Ballyowen Stream should be undertaken during construction works;
- Silt control features should be employed where appropriate, such as silt fencing adjacent the existing drainage ditch;
- Regular inspection and maintenance should be undertaken of any silt control features;
- Where spoil is generated, this should only be stored temporarily and away from the existing drainage ditch onsite. Where possible, spoil should be covered or alternatively, graded to avoid ponding or water saturation;
- If necessary, silt fencing should be placed around spoil areas;
- Where possible, surface water run-off should be diverted from areas of bare / exposed ground;
- In the event that pumping would be required during excavation works, the pumped water should be directed to silt control features, such as settlement ponds or silt traps, prior to discharge;
- The proposed works to the existing drainage ditch should be preferably undertaken when the drain is dry. If it is not possible to undertake works when the drain is dry, the drain should be temporarily dammed and the water pumped to silt control features, such as settlement ponds of silt traps, prior to being discharged to ground. Daily inspections of the Ballyowen Stream should be undertaken during drainage ditch works;
- Pre-cast concrete should be used where possible;
- The delivery and pouring of concrete should be supervised at all times;
- Concrete should be poured directly into the shuttered formwork from the Ready Mix Truck, reducing the risk of spillage;
- The wash-out of Ready Mix Truck drums should not be permitted onsite, in the environs of the site, or at a location which could result in a discharge to surface water;
- The disposal of excess uncured concrete should be removed from site by an authorised waste contractor;
- A temporary compound should be established by the construction work contractor for the storage of all machinery and plant when not in use, the re-fuelling of plant and the storage of all associated oils and fuels for plant;
- Should bagged cement be stored on site during construction work it would be stored within the temporary site compound, in a dry and secure area;

- The re-fuelling of machinery should take place within a bunded area. Re-fuelling should not take place within the immediate vicinity of the existing drainage ditch;
- Any fuels or oils should be stored in designated bunded areas, with adequate bund provision to contain 110% of the largest drum volume;
- Fuels / oils should be handled and stored with care to avoid spillage or leakage;
- Where appropriate, small plant equipment should be placed on drip trays;
- Any waste fuel / oils should be collected in bunded containers at designated areas (i.e. temporary construction compound) and properly disposed of to an authorised waste contractor;
- Spill kits, adequately stocked with spill clean-up materials such as booms and absorbent pads, should be available onsite;
- In the unlikely event of a hydrocarbon spillage, contaminated spill clean-up material should be properly disposed of to an authorised waste contractor;
- Cognisance should be taken of Inland Fisheries Ireland's "Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters";
- In the event of a suspected deterioration in water quality, works should immediately cease, an investigation into the cause undertaken and the relevant NPWS and IFI personnel informed.

8.0 POLLUTION CONTROL

8.1 Contamination of Watercourses and ground water is a risk during the construction phase. As the associated works may present a particular risk, a construction method statement for the foul sewer outfall pipe has been included in Appendix B.

Identified risks include spillages into water courses and unprotected ground, allowing pollutants to enter watercourses or ground water. The measures proposed to be put in place to mitigate this risk would be the use of exclusion zones where practicable.

This would include the erection of a 1m high barrier along the watercourse formed by steel road pins supporting an orange PVC barrier with warning signs appropriately fixed at regular intervals.

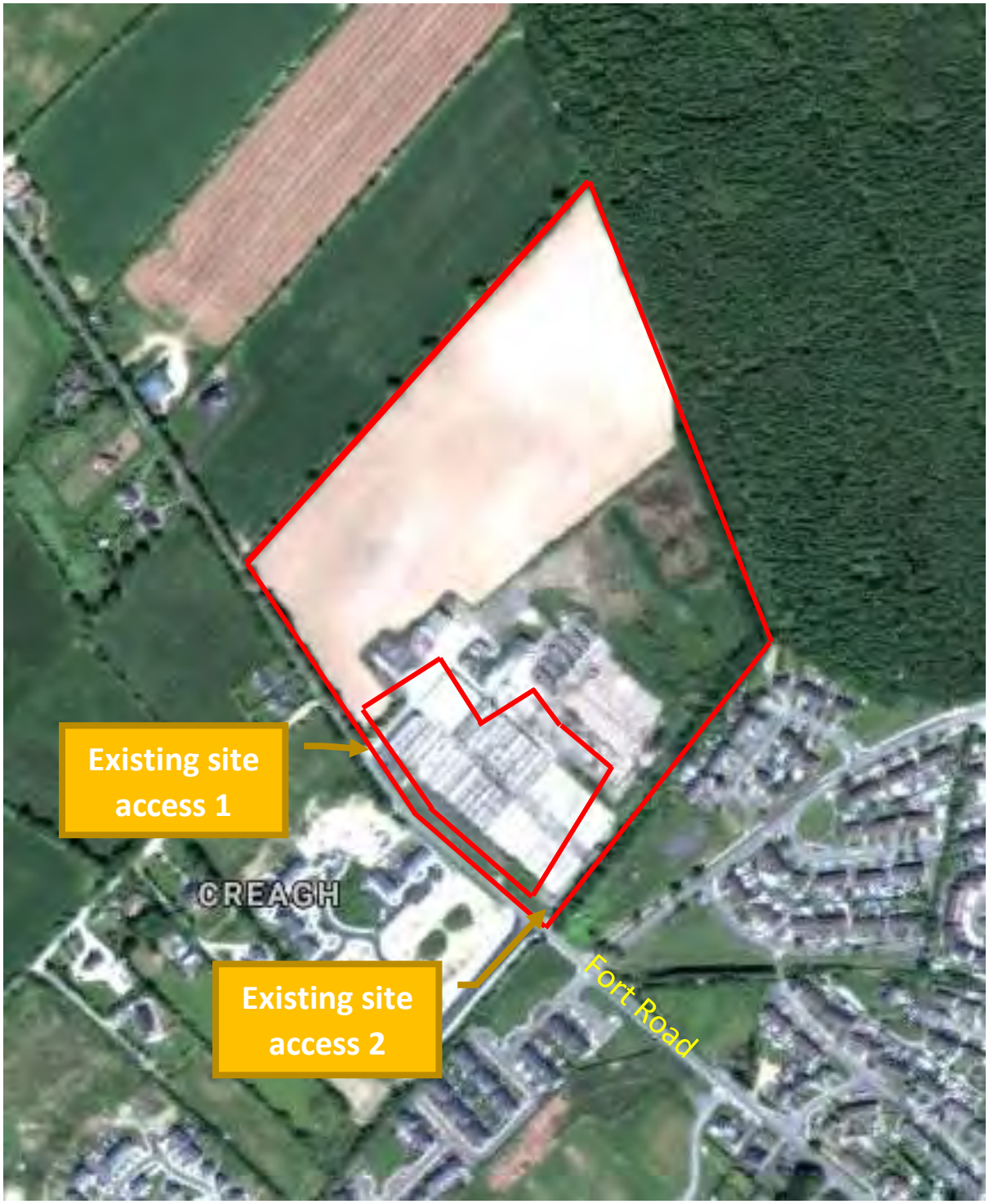
8.2 Sediment and Erosion – Similar to the above, adjacent watercourses/groundwater needs to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. To prevent this from occurring surface water discharge from site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete.

A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction.

A series of geotextile lined cascading, high level outfall, settling basins will be installed upstream of the agreed discharge point. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed before being discharged in a control manner to the agreed outfall. All inlets to the cascading settling basins will be riprapped to prevent scour and erosion in the vicinity of the inlet.

9.0 SITE SETUP

9.1 The existing site entrances off Fort Road will be used as the site's construction entrances. Specific control measures will be implemented to fully segregate construction traffic from external pedestrian traffic.



9.1 Existing site accesses

9.2 Existing site access 1

9.3 Existing site access 2

9.2 The proposed site access is detailed in figures 9.1-9.3. The Contractor shall provide arrangements to provide for vehicular traffic to the site with control measures where crossing the public footpath. The proposed location of the Contractor's compound will be internally within the site and will vary depending on the phase of the development.

9.3 Hoardings will be painted timber hoarding circa 2.4m including supports and appropriate anchoring (designed by Temporary Works Engineer), external lighting and safety signage. Site hoarding will include Health and Safety warnings at appropriate locations.

9.4 Site security will be provided by way of a monitored infrastructure systems such as site lighting and CCTV cameras, when deemed necessary.

10.0 CONSTRUCTION TRAFFIC

10.1 GENERAL SITE ACCESS / EGRESS

10.1.1 The site will be accessed from the existing site entrances from Fort Road until completion of the permanent site access. Traffic volumes are not anticipated to be significant and turning movements into site will be from Fort Road and should be accommodated without delays. Warning signage will be provided for pedestrians and other road users on all approaches in accordance with Chapter 8 of the Traffic Signs Manual and the Contractor's Traffic Management Plan.

10.1.2 As part of the Construction Stage Safety Plan for the works a Traffic Management Plan (TMP) will be prepared in accordance with the principles outlined below and held on site. It shall comply at all times with the requirements of;

• Chapter 8 of the Department of the Environment Traffic Signs Manual, current edition, published by The Stationery Office, and available from the Government Publications Office, Sun Alliance House, Molesworth Street, Dublin 2;

• Guidance for the Control and Management of Traffic at Road Works (June 2010) prepared by the Local Government Management Services Board;

• Any additional requirements detailed in the Design Manual for Roads and Bridges & Design Manual for Urban Roads & Streets (DMURS)

10.1.3 All construction traffic will enter the site via Fort Road and will be routed to the site via the primary road network in the area.

10.1.4 During the construction of the proposed infrastructure works, suitable excavated material that can be reused for construction and fill activities will be retained on site where possible. Any unsuitable material or unusable material will be disposed offsite to a suitably licensed landfill facility in accordance with the regulations for same and the project Construction Waste Management Plan.

10.1.5 Construction traffic will consist of the following categories:

• Private vehicles owned and driven by site construction and supervisory staff.

• Excavation plant, dumper trucks and materials delivery vehicles involved in site development works.

10.2 STAFF AND PARKING

10.2.1 On-site employees will generally arrive before 07:00, thus avoiding the morning peak hour traffic. Construction employees will generally depart after 17:00. It should be noted that a large proportion of construction workers may arrive in shared transport.

10.2.2 Construction traffic will not be permitted to park on the public roads or within the general area outside the main site.

10.3 ON SITE ACCOMODATION

10.3.1 Facilities will be provided by the contractor within the confines of the site hoarding as follows;

• Adequate materials drop-off and storage area;

• Set down areas for trucks;

• Dedicated staff parking and visitor parking;

• Staff welfare facilities i.e. toilets etc.

10.4 CONSTRUCTION ACTIVITIES

10.4.1 The most onerous construction period with regards to traffic generation is expected to be HGVs during the following work elements;

• Demolition and Excavation stage where waste and soil is removed from site;

• Bringing construction materials to site;

• Bringing concrete to site for sub and superstructures.

10.5 MINIMISATION OF MOVEMENT AND IMPACT

10.5.1 Construction vehicle movements and their impact will be minimised through;

• Consolidation of delivery loads to / from the site and management of large deliveries on site to occur outside of peak periods;

• Use of precast / prefabricated materials where possible;

• “Cut” materials generated by the construction works to be re-used onsite where possible, through various works;

• Adequate storage space on site to be provided;

• The design of the works has involved an element of minimising the quantity of material to be removed from site by way of cut and fill balance;

• Scheduling of movements to outside peak traffic times and school pickup / drop-off times.

10.6 PUBLIC ROADS

10.6.1 The following measures will be taken to ensure that the site and surroundings are kept clean and tidy;

• A regular programme of site tidying to be established to ensure a safe and orderly site;

• Mud spillages on roads and footpaths outside the site to be cleaned regularly and will not be allowed to accumulate;

• Wheel-wash facilities or similar will be provided for vehicles exiting the site if deemed appropriate or when significant vehicle movements are planned (e.g. disposal of topsoil from site);

• Dedicated road sweeper will be put in place if site conditions require.

APPENDIX A

Phasing Plan

Phase 1
Total Floor Area 9475.5m²
Part V Area 938.2m²
Percent Part V 9.9%
Percent Open Space 29.2%
57 Houses / 15 Apartments

Phase 2
Total Floor Area 10105.1m²
Part V Area 1057.8m²
Percent Part V 10.5%
Percent Open Space 19.9%
67 Houses / 10 Apartments

Phase 3
Total Floor Area 5588.0m²
Part V Area 558.8m²
Percent Part V 9.6%
Percent Open Space 16.7%
43 Houses / 0 Apartments

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

APT. BL. 5 TYPE B
305.7m²

APT. BL. 6 TYPE B
305.7m²

APT. TYPE A
211.3m²

APT. BL. 10 TYPE B
305.7m²

APT. BL. 15 TYPE D
217.7m²

APT. BL. 26 TYPE C
286.5m²

APT. BL. 22 TYPE A
211.3m²

Phase 5
Total Floor Area 6826.0m²
Part V Area 682.6m²
Percent Part V 9.9%
Percent Open Space 9.2%
38 Houses / 29 Apartments

Phase 4
Total Floor Area 3936.5m²
Part V Area 393.7m²
Percent Part V 10.5%
Percent Open Space 26.2%
27 Houses / 11 Apartments

Overall
Total Floor Area 35931.1m²
Part V Floor Area 3,618.3m²
Part V Percentage 10.1%

Proposed Part V properties shown in yellow

House Types
- **A** A 147.1m² 4-bed Detached — A End Unit 149.4m² 4-bed Detached
- **B** B 163.3m² 4-bed Detached
- **C** C 165.8m² 4-bed Semi-detached
- **D** D 112.8m² 3-bed Semi-detached/Terraced
- **E** E 107m² 3-bed Semi-detached/Terraced
- **F** F 121.2m² 3-bed Terraced/Semi-detached
- **G** G 118m² 3-bed Terraced
- **H** H 84.6m² 2-bed Terraced
- **J** J 180.7m² 5-bed Detached — J End Unit 184.1m² 5-bed Detached

REV	DATE	REV BY	DESCRIPTION
B	7.9.18	LM	REVISE FROM PRE-APP
A	25.5.18	LM	SHOW % OPEN SPACE

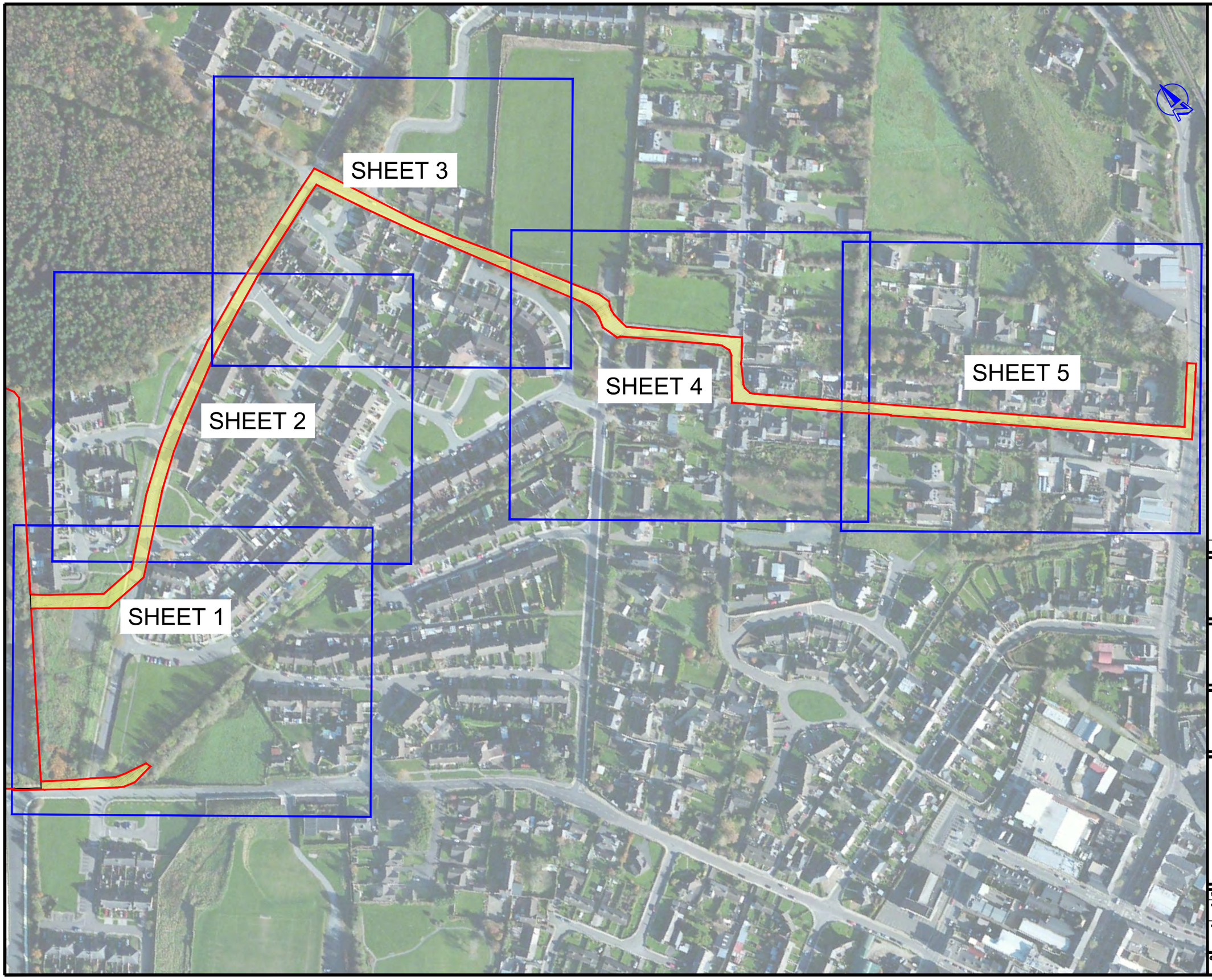
STATUS **PLANNING**

PROJECT	PROPOSED RESIDENTIAL DEVELOPMENT
PROJECT ADDRESS	BALLYOWEN/RAMSFORTPARK, GOREY, CO. WEXFORD
DWG TITLE	SITE PLAN: PHASING/PART V PLAN
DWG NO	PL-030
REV	B
JOB NO	1725
SCALE @ A3	1:1500
DATE	7.2.2018
DRN	Liam Minogue

STRUTEC
Architects · Engineers · Project Managers
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

APPENDIX B

Pipeline Drawings & Method Statement



LEGEND

PROPOSED SITE BOUNDARY

PROPOSED SITE BOUNDARY OUTSIDE APPLICANT'S LAND OWNERHIP

rev.	date	amendment	drn	ckd
B	31.08.18	PLANNING – REVISED PIPE ROUTE	NOM	PMS
A	13.07.18	PLANNING	NOM	PMS

PROPOSED HOUSING DEVELOPMENT
CREAGH, GOREY, CO. WEXFORD

PROPOSED FOUL & STORMWATER PIPES LOCATED OUTSIDE APPLICANT'S LAND OWNERSHIP

KEY PLAN

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

INNOVATION CENTRE
GREEN ROAD
CARLOW

TELEPHONE: 059 91 33084
FAX: 059 91 40499
EMAIL: info@iece.ie

file location: N:\IE1505\DRAWINGS		scale: 1:2500	A3
drawing status: PLANNING		datum: MALIN	
		drawn: NOM	
drawing no. IE1505-018	rev B	checked: PMS	
		approved: PMS	
		date: 31.08.2018	

LEGEND

PROPOSED SITE BOUNDARY

rev.	date	amendment	drn	ckd
C	10.10.18	PLANNING: UPDATED FOR FINAL LAYOUT	NOM	PMS
B	22.05.18	PLANNING: PAGE SIZE CHANGED	NOM	PMS
A	09.03.18	PLANNING	NOM	PMS

PROPOSED HOUSING DEVELOPMENT
CREAGH, GOREY, CO. WEXFORD

PROPOSED FOUL, STORMWATER & WATER MAINS

KEY PLAN

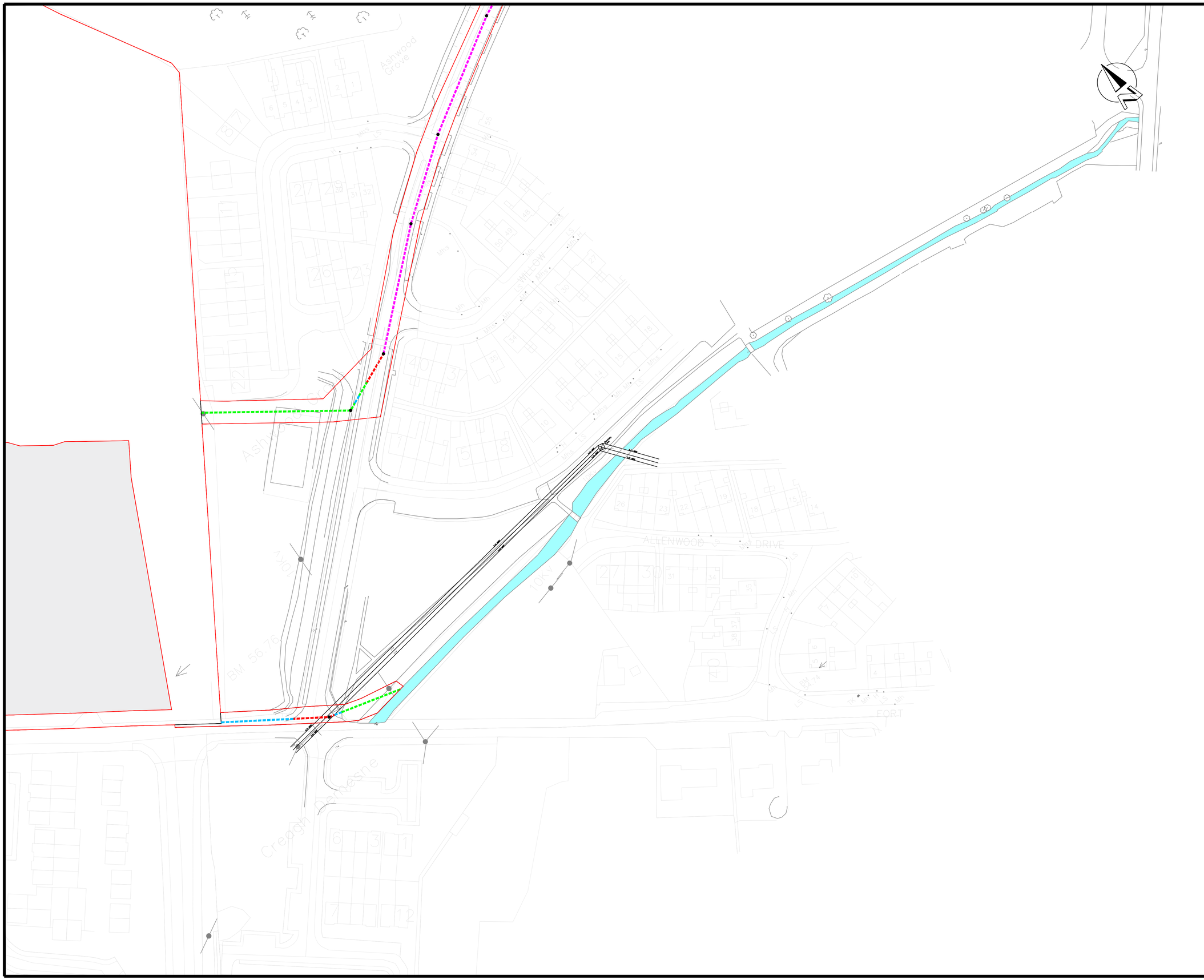
IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

INNOVATION CENTRE
GREEN ROAD
CARLOW

TELEPHONE: 059 91 33084
FAX: 059 91 40499
EMAIL: info@iece.ie

DRAFT

file location:	N:\IE1505\DRAWINGS
drawing status:	PLANNING
drawing no.	IE1505-000
rev	C
scale:	1:2000 A1
datum:	MALIN
drawn:	NOM
checked:	PMS
approved:	PMS
date:	10.10.2018



LEGEND

- PROPOSED SITE BOUNDARY
- REINSTATEMENT TYPE 1
- REINSTATEMENT TYPE 2
- REINSTATEMENT TYPE 3
- REINSTATEMENT TYPE 4
- REINSTATEMENT TYPE 5

NOTES

1. FOR REINSTATEMENT DETAILS REFER TO DRAWING NO. IE1505-017-B.

rev.	date	amendment	drn	ckd
C	23.10.18	PLANNING: UPDATED FOR FINAL LAYOUT	NOM	PMS
B	22.05.18	PLANNING: LEGEND UPDATED	NOM	PMS
A	09.03.18	PLANNING	LMc	PMS

PROPOSED HOUSING DEVELOPMENT
CREAGH, GOREY, CO. WEXFORD

PROPOSED FOUL DRAINAGE

REINSTATEMENT LAYOUT PLAN
FOR FOIL DRAINAGE SHEET 1

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

INNOVATION CENTRE
GREEN ROAD
CARLOW

TELEPHONE: 059 91 33084
FAX: 059 91 40499
EMAIL: info@iece.ie

DRAFT

file location: N:\IE1505\DRAWINGS	scale: 1:750 A1
drawing status: PLANNING	datum: MALIN
	drawn: NOM
drawing no. IE1505-014	rev C
	checked: PMS
	approved: PMS
	date: 23.10.2018

REFER TO DRAWING NUMBER IE1544-002-D IN SITE SPECIFIC FLOOD RISK ASSESSMENT FOR DETAILS OF PROPOSED DRAINAGE CHANNEL

PROPOSED FOUL CONNECTION POINT FOR FUTURE COMMUNITY & EDUCATION ZONED LANDS

CLASS 1 BYPASS SEPARATOR
CONTRIBUTING AREA = 2.044Ha
PEAK FLOW = 522 l/s

PROPOSED STORM CONNECTION POINT FOR FUTURE COMMUNITY & EDUCATION ZONED LANDS

SILT TRAP

ATTENUATION SYSTEM
STORM TECH MC-3500 CHAMBER
VOLUME = 1140m³, DEPTH = 1.14m

VORTEX FLOW CONTROL DEIVCE
PEAK FLOW = 16.1 l/s
DESIGN HEAD = 1.14m

WATERCOURSE

HEADWALL AT OUTFALL TO STREAM

LEGEND

- PROPOSED SITE BOUNDARY
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER SILT TRAP/CATCH PIT
- PROPOSED VORTEX FLOW CONTROL DEVICE & MANHOLE CHAMBER
- PROPOSED ROAD GULLY
- EXISTING ROAD GULLY
- EXISTING STORMWATER
- PROPOSED FOUL MANHOLE
- PROPOSED FOUL GRAVITY PIPE
- PROPOSED DRAINAGE PIPE & CHANNEL
- EXISTING FOUL
- EXISTING WATER MAIN
- STORM PROPOSED FOR ADJACENT 85 UNIT DEVELOPMENT
- FOUL PROPOSED FOR ADJACENT 85 UNIT DEVELOPMENT

NOTES

1. ALL DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH:
   - "CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY" 7TH EDITION,
   - IRISH WATER "CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE", DECEMBER 2017 (REVISION 03)
2. MANHOLE FRAME & COVER TO BE:
   CLASS D400 IN TRAFFICKED AREAS
   CLASS B125 IN FOOTPATHS & LANDSCAPED AREAS
3. REFER TO IRISH WATER "WASTEWTER INFRASTRUCTURE STANDARD DETAILS DECEMBER 2017 (REVISION 03) FOR FOUL WATER STANDARD DETAILS
4. REFER TO DRAWING IE1505-013-B FOR ADDITIONAL STANDARD DETAILS.
5. REFER TO DRAWINGS IE1505-009-C, IE1505-010-C, IE1505-011-C, IE1505-012-C, FOR FOUL AND STORMWATER LONG SECTIONS
4. REFER TO DRAWINGS IE1505-014-C, IE1505-015-C, IE1505-016-C, IE1505-017-C, FOR FOUL AND STORMWATER REINSTATEMENT DRAWINGS
5. PETROL INTERCEPTOR SHALL BE A CLASS 1 BYPASS INTERCEPTOR/SEPARATOR IN ACCORDANCE WITH BS EN 858-1:2002 and BS EN 858-2:2003.
6. REFER TO REFER TO DRAWING NUMBER IE1544-002-D IN SITE SPECIFIC FLOOD RISK ASSESSMENT FOR DETAILS OF PROPOSED DRAINAGE CHANNEL

rev.	date	amendment	drn	ckd
C	23.10.18	PLANNING: UPDATED FOR FINAL LAYOUT	NOM	PMS
B	22.05.18	PLANNING: NOTE UPDATE	NOM	PMS
A	09.03.18	PLANNING	NOM	PMS

PROPOSED HOUSING DEVELOPMENT
CREAGH, GOREY, CO. WEXFORD

PROPOSED FOUL & STORMWATER DRAINAGE

LAYOUT PLAN
SHEET 3

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

INNOVATION CENTRE
GREEN ROAD
CARLOW

TELEPHONE: 059 91 33084
FAX: 059 91 40499
EMAIL: info@iece.ie

DRAFT

file location:	N:\IE\GOREY\DRAWINGS	scale:	1:500 A1
drawing status:	PLANNING	datum:	MALIN
		drawn:	NOM
drawing no.	rev	checked:	PMS
IE1505-003	C	approved:	PMS
		date:	23.10.2018

LEGEND

- PROPOSED SITE BOUNDARY
- REINSTATEMENT TYPE 1
- REINSTATEMENT TYPE 2
- REINSTATEMENT TYPE 3
- REINSTATEMENT TYPE 4
- REINSTATEMENT TYPE 5

NOTES

1. FOR REINSTATEMENT DETAILS REFER TO DRAWING NO. IE1505-017-B.

rev.	date	amendment	drn	ckd
C	23.10.18	PLANNING: UPDATED FOR FINAL LAYOUT	NOM	PMS
B	22.05.18	PLANNING: LEGEND UPDATED; REINSTATEMENT TYPE CHANGED	NOM	PMS
A	09.03.18	PLANNING	LMc	PMS

PROPOSED HOUSING DEVELOPMENT
CREAGH, GOREY, CO. WEXFORD

PROPOSED FOUL & STORMWATER DRAINAGE

REINSTATEMENT LAYOUT PLAN
FOR FOIL DRAINAGE SHEET 2

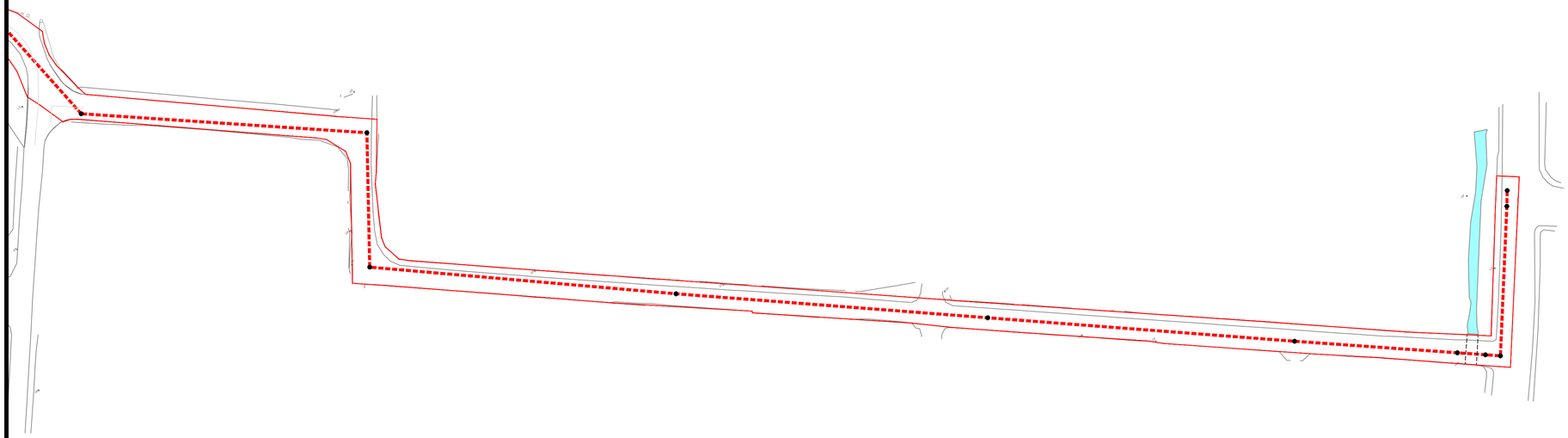
IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

INNOVATION CENTRE
GREEN ROAD
CARLOW

TELEPHONE: 059 91 33084
FAX: 059 91 40499
EMAIL: info@iece.ie

DRAFT

file location:	N:\IE1505\DRAWINGS\	scale: 1:750	A1
drawing status:	PLANNING	datum: MALIN	
		drawn: NOM	
drawing no. IE1505-015	rev C	checked: PMS	
		approved: PMS	
		date: 23.10.2018	



LEGEND

- PROPOSED SITE BOUNDARY
- REINSTATEMENT TYPE 1
- REINSTATEMENT TYPE 2
- REINSTATEMENT TYPE 3
- REINSTATEMENT TYPE 4
- REINSTATEMENT TYPE 5

NOTES

1. FOR REINSTATEMENT DETAILS REFER TO DRAWING NO. IE1505-017-B.

rev.	date	amendment	drn	ckd
C	23.10.18	PLANNING: UPDATED FOR FINAL LAYOUT	NOM	PMS
B	22.05.18	PLANNING: LEGEND UPDATED; REINSTATEMENT TYPE CHANGED	NOM	PMS
A	09.03.18	PLANNING	LMc	PMS

PROPOSED HOUSING DEVELOPMENT
CREAGH, GOREY, CO. WEXFORD

PROPOSED FOUL & STORMWATER DRAINAGE

REINSTATEMENT LAYOUT PLAN
FOR FOIL DRAINAGE SHEET 3

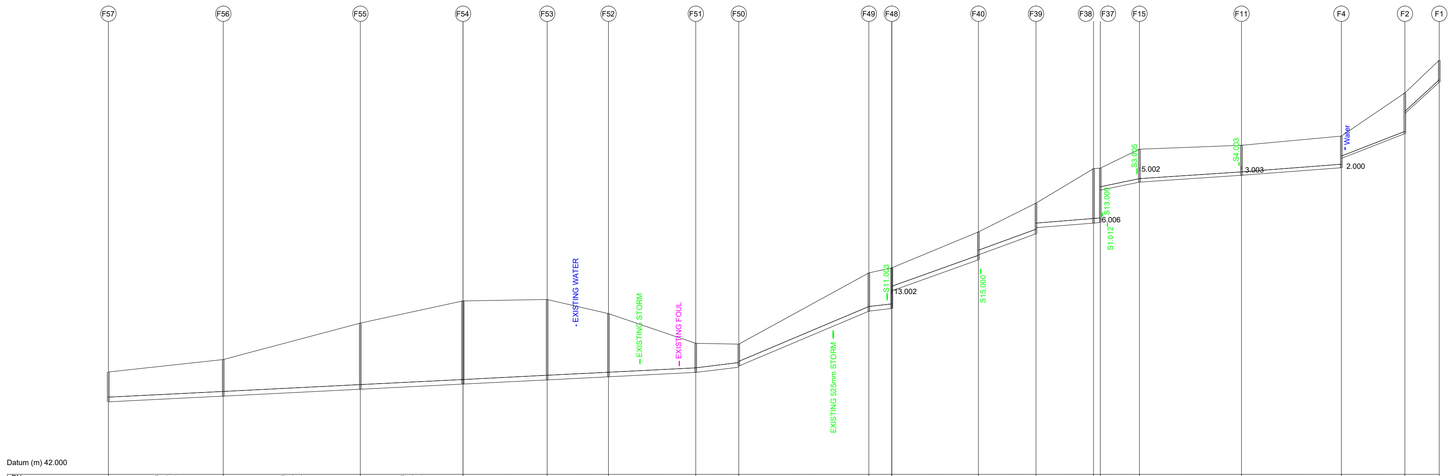
IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

INNOVATION CENTRE
GREEN ROAD
CARLOW

TELEPHONE: 059 91 33084
FAX: 059 91 40499
EMAIL: info@iece.ie

DRAFT

file location:	N:\1505\DRAWINGS	scale:	1:750 A1
drawing status:	PLANNING	datum:	MALIN
		drawn:	NOM
drawing no.	rev	checked:	PMS
IE1505-016	B	approved:	PMS
		date:	22.05.2018



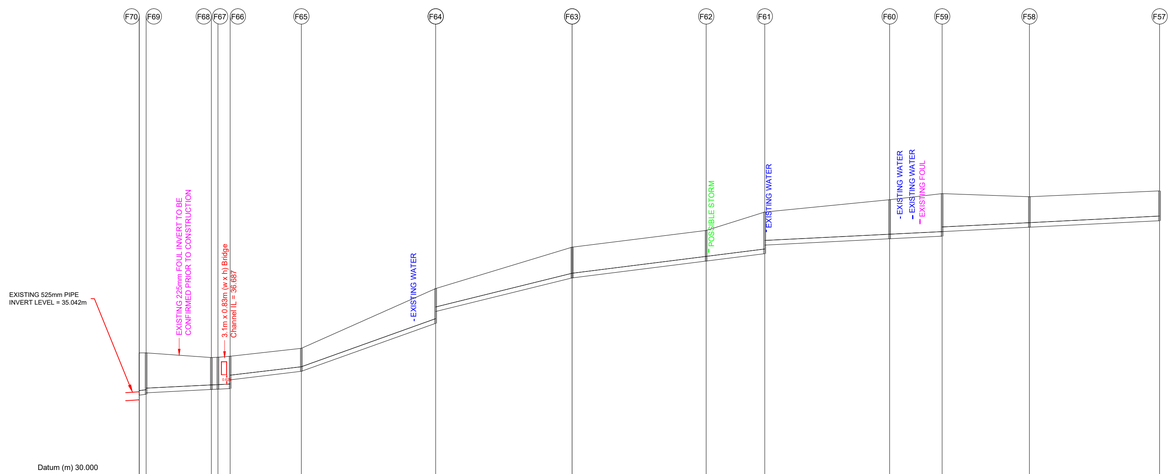
Datum (m) 42.000

PN	F1.017	F1.016	F1.015	F1.014	F1.013	F1.012	F1.011	F1.010	F1.009	F1.008	F1.007	F1.006	F1.005	F1.004	F1.003	F1.002	F1.001	F1.000
Dia (mm)	300	300	300	300	300	300	300	300	300	300	300	300	300	225	225	225	150	150
Slope (1:X)	200	200	200	200	200	200	82	24	86	28	27	125	110	48	150	131	26	11
Cover Level (m)	48.680	49.490	51.870	53.315	53.410	52.485	50.560	50.495	55.150	55.475	57.825	59.700	61.960	61.985	63.225	63.475	64.075	64.900	69.035
Invert Level (m)	46.732	47.107	47.555	47.890	48.165	48.365	48.650	48.995	49.070	52.650	52.825	53.975	56.000	56.325	57.700	58.100	58.400	58.540	60.945	61.076	61.076	61.520	62.016	62.025	64.236	65.550	67.000
Length (m)	75.052	89.500	67.000	55.000	40.000	57.000	28.131	84.888	15.000	56.570	37.600	37.600	4.38	25.592	66.594	65.174	41.466	22.496
Pipe Material	Spigot & Socket Concrete Pipe Class 120																u-PVC	

FOUL WATER PIPES F1.000 - F1.017

HORIZONTAL SCALE 1:2000

VERTICAL SCALE 1:200



Datum (m) 30.000

PN	F1.030	F1.029	F1.028	F1.027	F1.026	F1.025	F1.024	F1.023	F1.022	F1.021	F1.020	F1.019	F1.018
Dia (mm)	300	300	300	300	300	300	300	300	300	300	300	300	300
Slope (1:X)	77	200	195	200	84	28	41	80	80	200	200	200	200
Cover Level (m)	38.100	38.100	37.800	37.815	37.884	38.400	42.300	45.000	46.100	47.300	48.100	48.500	48.300	48.680
Invert Level (m)	35.242	35.492	35.711	35.723	35.773	36.344	36.900	40.036	40.800	43.000	44.100	44.561	45.142	45.550	45.722	46.022	46.307	46.732
Length (m)	4.465	42.591	4.29	8.0	46.484	87.673	89.060	87.559	38.247	81.540	34.288	57.000	85.000
Pipe Material	Spigot & Socket Concrete Pipe Class 120												

FOUL WATER PIPES F1.017 - F1.030

HORIZONTAL SCALE 1:2000

VERTICAL SCALE 1:200

LEGEND

NOTES

1. ALL DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH:
   - "CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY" 7TH EDITION,
   - IRISH WATER "CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE", DECEMBER 2017 (REVISION 03)
2. MANHOLE FRAME & COVER TO BE:
   CLASS D400 IN TRAFFICKED AREAS
   CLASS B125 IN FOOTPATHS & LANDSCAPED AREAS
3. FOUL PIPES CROSSING ABOVE STORMWATER PIPES SHALL BE SURROUNDED IN CONCRETE 2m ON EITHER SIDE OR HAVE NO PIPE JOINTS WITHIN 2m EITHER SIDE OF THE CROSSING POINT.
4. REFER TO DRAWING IE1505-013-B FOR ADDITIONAL STANDARD DETAILS.
5. REFER TO DRAWINGS IE1505-002-C TO IE1505-006-C, FOR FOUL WATER LAYOUT PLANS

rev.	date	amendment	drn	ckd
C	23.10.18	PLANNING: UPDATED FOR FINAL LAYOUT	NOM	PMS
B	22.05.18	PLANNING: NOTE UPDATE	NOM	PMS
A	09.03.18	PLANNING	NOM	PMS

PROPOSED HOUSING DEVELOPMENT
CREAGH, GOREY, CO. WEXFORD

PROPOSED FOUL & STORMWATER DRAINAGE

FOUL WATER LONG SECTIONS
SHEET 1 OF 2

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL
INNOVATION CENTRE
GREEN ROAD
CARLOW
TELEPHONE: 059 91 33084
FAX: 059 91 40499
EMAIL: info@iece.ie

DRAFT

file location:	N:\IE1505\DRAWINGS
drawing status:	PLANNING
drawing no.	IE1505-011
rev	C
scale:	AS SHOWN A1
datum:	MALIN
drawn:	NOM
checked:	PMS
approved:	PMS
date:	23.10.2018

1 Horizontal Directional Drilling Method Statement

1.1 Introduction

This contains an outline method statement for the construction of a short length of 225mm foul pipe under a road bridge on the Ballyowen Stream located at the junction of Garden City and the R772 Arklow Road.

1.2 Methodology

- Prior to commencing any site works, existing utilities shall be identified along the proposed drilling route including the location of the proposed launch pit and reception pit required for the drilling process.
- The location and depth of any utilities shall be confirmed on site using Ground Penetrating Radar and marked on the road and footpath in the vicinity of the proposed drilling works
- A Traffic Management Plan and Preliminary Health and Safety Plan shall be prepared in advanced of commencing the works.
- A small pit shall be dug at the launch point and reception point to cater for the cut material and fluid. These pits also serve to verify that the vicinity is hazard free from utilities.
- The Horizontal Directional Drilling (HDD) process commences by using a drilling rig to drill a small diameter pilot hole from the launch pit to the reception pit. This is carried out using high-pressure water through drilling rods.
- Attached to the front of the rods is a cutting head and transmitter, which is controlled by a locator to achieve the correct line and level required.
- The rods pass through the ground mixing natural soil with the mud/water causing a small bentonite filled tunnel and at no time is a cavity formed.
- Once the initial drill out is achieved the transmitter and cutting head are removed. This is done by removing the securing collar and unscrewing the cutting head.
- A reamer is then attached which contains multiple water jets and a cutting face. This is attached by screwing it to the drilling rods and replacing the securing collar. The drilling direction is then reversed by retracting the reamer through the borehole.

- During the retraction of reamer, the borehole will be enlarged and bentonite fluid will stabilize the bore hole and transport the cutting materials out of the created bore hole.
- Different diameter reamers are then used to enlarge the borehole. Borehole enlargement will be carried out in stages until a bentonite filled tunnel is ready to receive the pipe.
- The final reamer is then attached to a towing head that is inserted and expanded in the pipe to be installed.
- The pipe displaces the bentonite as it is drawn through the tunnel and the bentonite fills the excavated pits.
- The bentonite from the tunnel or from any blow outs will have to be removed by means of an vacuum truck by the contractor and disposed of at a licenced facility.
- At no time is there a cavity created in the ground and the pipes are fully grouted in by displacement.
- The installed 225mm pipe shall be pressure tested using air or water testing in accordance with Section 4.10 of Irish Water's '*Code of Practice for Wastewater Infrastructure',* December 2017.
- Upon installation of 225mm foul pipe, both ends of the pipes are capped to prevent any soil from getting in until the connections are made at either side via open cut construction works.
- The site is cleaned and demobilization of the Horizontal Directional Drilling Rig and reinstatement of the launch and receiver pits is carried out.