

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME III TECHNICAL APPENDICES



PROPOSED RESIDENTIAL DEVELOPMENT

AT

Gorey, Co. Wexford

Prepared by



In Conjunction with

Strutec Engineers/PES Ltd./IE Consulting/Roadplan/Murray Associates/Shanarc

February 2019

LIST OF APPENDICES

Appendix A Biodiversity

Appendix B Land and Soils

Appendix C Water

Appendix D Noise

Appendix E – Archaeology

Appendix F – Landscape and Visual

APPENDIX A – BIODIVERSITY

ATTACHMENT 4.1
- CONSULTATIONS -

Correspondence with the Development Applications Unit

From: Lorraine (Panther Environmental Solutions Ltd.) [<mailto:lorraine@pantherwms.com>]
Sent: 18 April 2018 09:26
To: Manager Dau
Subject: Planning Application Consultation - Proposed Development at Creagh, Gorey, Co. Wexford

Dear Sir / Madam,

Panther Environmental Solutions Limited is currently involved in the preparation of an Environmental Impact Assessment Report to accompany a planning application to An Bord Pleanála, with respect to an application for the proposed construction of residential units and a childcare facility at Gorey, Co. Wexford. The construction phase of the development, as well as cumulative impacts with other developments in the area, will also be addressed.

While it is understood that the National Parks and Wildlife Service will be consulted during the planning application process, we would welcome any comments or observations which the Development Applications Unit may have in relation to the proposed development in the preparation of documents for the application. It is noted that any further comments/observations made during consideration of the planning application, once made, would also be considered as part of relevant assessments.

The proposed development site is located on the outskirts of Gorey town (as shown in the location map included), bordered to the south and east by housing estates, to the northeast by Ramsfort Park (a coniferous forest) and to the west by agricultural land. The site comprises of an area of agricultural grassland and an area of waste ground from the demolition of the former Walsh Mushrooms facility, bordered by hedgerows and treelines.

The proposed development would comprise of the construction of a residential estate, with a total of 307 residential dwellings and childcare facility, in addition to the construction of new surface water and domestic wastewater drainage systems, two site access roads, and all ancillary development works including internal road surfacing, boundary construction, the provision of outdoor artificial lighting and site landscaping.

Surface water, comprised of rainwater run-off from roofs and paved areas, would be collected via a system of gullies and stormwater drains and would connect with the existing storm drainage network of the Creagh area. Domestic wastewater would be directed to Gorey town's public sewer, which would undergo treatment at the Courtown-Gorey Wastewater Treatment Plant prior to discharge.

There are two designated sites located within 15km of the proposed development: Slaney River Valley SAC (Site Code: 000781) located 2.4km to the west and Kilpatrick Sandhills SAC (Site Code: 001742) located 10.9km to the north-east. It should be noted that the proposed development site is not hydrologically connected to either of the SAC sites.

We would welcome any comments or observations which the Development Applications Unit may have to highlight any particular concerns in relation to the proposed development.

Best Regards,
Lorraine

Lorraine Wyse
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Tel: +00353 (0)59-9134222
Email:lorraine@pantherwms.com

From: Manager Dau <Manager.Dau@chg.gov.ie>
Sent: Wednesday, April 18, 2018 4:47 PM
To: Lorraine (Panther Environmental Solutions Ltd.) <lorraine@pantherwms.com>
Subject: RE: Planning Application Consultation - Proposed Development at Creagh, Gorey, Co. Wexford

Hi Lorraine,

I acknowledge receipt of your email and request. A reference number will be provided to you shortly. In the meantime, could you advise if the application to An Bord Pleanála will be a Strategic Housing Development? If so, have pre-application consultations with ABP commenced?

Kind regards,

Yvonne Nolan
Development Applications Unit
Department of Culture, Heritage and the Gaeltacht
Newtown Road
Wexford
Y35 AP90

(053) 9117382



An Roinn
Cultúir, Oidhreachta agus Gaeltachta

Department of
Culture, Heritage and the Gaeltacht

From: Lorraine (Panther Environmental Solutions Ltd.) [<mailto:lorraine@pantherwms.com>]
Sent: 18 April 2018 17:00
To: Manager Dau
Subject: RE: Planning Application Consultation - Proposed Development at Creagh, Gorey, Co. Wexford

Hi Yvonne,

Thank you for your email. The application will be a Strategic Housing Development. A SHD pre-application will be submitted to the Board shortly, so pre-application discussions will commence soon.

Kind regards,
Lorraine

From: Manager Dau <Manager.Dau@chg.gov.ie>
Sent: Wednesday 18 April 2018 17:26
To: Lorraine (Panther Environmental Solutions Ltd.) <lorraine@pantherwms.com>
Subject: RE: Planning Application Consultation - Proposed Development at Creagh, Gorey, Co. Wexford

Hi Lorraine,

Thanks for your reply. The DAU assigned ref. no. is G Pre00081/2018. Please quote this in any future correspondence with DAU relating to this consultation.

Kind regards,

Yvonne

Correspondence with Inland Fisheries Ireland



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7th August 2018

Inland Fisheries Ireland,
Anglesea Street,
Clonmel,
Co. Tipperary
E91 RD25

Dear Sir / Madam,

Panther Environmental Solutions Limited is currently involved in the preparation of an Environmental Impact Assessment Report to accompany a planning application to An Bord Pleanála, with respect to an application for the proposed construction of residential units and a childcare facility at Gorey, Co. Wexford. The construction phase of the development, as well as cumulative impacts with other developments in the area, will also be addressed.

While it is understood that Inland Fisheries Ireland will be consulted during the planning application process, we would welcome any comments or observations which the Inland Fisheries Ireland may have in relation to the proposed development in the preparation of documents for the application. It is noted that any further comments/observations made during consideration of the planning application, once made, would also be considered as part of relevant assessments.

The proposed development site is located on the outskirts of Gorey town (as shown in the location map included), bordered to the south and east by housing estates, to the northeast by Ramsfort Park (a coniferous forest) and to the west by agricultural land. The site comprises of an area of agricultural grassland and an area of waste ground from the demolition of the former Walsh Mushrooms facility, bordered by hedgerows and treelines.

The proposed development would comprise of the construction of a residential estate, with a total of 297 residential dwellings and childcare facility, in addition to the construction of new surface water and domestic wastewater drainage systems, two site access roads, and all ancillary development works including internal road surfacing, boundary construction, the provision of outdoor artificial lighting and site landscaping.

The proposed site is located in the Owenavorrhagh Sub-Catchment of the Owenavorrhagh Catchment area. There is one small area of drainage ditch at the site, in the north-eastern section of the site measuring approximately 160m. This joins with a small stream to the south-east of the site, the Ballyowen Stream, which flows to the River Banoge approximately 0.6km downstream. The River Banoge flows south for approximately 4.6km before converging with the Owenavorrhagh River, which enters the Irish Sea 5.6km downstream.

Surface water, comprised of rainwater run-off from roofs and paved areas, would be collected via a system of gullies and stormwater drains and would connect with the Ballyowen Stream, approximately 70m south-east of the proposed site.

Domestic wastewater would be directed to Gorey town's public sewer, which would undergo treatment at Courtown-Gorey Waste Water Treatment Plant prior to discharge. This would involve the construction of an underground foul sewer pipeline, approximately 1km in length, from the proposed site to the public sewer line. A section of the proposed pipeline route, approximately 320m in length, would run adjacent the Ballyowen Stream within a working corridor of approximately 3.5m, between the stream bank and boundary walls of adjacent private dwellings. Directional drilling, 5-8m in length, is proposed for the only stream crossing of the proposed route. No instream works would be required as part of the proposed works.

A draft layout map, outlining the approximate locations of the Ballyowen Stream and the proposed foul pipeline route, is included. It should be noted, however, that this may be subject to change during the final design stage.

There are two designated sites located within 15km of the proposed development: Slaney River Valley SAC (Site Code: 000781) located 2.4km to the west and Kilpatrick Sandhills SAC (Site Code: 001742) located 10.9km to the north-east. It should be noted that the proposed development site is not hydrologically connected to either of the SAC sites.

We would welcome any comments or observations which Inland Fisheries Ireland may have to highlight any particular concerns in relation to the proposed development.

Yours sincerely,



Lorraine Wyse
Panther Environmental Solutions Ltd



Lorraine Wyse
Panther Environmental Solutions Ltd
Units 3 & 4, Innovation Centre
Institute of Technology
Green Road
Carlow

27 August 2018

Planning application Consultation – Creagh, Gorey, Co. Wexford

Dear Ms. Wyse,

My apologies for the delay in responding to your query. Inland Fisheries Ireland have reviewed the documentation relating to construction of a residential development and installation of a sewer line at the Creagh site forwarded to our offices and have the following comments.

The Ballyowen Stream which flows in close proximity to this site represents the headwaters of the Banoge River catchment. A small tributary of the Ballyowen Stream is shown on the old OSI maps bordering this proposed development site, while it is clear that the nearby Ballyowen Stream is the ultimate receptor of the surface water run-off from this site. The Banoge and its tributaries are an important salmonid catchment and represent some of the best fisheries habitat of the entire Owenavorrhagh system. The Owenavorrhagh River catchment supports several species listed in Annex II of the Directive including Salmon, River Lamprey, Brook Lamprey, Sea Lamprey and Otter. The recent upgrade of Gorey Waste Water Treatment plant whereby all discharges of treated sewage are now to a sea outfall at Courtown as opposed to the Banoge River downstream of Gorey will result in a significant improvement in biological water quality in the Owenavorrhagh and Banoge catchments. Because of this we expect to see a significant increase in salmon and trout populations in the Banoge River.

In the past, poor planning throughout the town of Gorey has resulted in the loss and fragmentation of the important aquatic and riparian habitat of the Banoge and its tributaries. This poor practice has included the piping/culverting of important salmonid waters resulting in a loss of fisheries habitat and the creation of barriers to fish migration, poorly designed bridge crossings and the replacement of natural river bank habitat with gabions, concrete and rock armour.

Of serious concern to IFI is the route proposed for the foul sewer pipeline which will run immediately adjacent to the Ballyowen Stream over an approximate 320metre stretch. Our knowledge of this site is that there is limited space for this significant construction and given the sensitivity of the Ballyowen Stream and the high potential for the discharge of deleterious matter during these works we object to the route as proposed and request that the applicant find an alternative pipeline route for the construction of this sewer.

IIE Cluain Meala, Sraid Anglesea, Cluain Meala, Co. Tiobraid Arann.
IFI Clonmel, Anglesea Street, Clonmel, Co. Tipperary.
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With reference to the construction of the proposed residential development, the following observations and comments are of necessity of a general nature. While they apply to the proposed development in general, the waters in fisheries terms likely to be impacted act primarily as contributories to downstream habitat for juvenile salmonids, lampreys and other species as well as macrophytes, algae and macro-invertebrates which as drift form a significant part of the food supply to the downstream fisheries of the Ballyowen, Banoge and Owenavorrhagh Rivers. They also, in the context of the proposed works, have the potential to convey deleterious matter from those works such as concrete, silt, fuel, lubricating and hydraulic oils from construction plant and equipment downstream unless proper safeguards are in place. IFI request you have particular regard to the following in the planning stage of the proposed development.

Uncured concrete can kill fish and macro-invertebrates by altering the pH of the water. Concrete delivery vehicles should be precluded from washing out at or in the environs of the site, or at such location as would result in a discharge to surface waters. If bagged cement is stored on site during construction work, it should be held in a dry secure area when not in use.

One of the potential impacts of the proposed development is the discharge of silt-laden waters to fisheries streams where earth moving and excavation works are on-going. Silt can clog salmonid spawning beds, and juvenile salmonids are particularly sensitive to siltation of gill structures. Similarly, plant and macro-invertebrate communities can literally be blanketed over, and this can lead to loss or degradation of valuable habitat. It is important to incorporate best practices into construction methods and strategies to minimise discharges of silt/suspended solids to waters. IFI requests that the applicant outlines the measures proposed during construction on-site which will ensure that deleterious matter from the site will not enter the Ballyowen Stream via the on-site drainage ditch bordering the east of the development site highlighted on the map provided.

The potential for soil erosion/suspended solids generation is higher, during/after periods of prolonged rainfall. Systems should be put in place to ensure that there shall be no discharge of suspended solids or any other deleterious matter to watercourses during the construction/operational phase and during any landscaping works. Stockpiles of topsoil and associated materials arising during site development should be similarly protected. Silt traps should be constructed at locations that will intercept run-off to the drainage network. A comprehensive plan should be drawn up at the planning stage with specific measures to address the potential for silt pollution of watercourses during construction/landscaping works.

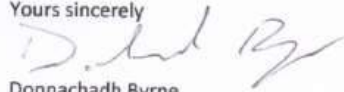
Concerns of IFI include:

- (1) IFI objects to the proposed route for the sewer line serving this development and we request that the applicant use an alternative route for this proposed sewer line.
- (2) All watercourses are maintained in their original, open & natural channel and the existing line of the watercourse must not be altered.
- (3) There shall be no in-stream works without consultation with IFI.
- (4) Systems should be put in place to ensure that there shall be no discharge of suspended solids or any other deleterious matter to watercourses during the construction phase and during any landscaping works. These systems should be adequate to deal with periods of prolonged rainfall.
- (5) Given the scale of the proposed works the pollution threat from concrete and concrete/cement washings is significant. Good housekeeping is of the utmost importance while using concrete or cement near watercourses.
- (6) Fuels, oils, greases and hydraulic fluids must be stored in bunded compounds.

- (7) Refuelling of machinery must be carried out in bunded areas.
- (8) All waste oil, empty oil containers and other hazardous wastes are disposed of in conjunction with the requirements of the Waste Management Act 1996.
- (9) All surface water from this site should be passed through a petrol/oil interceptor and be subject to attenuation prior to discharge.
- (10) All fuel & oil tanks must be adequately bunded.

IFI, in principle has no objection to the development of housing at this location. Our main concern relates to the route proposed for the sewer line which is immediately adjacent to the Ballyowen Stream for over 320metres. We request that the applicant provide clarification to the questions raised above and that they alter proposed route for the sewer line in-line with our concerns as outlined above.

Yours sincerely



Donnachadh Byrne
Senior Fisheries Environmental Officer

Please note that any further correspondence regarding this matter should be addressed to Mr. Donnachadh Byrne, Senior Fisheries Environmental Officer, Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Campus, Dublin 24



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25th September 2018

Mr. Donnachadh Byrne,
Senior Fisheries Environmental Officer,
Inland Fisheries Ireland,
3044 Lake Drive,
Citywest Business Campus,
Dublin 24.

Re: Planning Application Consultation – Creagh, Gorey, Co. Wexford

Dear Mr. Byrne,

Thank you for your response, received on the 27th of August 2018, with regards my letter outlining the proposed construction of residential units and a childcare facility at Gorey, Co. Wexford. We have taken the concerns of Inland Fisheries Ireland (IFI) into consideration and I now write to provide clarification on the questions and concerns raised in your letter, as outlined below.

1. IFI objects to the proposed route for the sewer line serving this development and we request that the applicant use an alternative route for this proposed sewer line.

As mentioned in my original letter, dated the 7th August 2018, domestic wastewater would be directed to Gorey town's public sewer which would undergo treatment at Courtown-Gorey Waste Water Treatment Plant prior to discharge. It was initially proposed to construct an underground foul sewer pipeline, approximately 1km in length, from the proposed site to the public sewer line, with a section of the proposed route, approximately 320m, running adjacent the Ballyowen Stream.

Following the concerns raised by IFI and their request for an alternative route for the proposed foul sewer line, a new pipeline route is proposed. Two layout maps, outlining the approximate locations of the Ballyowen Stream and the new proposed foul sewer pipeline are included. It should be noted, however, that this may be subject to change during the final design stage. This route, approximately 1.1km in length, follows the road network and eliminates the 320m section adjacent the Ballyowen Stream, which was noted as of serious concern by IFI. The eastern section of the pipeline route follows the same route as previously proposed, following the road network and crossing the Ballyowen Stream at the R772 roadway via directional drilling. Directional drilling would be 5-8m in length and is the only stream crossing of the proposed route. No instream works would be required as part of the proposed works.

We would welcome any comments or observations which IFI may have with regards the alternative foul sewer route proposed.

- 2. All watercourses are maintained in their original, open & natural channel and the existing line of the watercourse must not be altered.***
- 3. There shall be no in-stream works without consultation with IFI.***

There are no proposed in-stream works or alterations to the Ballyowen Stream as part of this proposed development.

It was previously noted that an area of drainage channel is located along the north-eastern section of the site, and was outlined in the layout map provided with the letter dated the 7th of August 2018. Upon further investigation, it was determined that this drainage channel extends to approximately 280m, as outlined on the map accompanying this letter, prior to joining with an existing 525mm diameter pipe, which connects with the Ballyowen Stream approximately 145m from the site. This drainage channel contains a limited volume of water, and was observed on occasions to be dry.

It is proposed to modify the existing drainage channel to accommodate the development as proposed, while also maintaining the functionality of the drainage channel to convey surface water runoff from surrounding lands. It is proposed to pipe this drainage channel using a 525mm diameter perforated pipe, surrounded by Type B filter drain material. This pipe has been sized to ensure it has the adequate hydraulic capacity to convey the 1 in 100 year (1% AEP) and calculated additional climate change volumes. It is also proposed that the first 116m section of the channel be re-profiled and vegetated in order to form a swale-type channel. A layout of the proposed works to the drainage channel are included with this letter.

Construction best practice measures for the protection of surface waters would be implemented during any works to and within the vicinity of the drainage channel, and have been outlined within the Environmental Impact Assessment Report (EIAR). These measures are also outlined in the Construction Environmental Management Plan (CEMP), which has been prepared for the development, and are further discussed in the sections below. Such measures would include the regular inspection of watercourses during works and the implementation of silt control features

where required. Cognisance would be taken of IFI's "*Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*".

- 4. *Systems should be put in place to ensure that there shall be no discharge of suspended solids or any other deleterious matter to watercourses during the construction phase and during any landscaping works. These systems should be adequate to deal with periods of prolonged rainfall.***

Construction best practice measures for the protection of surface waters would be implemented during the construction and landscaping phases of the proposed development, and have been outlined within the EIAR and CEMP prepared for the development. The recommended measures outlined in the EIAR and CEMP to reduce the potential for a deterioration in water quality due to the potential release of suspended solids are included below. Measures to reduce the potential for concrete and hydrocarbons to cause a deterioration in water quality are discussed in the following sections.

- All construction works should be confined to the development footprint;
- Regular visual inspections of nearby watercourses should be undertaken during construction works;
- Silt control features should be employed where appropriate, such as silt fencing;
- 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 surface waters. 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;
- 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.

- 5. *Given the scale of the proposed works the pollution threat from concrete and concrete/cement washings is significant. Good housekeeping is of the utmost importance while using concrete or cement near watercourses.***

Good housekeeping would be implemented throughout the construction phase of the development, with regular site inspections and visual inspections of nearby watercourses. Concrete works, including delivery and pouring, would be supervised at all times. The EIAR and

CEMP outline the measures to be implemented during the construction phase, and have been updated to include the recommendations of IFI. These measures include the following:

- Pre-cast concrete should be used where possible;
- Concrete should be poured directly into the shuttered formwork from Ready Mix Trucks where possible, reducing the potential 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;
- 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.

- 6. *Fuels, oils, greases and hydraulic fluids must be stored in bunded compounds.***
- 7. *Refuelling of machinery must be carried out in bunded areas.***
- 8. *All waste oil, empty oil containers and other hazardous wastes are disposed of in conjunction with the requirements of the Waste Management Act 1996.***
- 9. *All fuel & oil tanks must be adequately bunded.***

To reduce the potential for a deterioration in water quality due to the potential release of hydrocarbons, measures have been recommended in the EIAR and CEMP with regards the appropriate storage, handling and disposal of potentially polluting substances during the construction phase. Such measures include the following:

- All plant machinery and equipment should be maintained in good working order and regularly inspected;
- 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;
- 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*";

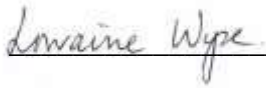
- In the event of a suspected deterioration in water quality, works should immediately cease, an investigation into the cause undertaken and the relevant NPWS and IFI personnel informed.

10. All surface water from this site should be passed through a petrol/oil interceptor and be subject to attenuation prior to discharge.

Surface water, comprised of rainwater run-off from roofs and paved areas, would be collected via a system of gullies and stormwater drains and would pass through a silt trap, Class I Bypass Separator and Attenuation System prior to connecting with the Ballyowen Stream.

We would welcome any further comments or observations which Inland Fisheries Ireland may have to highlight any particular concerns in relation to the proposed development.

Yours sincerely,



Lorraine Wyse
Panther Environmental Solutions Ltd

From: Donnachadh Byrne <Donnachadh.Byrne@fisheriesireland.ie>
Sent: Tuesday 30 October 2018 11:50
To: Lorraine (Panther Environmental Solutions Ltd.) <lorraine@pantherwms.com>
Subject: RE: Planning Application Consultation - Proposed Development at Creagh, Gorey, Co. Wexford

Hi Lorraine,

My apologies for the delay in getting back to you.

Inland Fisheries Ireland welcome the proposal to reroute the sewer line along an alternative route that does not follow the line of the Ballyowen Stream.

With regard to the proposals to modify and pipe the drainage channel along the eastern boundary of the site, we note that this channel conveys water for much of the year. IFI have no objections to the modification/piping of this channel, we do however request that these works are timed to be carried out over the Summer Months when rainfall is less likely and be undertaken only when this channel is fully dry.

IFI have long-term concerns relating to missed connections to surface water lines and ask that the difficulties in tracing discharges of deleterious matter from missed connections to these surface water drains and fisheries waters downstream be considered if any surface water drains are to be piped.

Kind regards,

Donnachadh Byrne

Senior Fisheries Environmental Officer

Iascach Intíre Éireann
Inland Fisheries Ireland

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Help Protect Ireland's Inland Fisheries

Call 1890 34 74 24 to report illegal fishing, water pollution or invasive species.

ATTACHMENT 4.2
- PHOTO LOG -



Plate 1: Improved agricultural grassland habitat (GA1).



Plate 2: Recolonising bare ground habitat (ED3) (Dec 2017).



Plate 3: Recolonising bare ground habitat (ED3) (Aug 2018).



Plate 4: Area of buildings and artificial surfaces (BL3).

Notes:

CREAGH, GOREY, CO. WEXFORD

**ATTACHMENT 4.2
PHOTO LOG**



UNITS 3 & 4
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file location:	scale:	N/A	A4
drawing status:	REPORT	datum:	N/A
		drawn:	PES
drawing no.	rev	checked:	MF
PL_18_9194	A	approved:	-
		date:	28/09/2018

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Plate 5: Area of buildings and artificial surfaces (BL3).



Plate 6: Hedgerow habitat (WL1) with some mature trees (December 2017).



Plate 7: Hedgerow habitat (WL1) with some mature trees (August 2018).



Plate 8: Treeline habitat (WL2) at north-east boundary

Notes:

CREAGH, GOREY, CO. WEXFORD

**ATTACHMENT 4.2
PHOTO LOG**



UNITS 3 & 4
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Plate 9: Example of scrub (WS1) habitat at the site.



Plate 10: Section of the drainage ditch (FW4) at the site.



Plate 11: Overgrown flower beds and borders habitat



Plate 12: Area of ED3 habitat, as the foul sewer pipeline route leaves the development site.

Notes:

CREAGH, GOREY, CO. WEXFORD

**ATTACHMENT 4.2
PHOTO LOG**



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INNOVATION
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Plate 13: BL3 habitat along the proposed pipeline route.



Plate 14: Japanese Knotweed, located in lands adjacent the proposed development site and foul sewer pipeline.

Notes:

CREAGH, GOREY, CO. WEXFORD

**ATTACHMENT 4.2
PHOTO LOG**



UNITS 3 & 4
INNOVATION
CENTRE
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drawing status:	REPORT	datum:	N/A
drawing no.	rev	drawn:	PES
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ATTACHMENT 4.3
- FULL LIST OF RECORDED FLORA -

Table 1: Full List of Recorded Flora for the Proposed Development Site.

Habitat	Common Name	Scientific Name	DAFOR Classification
Improved Agricultural Grassland (GA1)	Ryegrasses	<i>Lolium</i> spp.	D
	Dandelion	<i>Taraxacum</i> spp.	F
	Buttercup	<i>Ranunculus</i> spp.	O
	Clover	<i>Trifolium</i> spp.	O
	Daisy	<i>Bellis perennis</i>	O
	Sticky Mouse-ear	<i>Cerastium glomeratum</i>	O
	Shepherd's-purse	<i>Capsella bursa-pastoris</i>	R
Recolonising Bare Ground (ED3)	Bramble	<i>Rubus fruticosus</i>	F
	Buttercup	<i>Ranunculus</i> spp.	F
	Daisy	<i>Bellis perennis</i>	F
	Groundsel	<i>Senecio vulgaris</i>	F
	Meadow-grasses	<i>Poa</i> spp.	F
	Nettle	<i>Urtica dioica</i>	F
	Ryegrasses	<i>Lolium</i> spp.	F
	Shepherd's-purse	<i>Capsella bursa-pastoris</i>	F
	Speedwell	<i>Veronica</i> spp.	F
	Thistle	<i>Cirsium</i> spp.	F
	Bent grasses	<i>Agrostis</i> spp.	O
	Cleavers	<i>Galium aparine</i>	O
	Cock's-foot	<i>Dactylis glomerata</i>	O
	Colt's Foot	<i>Tussilago farfara</i>	O
	Cow Parsley	<i>Anthriscus sylvestris</i>	O
	Dandelion	<i>Taraxacum</i> spp.	O
	Dock	<i>Rumex</i> spp.	O
	Ferns	-	O
	Great Willowherb	<i>Epilobium hirsutum</i>	O
	Marsh Woundwort	<i>Stachys palustris</i>	O
	Nipplewort	<i>Lapsana communis</i>	O
	Perennial Sowthistle	<i>Sonchus arvensis</i>	O
	Ragwort	<i>Senecio jacobaea</i>	O
	Red Bartsia	<i>Odontites vernus</i>	O
	Ribwort Plantain	<i>Plantago lanceolata</i>	O
	Rosebay Willowherb	<i>Chamerion angustifolium</i>	O
	Scarlet Pimpernel	<i>Anagallis arvensis</i>	O
	Scentless Mayweed	<i>Tripleurospermum inodorum</i>	O
	Selfheal	<i>Prunella vulgaris</i>	O
	Short-fruited Willowherb	<i>Epilobium obscurum</i>	O
	Foxglove	<i>Digitalis purpurea</i>	R
	Rape	<i>Brassica napus</i>	R
Buildings and artificial surfaces (BL3)	Dandelion	<i>Taraxacum</i> spp.	O
	Dock	<i>Rumex</i> spp.	O
	Ryegrasses	<i>Lolium</i> spp.	O

Habitat	Common Name	Scientific Name	DAFOR Classification
	Nettle	<i>Urtica dioica</i>	O
	Various Mosses	-	O
	Sticky Mouse-ear	<i>Cerastium glomeratum</i>	R
Scrub (WS1)	Willow	<i>Salix</i> spp.	F
	Birch	<i>Betula</i> sp.	O
	Bramble	<i>Rubus fruticosus</i>	O
	Cleavers	<i>Galium aparine</i>	O
	Dandelion	<i>Taraxacum</i> spp.	O
	Dock	<i>Rumex</i> spp.	O
	Gorse	<i>Ulex europaeus</i>	O
	Hawthorn	<i>Crataegus monogyna</i>	O
	Nettle	<i>Urtica dioica</i>	O
Thistle	<i>Cirsium</i> spp.	O	
Hedgerows (WL1)	Bramble	<i>Rubus fruticosus</i>	A
	Ash	<i>Fraxinus excelsior</i>	F
	Hawthorn	<i>Crataegus monogyna</i>	F
	Ivy	<i>Hedera helix</i>	F
	Nettle	<i>Urtica dioica</i>	F
	Bracken	<i>Pteridium aquilinum</i>	O
	Cherry	<i>Prunus</i> sp.	O
	Cleavers	<i>Galium aparine</i>	O
	Dock	<i>Rumex</i> spp.	O
	Elder	<i>Sambucus nigra</i>	O
	Gorse	<i>Ulex europaeus</i>	O
	Herb-Robert	<i>Geranium robertianum</i>	O
	Hogweed	<i>Heracleum sphondylium</i>	O
	Holly	<i>Ilex aquifolium</i>	O
	Lime	<i>Tilia</i> sp.	O
Thistle	<i>Cirsium</i> spp.	O	
Treelines (WL2) – South-western Boundary	Bramble	<i>Rubus fruticosus</i>	A
	Ash	<i>Fraxinus excelsior</i>	F
	Cleavers	<i>Galium aparine</i>	F
	Gorse	<i>Ulex europaeus</i>	F
	Hawthorn	<i>Crataegus monogyna</i>	F
	Ivy	<i>Hedera helix</i>	F
	Nettle	<i>Urtica dioica</i>	F
	Oak	<i>Quercus</i> sp.	F
	Bracken	<i>Pteridium aquilinum</i>	O
	Buttercup	<i>Ranunculus</i> spp.	O
	Dandelion	<i>Taraxacum</i> spp.	O
	Dock	<i>Rumex</i> spp.	O
	Herb-Robert	<i>Geranium robertianum</i>	O
	Hogweed	<i>Heracleum sphondylium</i>	O
	Holly	<i>Ilex aquifolium</i>	O

Habitat	Common Name	Scientific Name	DAFOR Classification
Treelines (WL2) – North-eastern Boundary	Bramble	<i>Rubus fruticosus</i>	F
	Ferns	-	F
	Ivy	<i>Hedera helix</i>	F
	Oak	<i>Quercus</i> sp.	F
	Ash	<i>Fraxinus excelsior</i>	O
	Birch	<i>Betula</i> sp.	O
	Gorse	<i>Ulex europaeus</i>	O
	Hazel	<i>Corylus avellana</i>	O
	Holly	<i>Ilex aquifolium</i>	O
Nettle	<i>Urtica dioica</i>	O	
Treelines (WL2) – South-eastern Boundary	Leyland Cypress	<i>Cupressus leylandii</i>	D
	Bramble	<i>Rubus fruticosus</i>	F
	Hawthorn	<i>Crataegus monogyna</i>	O
	Ivy	<i>Hedera helix</i>	O
Drainage Ditches (FW4)	Bramble	<i>Rubus fruticosus</i>	O
	Ferns	-	O
	Ivy	<i>Hedera helix</i>	O
	Nettle	<i>Urtica dioica</i>	O
	Thistle	<i>Cirsium</i> spp.	O
	Dock	<i>Rumex</i> spp.	R
Flower Beds and Borders (BC4)	Leyland Cypress	<i>Cuprocyparis leylandii</i>	A
	Dandelion	<i>Taraxacum</i> spp.	F
	Ivy	<i>Hedera helix</i>	F
	Bramble	<i>Rubus fruticosus</i>	O
	Daisy Bush	<i>Senecio greyi</i>	O
	Herb-Robert	<i>Geranium robertianum</i>	O
	Privet	<i>Ligustrum</i> sp.	O
	Pyracantha	<i>Pyracantha</i> sp.	O
	Ragwort	<i>Senecio jacobaea</i>	O
Cabbage Palm	<i>Cordyline australis</i>	R	

Table 2: Full List of Recorded Flora for the Proposed Foul Sewer Pipeline Route

Habitat	Common Name	Scientific Name	DAFOR Classification
Buildings and artificial surfaces (BL3)	-	-	-
Recolonising Bare Ground (ED3)	Bramble	<i>Rubus fruticosus</i>	F
	Grasses (various)	-	F
	Hedge Bindweed	<i>Calystegia sepium</i>	F
	Nettle	<i>Urtica dioica</i>	F
	Willow	<i>Salix</i> spp.	F
	Buttercup	<i>Ranunculus</i> spp.	O
	Cleavers	<i>Galium aparine</i>	O
	Dock	<i>Rumex</i> spp.	O
	Great Willowherb	<i>Epilobium hirsutum</i>	O
	Ivy	<i>Hedera helix</i>	O
	Ragwort	<i>Senecio jacobaea</i>	O
	Ribwort Plantain	<i>Plantago lanceolata</i>	O
	Rosebay Willowherb	<i>Chamerion angustifolium</i>	O
	Short-fruited Willowherb	<i>Epilobium obscurum</i>	O
	Thistle	<i>Cirsium</i> spp.	O
	Gorse	<i>Ulex europaeus</i>	R
Nipplewort	<i>Lapsana communis</i>	R	

ATTACHMENT 4.4
- BCI RECORDS -

12th October 2018

Corey Canon,
Panther Environmental Solutions

RE: Grid Reference – T1496860614

Dear Corey,

Thank you for contacting Bat Conservation Ireland in relation your data request. Records for the quoted grid references within 10km radius of the grid reference listed. Data has been provided at the end of this letter with the bat records for this search area.

The seriousness of the decline of bat population across Europe has led to the establishment of conservation programmes and appropriate legislation to stabilise population numbers. The following should be considered in relation to developments or proposals that may impact on bat populations:

- a. Bats and their bat roosts are protected by Irish (Wildlife Act 1976 and 2000 Amendment) which make it an offence to willfully interfere with or destroy the breeding or resting place of these species. All species of bats are listed in Schedule 5 of the 1976 Act and therefore are subject to the provisions of Section 23. The Wildlife Amendment Act 2000 improves the conservation of both species and their habitats and gives statutory protection to Natural Heritage Areas (NHAs).
- b. Potentially the most important legislation for the protection and conservation of flora and fauna and their natural habitat is the EC Habitats Directive 1992 (EEC 92/43), which lists habitats and species of European conservation importance. This directive seeks to protect rare and vulnerable species, including all species of bats. All ten species of bat are protected with the lesser horseshoe bat listed as an Annex II species while all other bats (commonly known as vesper bats) are listed as Annex IV species.
- c. Local Planning Authorities are required to give consideration to nature conservation interests under the guidance of the SEA Directive 2001/42/EC. This directive states that the protected status afforded to bats means that planning authorities must consider their presence in order to reduce the impact of developments through mitigation measures.
- d. The National Biodiversity Plan confers general responsibilities on all participants in the development process to take into account of protected species. *“The overall objective is to secure the conservation, and where possible the enhancement, and sustainable use of biological diversity in Ireland and contribute to conservation and sustainable use of biodiversity globally”.*

Member States must achieve a favourable conservation status for bat species. This involves measures that will stabilize the population dynamics of the species, so that it maintains itself on a long-term basis as a viable component of the natural habitat. Therefore, each Member State must

prevent the natural range of the species from reducing and thus takes measures to ensure suitable habitat remain in the long-term.

There are total of nine species of bat known to roost in the Republic of Ireland: soprano pipistrelle, common pipistrelle, Nathusius' pipistrelle, Natterer's bat, Daubenton's bat, whiskered bat, lesser horseshoe bat, Leisler's bat and brown long-eared bat. Each bat species have particular ecological requirements in relation to roosting, commuting and foraging habitats. A tenth species of bat, the Brandt's bat, was recorded once in 2001 and is considered a vagrant species. In addition, a single male Greater Horseshoe bat was also recorded once in 2012 and is also considered a vagrant. The NPWS Conservation Assessment for each species can access via www.npws.ie as well as a number of documents listed below.

NPWS Conservation Status Assessment report for each of the species recorded is presented below:

- a. Natterer's bat *Myotis nattereri* (Species Code 1322)
This species is given a Favourable Status in Republic of Ireland.
- b. Whiskered bat *Myotis mystacinus* (Species Codes 1330)
This species is given a Favourable Status in Republic of Ireland.
- c. Leisler's bat *Nyctalus leisleri* (Species Code 1331)
This species is given a Favourable Status in Republic of Ireland. Ireland is the stronghold for this species and is given a status of International Importance.
- d. Daubenton's bat *Myotis daubentoni* (Species Code 1314)
This species is given a Favourable Status in Republic of Ireland.
- e. Brown long-eared bats *Plecotus auritus* (Species Code 1326)
This species is given a Favourable Status in Republic of Ireland.
- f. Common pipistrelle *Pipistrellus pipistrellus* (Species Code 1309)
This species is given a Favourable Status in Republic of Ireland.
- g. Nathusius' pipistrelle *Pipistrellus nathusii* (Species Code 1317)
This species is given a Favourable Status in Republic of Ireland.
- h. Lesser horseshoe bat *Rhinolophus hipposideros* (Species Code 1303)
This species is given a Favourable Status in Republic of Ireland.
- i. Brandt's bat *Myotis brandtii* (Species Code 1320)
This species is given a Favourable Status in Republic of Ireland.
- j. Soprano pipistrelle *Pipistrellus pygmaeus* (Species Code 1309)
This species is given a Favourable Status in Republic of Ireland.

The principal pressures on Irish bat species are as follows:

- urbanized areas (e.g. light pollution)
- bridge/viaduct repairs
- pesticides usage
- removal of hedges, scrub, forestry
- water pollution
- other pollution and human impacts (e.g. renovation of dwellings with roosts)
- infillings of ditches, dykes, ponds, pools and marshes
- management of aquatic and bank vegetation for drainage purposes
- abandonment of pastoral systems
- spieleology and vandalism
- communication routes: roads
- forestry management

**Bat Conservation Ireland Ltd., Ulex House, Drumheel,
Lisduff, Virginia, County Cavan**



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For information on population trends, distribution and threats please consult the Bat Conservation Ireland publication *Irish Bats in the 21st Century* (Roche *et al.*, 2014).

Bat Conservation Ireland officially came into existence in 2004 and now acts as the national umbrella group for all county bat groups. Bat Conservation Ireland is affiliated with the Irish Wildlife Trust and works closely with many NGOs, The Heritage Council and NPWS Conservation Rangers. Bat Conservation Ireland manages the All Ireland Bat Monitoring Programme in conjunction with Bat Conservation Trust UK and under the funding and assistance of the Heritage Council, NPWS (Department of Environment, Heritage and Local Government), EHS (Department of Environment Northern Ireland) and Waterways Ireland. We provide information on the conservation of bats to all public enquires and will assist the general public in their needs in relation to bats. The group is also involved in providing training in the use of bat detectors through organising bat detector workshops. The erection of bat boxes, field surveys and the collection of data on bat distribution in the country are on-going group projects.

If you have any further queries, please do not hesitate to contact me.

Yours sincerely,

Dr Tina Aughney

Dr Tina Aughney
Bat Conservation Ireland

Conditions of data usage:

<input type="checkbox"/> Data is provided at a spatial level deemed appropriate for the sensitivity of the data. Only 4 figures grid reference should be reported in public reports for roost sites with no name or address of the roost site listed.
<input type="checkbox"/> Data is supplied for consultation purpose. The lack of records for a particular area does not mean that there are no bats present.

Data are not passed to a third party.

Data are supplied only for the uses or specific analyses stated on the Data Sharing Agreement. A further form must be completed for any uses additional to those originally described.

The respective project will be acknowledged wherever the data provided are used, in publications, reports, papers etc. as follows: "Bat Data from XXX project (e.g. BATLAS 2010) was supplied by Bat Conservation Ireland" or similar wording depending on the dataset. BCireland will specify a wording if a different one is required to the above.

Raw data are not to be given verbatim in any presentation, publication, report etc. without prior written permission from Bat Conservation Ireland.

No data will be published on the internet without prior written permission from Bat Conservation Ireland.

Up to four copies of any report or publication will be supplied, free of charge, to Bat Conservation Ireland. In the case of confidential reports, only relevant sections using the bat data provided will be required. This requirement may be waived under certain conditions, e.g. student dissertations, at the discretion of the project partners.

Permission to use the data supplied expires 12 months after approval, unless otherwise agreed. All copies of the data, including those on database, should be destroyed/ removed at this time.

Failure by the User to abide by the conditions above may jeopardise the release of data in future requests. Project partners may impose further conditions of use of the data or substitutions for them where specific exemptions are agreed. In such cases, applicants will be notified before data are released.

Additional bat data collated by the surveying bodies should be submitted to BCireland to include on the database thereby ensuring the continued high level of bat data available for future datasets.

Whilst every effort is made to ensure data held are correct, Bat Conservation Ireland cannot accept responsibility for any errors in data provided. We will always seek to provide the most recent data available. Bat Conservation Ireland cannot be held responsible for any misuse or misrepresentation of the data supplied.

Consultation Documents:

Anon (2002) National Biodiversity Plan. Department of Arts, Heritage, Gealtacht and the Islands.

Anon (2008) The status of EU protected habitats and species in Ireland: Conservation status in Ireland of habitats and species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.

Kelleher, C. and Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Limpens, H. J. G. A., Twist, P., & Veenbaas, G. 2005 Bats and road construction. *Brochure about bats and the ways in which practical measures can be taken to observe the legal duty of care for bats in planning, constructing, reconstructing and managing roads.* Rijkwaterstaat, Dienst Weg-en Waterbouwkunde, Delft, the Netherlands and the Vereniging voor Zoogdierkunde en Zoogdierbescherming, Arnhem, The Netherlands. 24 pages. DWW-2005-033.

McAney, K. (2006) A conservation plan for Irish vesper bats. Irish Wildlife Manuals, No. 20. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

National Roads Authority (2004 & 2009) *Guidelines for assessment of ecological impacts of National road schemes.* NRA, Dublin.

National Roads Authority (2006) *Best Practice Guidelines for the Conservation of Bats in the planning of National Road Schemes.* NRA, Dublin.

National Roads Authority (2006) *Guidelines for the Treatment of Bats during the construction of National Road Schemes.* NRA, Dublin.

NPWS (2009) Threat Response Plan: Vesper Bats (2009-2011). National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland

Roche, N., Aughney, T., Marnell, F. and Lundy, M. (2014) *Irish Bats in the 21st Century.* Cavan: Bat Conservation Ireland.

Whilde, A. 1993 *Threatened mammals, birds, amphibians and fish in Ireland. Irish Red Data Book 2: Vertebrates.* Belfast: HMSO.

Bat Conservation Ireland Database

The BCireland Database contains the following datasets:

a. Car-based Bat Monitoring Scheme 2003-2017

The Car-Based Bat Monitoring Scheme was first piloted in 2003 and targets the two most abundant pipistrelle species (common and soprano pipistrelles) and the Leisler's bat. The car based survey makes use of a broadband bat detector which picks up a range of ultrasound which can be recorded in the field and analysed post-survey. Car survey teams survey pre-mapped routes within 30km squares (28 designated squares) across the island of Ireland. This monitoring scheme is jointly funded by NPWS and NIEA.

b. All Ireland Daubenton's Bat Waterways Scheme 2006-2015

This scheme follows a survey methodology devised by the Bat Conservation Trust (BCT UK). Narrow band, heterodyne detectors are used by volunteers who conduct a 1km river/canal survey on the activity level of Daubenton's bat at chosen waterways. Surveyors count the number 'bat passes' of this bat species for 4 minutes at each of the ten fixed points on linear waterways across the island of Ireland. This monitoring scheme is jointly funded by NPWS and NIEA.

c. Brown Long-eared Bat Roost Monitoring Scheme 2007-2018

This scheme concentrates on counts of brown long-eared bats at specified roosts in the Republic of Ireland only. The roost survey protocol involves at least two counts per annum (mid-May to August) using three potential survey methods depending on the structure, access and location of bats within, and emerging from, the roost. This monitoring scheme is funded by NPWS.

d. BATLAS 2010

The BATLAS 2010 survey of the Republic of Ireland and Northern Ireland was conducted during two field survey years (2008 and 2009) to ascertain the distribution of four targeted bat species. The targeted species were; common and soprano pipistrelle, Daubenton's and Leisler's bats. This survey was funded by The Heritage Council, NPWS and NIEA.

e. Landscape conservation for Irish bats & species specific roosting characteristics

Using the 2000-2009 database of species records, collated and maintained by Bat Conservation Ireland, analysis of the habitat and landscape associations, using Corine, of all species that commonly occur in Ireland namely; common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, Leisler's bat, Daubenton's bat, Natterer's bat, whiskered bat, brown long-eared bat and the lesser horseshoe bat, was undertaken. Through this project BCireland aims to provide a guide to the key habitat associations of bats to help understand their habitat requirements in Ireland. This model is available as a GIS shape-file on a county by county basis.

f. Ad Hoc Bat Records

Ad Hoc Records submitted by various groups including Bat Groups, BCireland members, Ecological Consultants, etc. 2000-2013 are compiled on the BCireland database. BCireland accepts and verifies bat records from known groups and individuals. Such records consist of roost and bat detector records.

RESULTS (12/10/2018)

ROOSTS (12)

Name	Grid reference	Address	Species
Private	T0954	Camolin, Co. Wexford	Myotis spp., Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Plecotus auritus
Private	T1054	Camolin, Co. Wexford	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
Private	T0552	Camolin, County Wexford	Plecotus auritus
Private	T1255	Clogh, Co. Wexford.	Pipistrellus pygmaeus, Plecotus auritus
Private	T1759	Gorey, Co. Wexford	Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Plecotus auritus
Inch Church, Inch, Co. Wexford.	T1966	Inch, Co. Wexford.	Myotis nattereri, Myotis spp., Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Plecotus auritus
Leskinfere Church	T1256	Clogh, Co. Wexford	Myotis nattereri, Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
Private	T1758	Gorey, Co. Wexford	Pipistrellus pygmaeus
Private	T1658	Gorey, Co. Wexford.	Myotis daubentonii, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
Private	T2070	Arklow, County Wicklow	Nyctalus leisleri
Private	T1255	Clogh, County Wexford	Unidentified bat
Private	T1664	Gorey, Co. Wexford	Pipistrellus pipistrellus (45kHz)

TRANSECTS (13)

Name	Grid reference start	Species
Laraheen Transect	T133642	Myotis daubentonii, Pipistrellus spp. (45kHz/55kHz), Unidentified bat
Margerrys Bridge Transect	T1112159219	Myotis daubentonii, Unidentified bat
T05 (12) 2003-	T072598	Myotis spp., Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus spp. (45kHz/55kHz)
T05 (13) 2003-	T061572	Myotis spp., Nyctalus leisleri, Pipistrellus nathusii, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz),

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		Plecotus auritus, Unidentified bat
T05 (16) 2003-2008	T069520	Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
T05 (17) 2003-2008	T111532	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz), Plecotus auritus
T05 (18) 2003-2008	T136557	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz)
T05 (19) 2003-2008	T148541	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz)
T05 (20) 2003-2008	T184544	Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz)
T05 (5) 2003-	T111687	Myotis spp., Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz), Unidentified bat
T05 (6) 2003-	T153661	Myotis spp., Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz), Unidentified bat
T05 (7) 2003-	T112643	Myotis spp., Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz), Plecotus auritus, Unidentified bat
T05 (8) 2003-	T076664	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz)

AD-HOC OBSERVATIONS (25)

Survey	Grid reference	Date	Species
BATLAS 2010	T1672966957	2008-09-01	Pipistrellus pygmaeus
BATLAS 2010	T1521266059	2008-09-01	Myotis nattereri, Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
BATLAS 2010	T0856764571	2008-09-01	Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
BATLAS 2010	T0946957670	2008-08-06	Myotis daubentonii, Pipistrellus pygmaeus, Plecotus auritus
BATLAS 2010	T170560	2009-06-01	Myotis daubentonii, Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
BATLAS 2010	T2412466459	2008-08-06	Pipistrellus pygmaeus
BATLAS 2010	T1639466730	2008-09-01	Pipistrellus pipistrellus (45kHz), Plecotus auritus
BATLAS 2010	T1217064143	2008-09-01	Myotis daubentonii
BATLAS 2010	T0931657772	2008-08-06	Pipistrellus pipistrellus (45kHz)
BATLAS 2010	T0540867382	2008-09-01	Pipistrellus pipistrellus (45kHz)
BATLAS 2010	T2251964363	2008-08-06	Myotis daubentonii, Pipistrellus pipistrellus (45kHz)

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EIA survey	T112531	2008-07-09	Pipistrellus spp. (45kHz/55kHz)
EIA survey	T103548	2003-07-09	Myotis nattereri, Nyctalus leisleri, Pipistrellus pygmaeus
EIA survey	T221700	2005-07-12	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz)
EIA survey	T178593	2005-07-25	Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
EIA survey	T216680	2006-03-02	Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
EIA survey	T157579	2005-07-15	Myotis daubentonii, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
EIA survey	T201676	2005-07-13	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
EIA survey	T122557	2005-07-13	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
EIA survey	T1463	2008-09-01	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
EIA survey	T179594	2005-07-25	Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
EIA survey	T135572	2005-07-14	Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
EIA survey	T202664	2005-07-12	Myotis daubentonii, Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
EIA survey	T102547	2005-07-13	Myotis nattereri, Nyctalus leisleri, Pipistrellus pygmaeus
NPWS Calls	T2256470324	2008-10-16	Plecotus auritus

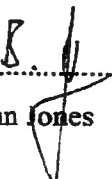
APPENDIX B – LAND AND SOILS

APPENDIX 5.1

S.I. Ltd Contract No: 4681

**Site Investigation for a Proposed
Development at Ballyowen,
Ramsfortpark, Gorey.
Interpretative Report**

Prepared by:


.....
Brian Jones

Issue Date:	19/12/2007
Status	Final
Revision	0

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List of Appendices

Appendix I

Borehole Records and Notes on Cable Percussion Boring

Appendix II

Trial Pit Records and Photographs

Appendix III

Exploratory Hole Location Plan

1.0 Preamble

On the instructions of Mr Alan Walsh of Amil Properties Ltd, a ground investigation was carried out by *Site Investigations Ltd* over the period 19/07/2007 to 31/07/2007 for a proposed single and two storey development at Ballyowen, Ramsfortpark, Gorey.

2.0 Scope

The scope of the site investigation was to investigate subsurface ground conditions by means of cable percussion boreholes and trial pits.

3.0 Exploratory Hole Locations

The locations of all the site works are shown on the Exploratory Hole Location Plan in Appendix III.

4.0 Site Works

4.1 General

The ground investigation and sampling was carried out in accordance with BS5930:1999 - 'British Standard Code of Practice for Site Investigation', and BS1377:1990 - 'British Standard Methods of Test for Soils for Civil Engineering Purposes.

4.2 Boreholes

Cable percussion boreholes were sunk at ten locations.

The borehole records and notes on the methodology and limitations of cable percussion boring are presented in Appendix I.

4.3 Trial Pits

Nine number trial pits were excavated. The trial pit logs and photographs are presented in Appendix II.

5.0 Revealed Ground Conditions

A generalised summary of the ground profile is given below. Reference should be made to the individual borehole records in Appendix I and trial pit records in Appendix II for the full strata information at specific locations.

- MADE GROUND
- Stiff brown sandy gravelly CLAY with some cobbles.

6.0 Groundwater

Groundwater levels and/or seepage into the boreholes and trial pits at the time of excavation are noted on the logs in Appendices I and II.

It should be noted that waterlevels noted on the trial pit logs do not generally give an accurate indication of the actual groundwater conditions as the trial pit is rarely left open for sufficient time for the waterlevel to reach equilibrium.

Also, waterlevels and waterstrikes noted on the borehole logs during drilling do not generally give an accurate indication of the actual groundwater conditions as the borehole is rarely left standing at the relevant depth for a sufficient time for the waterlevel to reach equilibrium, a permeable stratum may have been sealed off by the borehole casing, or water may have been added to facilitate progress. (Perforated standpipe or piezometer installations and associated waterlevel monitoring are required to provide more accurate information regarding groundwater conditions).

Furthermore, groundwater levels vary with time of year, rainfall, nearby construction and other factors.

7.0 Recommendations and Conclusions

7.1 General (non project specific)

The recommendations given and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between the exploratory hole locations or below the final level of excavation, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for conditions which have not been revealed by the exploratory holes. It is further recommended that all bearing surfaces when excavated should be inspected to verify the information given in this report.

Excavated surfaces in clay strata should be kept dry to avoid softening prior to foundation placement. Foundations should always be taken to a minimum depth of 0.50mBGL to avoid the effects of frost action and possible seasonal shrinkage/swelling.

If it is intended that on-site materials are to be used as fill, then the necessary laboratory testing should be specified by the Client to confirm the suitability. Also, relevant lab testing should be specified where stability of side slopes to excavations is a concern.

7.2 Foundations

It is recommended that the foundations are taken down to the stratum of stiff brown sandy gravelly CLAY with some cobbles which was encountered at a depth of approximately 1.0m below existing ground level across the site. An allowable bearing capacity of 125kN/m² has been calculated for this stratum. The ground strength remains fairly consistent with depth and foundations placed in areas where cut is necessary to level the site will therefore encounter soil of a similar or possibly greater allowable bearing capacity.

Appendix I

Borehole Records and Notes on Cable Percussion Boring

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey

HOLE ID: BH01

Client: Amil Properties Ltd.

Elevation: m.O.D.

Consultant:

Co-ordinates: E N

Site Address:

Ballyowen Ramsfortpark, Gorey, Co. Wexford

Hole Diameter: 200 mm

Boring Commenced: 19/07/2007

Drilled by: T. Tindel

Boring Completed: 19/07/2007

Logged by: E. Durero

Type of Boring: Cable Percussion

Sheet 1 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
Hardcore fill	0.00	XXXX							
Stiff brown sandy gravelly CLAY with cobbles.	0.20	(Symbol)							
	1.0	(Symbol)		B C(16)	1.00 1.00	7468			
	2.0	(Symbol)		B C(17)	2.00 2.00	7469			
	3.0	(Symbol)		B C(20)	3.00 3.00	7470			
	4.0	(Symbol)		B C(17)	4.00 4.00	7471			
	5.0	(Symbol)		B C(16)	5.00 5.00	7472			
	6.0	(Symbol)		B C(24)	6.00 6.00	7473			
	7.0	(Symbol)		B C(31)	7.00 7.00	7474			
	8.0	(Symbol)		B C(22)	8.00 8.00	7475			
	9.0	(Symbol)		B C(26)	9.00 9.00	7476			

BOREHOLE 4651BH(GP) COREHOLE GDT 18/12/07

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
 Hole terminated at scheduled deep.
 Water added to assist drilling.
 Chiselling from 1.70m to 1.90m for 15 mins., from 3.50m to 3.60m for 20mins. and 7.40m to 7.50m for 25mins.

Key to Symbols	
B	Bulk Disturbed Sample
D	Small disturbed sample
W	Water sample
U(9)	Undisturbed sample (drive blows)
S(9)	Standard Penetration Test(N value)
C(9)	Cone Penetration Test(N value)
W _{st}	Waterstrike depth
W ₂₀	Water level depth 20mins after strike
17.20(E)	Depth to water (E)nd of shift
12.20(S)	Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey **HOLE ID:** BH01

Client:	Amil Properties Ltd.	Elevation:	m.O.D.
Consultant:		Co-ordinates	E N
Site Address:	Ballyowen Ramsfortpark, Gorey, Co. Wexford	Hole Diameter:	200 mm
Boring Commenced:	19/07/2007	Drilled by:	T. Tindel
Boring Completed:	19/07/2007	Logged by:	E. Durero
Type of Boring:	Cable Percussion		

Sheet 2 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
	10.0	Hole End		B	10.00	7478	10.00	19/07/2007	dry(E)
	11.0								
	12.0								
	13.0								
	14.0								
	15.0								
	16.0								
	17.0								
	18.0								
	19.0								
	20.0								

BOREHOLE 4881BH.GPJ COREHOLE.GDT 18/12/07

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
 Hole terminated at scheduled deep.
 Water added to assist drilling.
 Chiseling from 1.70m to 1.90m for 15 mins., from 3.50m to 3.60m for 20mins. and 7.40m to 7.50m for 25mins.

Key to Symbols	
B Bulk Disturbed Sample	S(9) Standard Penetration Test(N value)
D Small disturbed sample	C(9) Cone Penetration Test(N value)
W Water sample	W ₂₀ Waterstrike depth
U(9) Undisturbed sample (drive blows)	W ₂₀₍₂₀₎ Water level depth 20mins after strike
	17.20(E) Depth to water (E)nd of shift
	12.20(S) Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey

HOLE ID: BH02

Client: Amil Properties Ltd.

Elevation: m.O.D.

Consultant:

Co-ordinates: E N

Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford

Drill Diameter: 200 mm

Boring Commenced: 25/07/2007

Drilled by: P. Tindel

Boring Completed: 26/07/2007

Logged by: E. Durero

Type of Boring: Cable Percussion

Sheet 1 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
MADE GROUND(Concrete above hardcore.)	0.0	0.00							
Stiff brown sandy gravelly CLAY with cobbles.	1.0	1.00		B C(19)	1.00 1.00	7240			
	2.0			B C(18)	2.00 2.00	7241		25/07/2007	2.40(20)
	3.0			B C(21)	3.00 3.00	7242		25/07/2007	2.90
	4.0			B C(19)	4.00 4.00	7243			
	5.0			B C(21)	5.00 5.00	7244			
	6.0			B C(23)	6.00 6.00	7245			
	7.0			B C(23)	7.00 7.00	7246	6.70	25/07/2007	-(E)
	8.0			B C(24)	8.00 8.00	7247	6.70	26/07/2007	-(S)
	9.0			B C(23)	9.00 9.00	7248			

BOREHOLE 4881BH.GPJ COREHOLE.GDT 18/12/07

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
Hole terminated at scheduled deep.
Water: sank at 2.90m., water sealed off at 3.5m.
Chiseling from 2.40m to 2.50m for 15mins., from 3.30m to 3.40m for 15mins., from 7.40m to 7.50m for 15 mins., from 8.20m to 8.30m for 15mins. and from 8.70m to 8.80m for 15mins.

Key to Symbols	
B	Bulk Disturbed Sample
D	Small disturbed sample
W	Water sample
U(B)	Undisturbed sample (drive blows)
S(θ)	Standard Penetration Test(N value)
C(θ)	Cone Penetration Test(N value)
z ₁	Waterstrike depth
z ₂	Water level depth 20mins after strike
17.20(E)	Depth to water (E)nd of shift
12.20(S)	Depth to water (S)tart of shift

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey **HOLE ID:** BH02

Client: Amil Properties Ltd.	Elevation: m.O.D.
Consultant:	Co-ordinates: E N
Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford	Hole Diameter: 200 mm
Boring Commenced: 25/07/2007	Drilled by: P. Tindel
Boring Completed: 26/07/2007	Logged by: E. Durero
Type of Boring: Cable Percussion	

Sheet 2 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
	10.0			B C(21)	10.00 10.00	7249	10.00	26/07/2007	(E)
	11.0								
	12.0								
	13.0								
	14.0								
	15.0								
	16.0								
	17.0								
	18.0								
	19.0								
	20.0								

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
Hole terminated at scheduled deep.
Water strike at 2.90m., water sealed off at 3.5m.
Chiselling from 2.40m to 2.50m for 15mins., from 3.30m to 3.40m for 15mins.,
from 7.40m to 7.50m for 15 mins., from 8.20m to 8.30m for 15mins. and from
8.70m to 8.80m for 15mins.

Key to Symbols	
B Bulk Disturbed Sample	S(9) Standard Penetration Test(N value)
D Small disturbed sample	C(9) Cone Penetration Test(N value)
W Water sample	Σ Waterstrike depth
U(9) Undisturbed sample (drive blows)	Σ Water level depth 20mins after strike
	17.20(E) Depth to water (E)nd of shift
	12.20(S) Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE 481BH.GPJ COREHOLE.GDT 18/12/07

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey

HOLE ID: BH03

Client: Amil Properties Ltd.

Elevation: m.O.D.

Consultant:

Co-ordinates: E N

Site Address:

Ballyowen Ramsfortpark, Gorey, Co. Wexford

Hole Diameter: 200 mm

Boring Commenced: 24/07/2007

Drilled by: P. Tindel

Boring Completed: 25/07/2007

Logged by: E. Durero

Type of Boring: Cable Percussion

Sheet 1 of 1

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
MADE GROUND(Concrete above hardcore.)	0.00	[Cross-hatch pattern]							
Stiff brown sandy gravelly CLAY.	0.50	[Stippled pattern]		B	0.50	7231			
	1.00			B C(17)	1.00 1.00	7232			
	2.00			B C(18)	2.00 2.00	7233			
	2.50			B	2.50	7234			
	3.00			B C(19)	3.00 3.00	7235			
Stiff brown sandy gravelly CLAY with cobbles.	3.50	[Stippled pattern with circles]					3.50	24/07/2007	(E)
	4.00			W C(26)	3.90 4.00	7237 7236	3.50	25/07/2007	(S)
	4.50			B	4.50	7238			
	5.00			B C(27)	5.00 5.00	7239			
	6.00			B	6.00	7240	6.10	25/07/2007	(E)
Obstruction, presumed boulders.	6.10	[Cross-hatch pattern]							
	6.10	[Hole End symbol]							
	7.00								
	8.00								
	9.00								
	10.00								

BOREHOLE 4681BH.GPJ COREHOLE.GDT 18/12/07

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
 Hole terminated at scheduled deep.
 Chiselling from 3.10m to 3.20m for 30mins., 4.40m to 4.60m for 15mins., 5.10m to 5.20m for 30mins. and 6.0m to 6.10m for 1hr.

Key to Symbols	
B Bulk Disturbed Sample	S(8) Standard Penetration Test(N value)
D Small disturbed sample	C(9) Cone Penetration Test(N value)
W Water sample	W Waterstrike depth
U(9) Undisturbed sample (drive blows)	W Water level depth 20mins after strike
	17.20(E) Depth to water (E)nd of shift
	12.20(S) Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey

HOLE ID: **BH04**

Client: Amil Properties Ltd.

Elevation: m.O.D.

Consultant:

Co-ordinates E N

Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford

Bore Diameter: 200 mm

Boring Commenced: 19/07/2007

Drilled by: T. Tindel

Boring Completed: 20/07/2007

Logged by: E. Durero

Type of Boring: Cable Percussion

Sheet 1 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
MADE GROUND(Sandy gravelly clay with cobbles and inclusions of bricks.)	0.00								
Stiff brown sandy gravelly CLAY with cobbles.	0.40								
	1.00			B C(18)	1.00 1.00	7479			
	2.00			B C(15)	2.00 2.00	7480			
	3.00			B C(17)	3.00 3.00	7481			
	4.00			B C(20)	4.00 4.00	7482			
	5.00			B C(19)	5.00 5.00	7483	5.00	19/07/2007 20/07/2007	dry(E) dry(S)
	6.00			B C(19)	6.00 6.00	7484			
	7.00			B C(18)	7.00 7.00	7485			
	8.00			B C(21)	8.00 8.00	7486			
	9.00			B C(19)	9.00 9.00	7487			

BOREHOLE 4681BH GP J COREHOLE GDT 03/03/08

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
 Hole terminated at scheduled deep.
 Water added to assist drilling.
 Chiselling from 0.20m to 0.40m for 30mins., 2.70m to 2.80m for 15mins., 4.5m to 4.60m for 15 mins., 6.7m to 6.9m for 30mins., 9.6m to 9.8m for 30mins.

<p>B Bulk Disturbed Sample D Small disturbed sample W Water sample U(9) Undisturbed sample (drive blows)</p>	<p style="text-align: center;">Key to Symbols</p> <p>S(9) Standard Penetration Test(N value) C(9) Cone Penetration Test(N value) Waterstrike depth Water level depth 20mins after strike Depth to water (E)nd of shift Depth to water (S)tart of shift</p>
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BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey

HOLE ID: BH04

Client: Amil Properties Ltd.

Elevation: m.O.D.

Consultant:

Co-ordinates: E N

Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford

Hole Diameter: 200 mm

Boring Commenced: 19/07/2007

Drilled by: T. Tindel

Boring Completed: 20/07/2007

Logged by: E. Durero

Type of Boring: Cable Percussion

Sheet 2 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
	10.0	Hole End		B	10.00	7488	10.00	20/07/2007	dry(E)
	11.0								
	12.0								
	13.0								
	14.0								
	15.0								
	16.0								
	17.0								
	18.0								
	19.0								
	20.0								

BOREHOLE 4881BH.GPJ COREHOLE GDT 03/03/08

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
Hole terminated at scheduled deep.
Water added to assist drilling.
Chiselling from 0.20m to 0.40m for 30mins., 2.70m to 2.80m for 15mins, 4.5m to 4.60m for 15 mins, 8.7m to 8.9m for 30mins, 9.6m to 9.8m for 30mins.

<u>Key to Symbols</u>	
B	Bulk Disturbed Sample
D	Small disturbed sample
W	Water sample
U(9)	Undisturbed sample (drive blows)
S(9)	Standard Penetration Test(N value)
C(9)	Cone Penetration Test(N value)
W ₁₀₀	Waterstrike depth
Z ₂₀₀	Water level depth 20mins after strike
17.20(E)	Depth to water (E)nd of shift
12.20(S)	Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey

HOLE ID: **BH05**

Client: Amil Properties Ltd.

Elevation: m.O.D.

Consultant:

Co-ordinates E N

Site Address:

Ballyowen Ramsfortpark, Gorey, Co. Wexford Hole Diameter: 200 mm

Boring Commenced: 20/07/2007

Drilled by: T. Tindel

Boring Completed: 20/07/2007

Logged by: E. Durero

Type of Boring: Cable Percussion

Sheet 1 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
MADE GROUND(Sandy gravelly clay with cobbles and inclusions of woods and bricks.)	0.00								
Stiff sandy gravelly CLAY with cobbles.	0.30								
	1.0			B C(19)	1.00 1.00	7489			
	2.0			B C(21)	2.00 2.00	7490			
	3.0			B C(18)	3.00 3.00	7491			
	4.0			B C(16)	4.00 4.00	7492			
	5.0			B C(19)	5.00 5.00	7493			
	6.0			B C(19)	6.00 6.00	7494			
	7.0			B C(16)	7.00 7.00	7495			
	8.0			B C(16)	8.00 8.00	7496			
	9.0			B C(16)	9.00 9.00	7497			
	10.0								

BOREHOLE 4681BH.GPJ COREHOLE.GDT 03/03/08

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
 Hole terminated at scheduled deep
 Water added to assist drilling.
 Chiselling from 0.20m to 0.40m for 30mins. 2.60m to 2.70m for 15mins. and 5.5m to 5.70m for 15 mins.

Key to Symbols	
B	Bulk Disturbed Sample
D	Small disturbed sample
W	Water sample
U(9)	Undisturbed sample (drive blows)
S(9)	Standard Penetration Test(N value)
C(9)	Cone Penetration Test(N value)
W	Waterstrike depth
W	Water level depth 20mins after strike
17.20(E)	Depth to water (E)nd of shift
12.20(S)	Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey **HOLE ID:** BH05

Client:	Amil Properties Ltd.	Elevation:	m.O.D.
Consultant:		Co-ordinates	E N
Site Address:	Ballyowen Ramsfortpark, Gorey, Co. Wexford	Hole Diameter:	200 mm
Boring Commenced:	20/07/2007	Drilled by:	T. Tindel
Boring Completed:	20/07/2007	Logged by:	E. Durero
Type of Boring:	Cable Percussion		

Sheet 2 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
	10.0	Hole End		B	10.00	7495	10.00	20/07/2007	dry(E)
	11.0								
	12.0								
	13.0								
	14.0								
	15.0								
	16.0								
	17.0								
	18.0								
	19.0								
	20.0								

BOREHOLE 46818H.GPJ COREHOLE.GDT 03/03/08

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
 hole terminated at scheduled deep.
 Water added to assist drilling.
 Chiselling from 0.20m to 0.40m for 30mins., 2.60m to 2.70m for 15mins. and 5.5m to 5.70m for 15 mins.

		Key to Symbols	
B	Bulk Disturbed Sample	S(9)	Standard Penetration Test(N value)
D	Small disturbed sample	C(9)	Cone Penetration Test(N value)
W	Water sample	W	Watershrike depth
U(9)	Undisturbed sample (drive blows)	W	Water level depth 20mins after strike
		17.20(E)	Depth to water (E)nd of shift
		12.20(S)	Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey

HOLE ID: BH06

Client: Amil Properties Ltd.

Elevation: m.O.D.

Consultant:

Co-ordinates: E N

Site Address:

Ballyowen Ramsfortpark, Gorey, Co. Wexford

Core Diameter: 200 mm

Boring Commenced: 22/07/2007

Drilled by: T. Tindel

Boring Completed: 22/07/2007

Logged by: E. Durero

Type of Boring: Cable Percussion

Sheet 1 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
MADE GROUND(Clayey sandy gravel with inclusions of bricks and concrete blocks.)	0.00	[Cross-hatch pattern]							
Stiff brown sandy gravelly CLAY with cobbles.	0.60	[Dotted pattern]							
	1.00	[Dotted pattern]		B C(15)	1.00 1.00	7201			
	2.00	[Dotted pattern]		B C(16)	2.00 2.00	7202			
	3.00	[Dotted pattern]		B C(15)	3.00 3.00	7203			
	4.00	[Dotted pattern]		B C(21)	4.00 4.00	7204			
	5.00	[Dotted pattern]		B C(19)	5.00 5.00	7205			
	6.00	[Dotted pattern]		B C(20)	6.00 6.00	7206			
	7.00	[Dotted pattern]		B C(21)	7.00 7.00	7207			
	8.00	[Dotted pattern]		B C(19)	8.00 8.00	7208			
9.00	[Dotted pattern]		B C(19)	9.00 9.00	7209				
	10.00								

BOREHOLE 4681BH.GPJ COREHOLE.GDT 03/03/08

Remarks: (Note: Stratum bands <200mm are not indicated piecemeal)
 Hole terminated at scheduled deep.
 Water added to assist drilling.
 Chiselling from 0.40m to 0.50m for 30mins., 1.60m to 1.80m for 30mins., 3.7m to 3.80m for 15 mins. and 5.80m to 6.0m for 15mins.

Key to Symbols	
B	Bulk Disturbed Sample
D	Small disturbed sample
W	Water sample
U(9)	Undisturbed sample (drive blows)
S(9)	Standard Penetration Test(N value)
C(9)	Cone Penetration Test(N value)
W	Waterstrike depth
W	Water level depth 20mins after strike
17.20(E)	Depth to water (E)nd of shift
12.20(S)	Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey

HOLE ID: **BH06**

Client: Amil Properties Ltd.

Elevation: m.O.D.

Consultant:

Co-ordinates E N

Site Address:

Ballyowen Ramsfortpark, Gorey, Co. Wexford Hole Diameter: 200 mm

Boring Commenced: 22/07/2007

Drilled by: T. Tindel

Boring Completed: 22/07/2007

Logged by: E. Durero

Type of Boring: Cable Percussion

Sheet 2 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
	10.0	Hole End		B	10.00	7210	10.00	22/07/2007	dry(E)
	11.0								
	12.0								
	13.0								
	14.0								
	15.0								
	16.0								
	17.0								
	18.0								
	19.0								
	20.0								

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
Hole terminated at scheduled deep.

Water added to assist drilling.

Chiselling from 0.40m to 0.50m for 30mins., 1.60m to 1.80m for 30mins., 3.7m to 3.80m for 15 mins. and 5.80m to 6.0m for 15mins.

Key to Symbols

- | | |
|---------------------------------------|--|
| B Bulk Disturbed Sample | S(9) Standard Penetration Test(N value) |
| D Small disturbed sample | C(9) Cone Penetration Test(N value) |
| W Water sample | W Waterstrike depth |
| U(9) Undisturbed sample (drive blows) | Z Water level depth 20mins after strike |
| | 17.20(E) Depth to water (E)nd of shift |
| | 12.20(S) Depth to water (S)tart of shift |

Site Investigations Ltd

BOREHOLE_4681BH.GPJ COREHOLE.GDT 03/03/08

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey **HOLE ID:** BH07

Client: Amil Properties Ltd.	Elevation: m.O.D.
Consultant:	Co-ordinates: E N
Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford	Hole Diameter: 200 mm
Boring Commenced: 23/07/2007	Drilled by: P. Tindel
Boring Completed: 24/07/2007	Logged by: E. Durero
Type of Boring: Cable Percussion	

Sheet 1 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
MADE GROUND(Concrete over hardcore.)	0.0 - 0.00								
Stiff brown slightly sandy gravelly CLAY with cobbles.	1.0 - 1.00			B C(19)	1.00 1.00	7221			
	2.0 - 2.00			B C(18)	2.00 2.00	7222			
	3.0 - 3.00			B C(20)	3.00 3.00	7223	3.00 3.00	23/07/2007 24/07/2007	dry(E) dry(S)
	4.0 - 4.00			B C(20)	4.00 4.00	7224		24/07/2007 24/07/2007	3.90(20) 4.10
	5.0 - 5.00			B C(20)	5.00 5.00	7225			
	6.0 - 6.00			B C(18)	6.00 6.00	7226			
Stiff brown slightly sandy gravelly CLAY.	7.0 - 7.00			B C(17)	7.00 7.00	7227			
	8.0 - 8.00			B C(24)	8.00 8.00	7228			
	9.0 - 9.00			B C(21)	9.00 9.00	7229			

BOREHOLE 4681BH.GPJ COREHOLE.GDT 18/12/07

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
Hole terminated at scheduled deep.
Water strike at 4.10m., sealed off at 5.40m.
Chiselling from 1.30m to 1.40m for 15mins., 3.60m to 3.70m for 15mins., 4.40m to 4.50m for 15 mins., 6.10m to 6.20m for 15mins., and 7.30m to 7.40m for 15mins.

Key to Symbols	
B	Bulk Disturbed Sample
D	Small disturbed sample
W	Water sample
U(θ)	Undisturbed sample (drive blows)
S(θ)	Standard Penetration Test(N value)
C(θ)	Cone Penetration Test(N value)
∇	Waterstrike depth
∇ ₂₀	Water level depth 20mins after strike
17.20(E)	Depth to water (E)nd of shift
12.20(S)	Depth to water (S)tart of shift

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey **HOLE ID:** BH07

Client:	Amil Properties Ltd.	Elevation:	m.O.D.
Consultant:		Co-ordinates	E N
Site Address:	Ballyowen Ramsfortpark, Gorey, Co. Wexford	Hole Diameter:	200 mm
Boring Commenced:	23/07/2007	Drilled by:	P. Tindel
Boring Completed:	24/07/2007	Logged by:	E. Durero
Type of Boring:	Cable Percussion		

Sheet 2 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
	10.0	Hole End		B C(23)	10.00 10.00	7230	10.00	24/07/2007	dry(E)
	11.0								
	12.0								
	13.0								
	14.0								
	15.0								
	16.0								
	17.0								
	18.0								
	19.0								
	20.0								

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
Hole terminated at scheduled deep.

Water strike at 4.10m., sealed off at 5.40m.

Chiselling from 1.30m to 1.40m for 15mins., 3.60m to 3.70m for 15mins., 4.40m to 4.50m for 15 mins., 6.10m to 6.20m for 15mins., and 7.30m to 7.40m for 15mins.

Key to Symbols

- | | |
|---------------------------------------|--|
| B Bulk Disturbed Sample | S(9) Standard Penetration Test(N value) |
| D Small disturbed sample | C(9) Cone Penetration Test(N value) |
| W Water sample | W Waterstrike depth |
| U(9) Undisturbed sample (drive blows) | W Water level depth 20mins after strike |
| | 17.20(E) Depth to water (E)nd of shift |
| | 12.20(S) Depth to water (S)tart of shift |

Site Investigations Ltd

BOREHOLE 4681BH.GPJ COREHOLE.GDT 18/7/2007

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey

HOLE ID:

BH08

Client: Amil Properties Ltd.

Elevation: m.O.D.

Consultant:

Co-ordinates E N

Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford

Hole Diameter: 200 mm

Boring Commenced: 23/07/2007

Drilled by: P. Tindel

Boring Completed: 23/07/2007

Logged by: E. Durero

Type of Boring: Cable Percussion

Sheet 1 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
MADE GROUND(Concrete over hardcore)	0.00	[Cross-hatch pattern]							
Stiff brown sandy gravelly CLAY with cobbles.	1.00	[Sandy clay with cobbles]		B C(18)	1.00 1.00	7211			
	2.00	[Sandy clay with cobbles]		B C(17)	2.00 2.00	7212			
	3.00	[Sandy clay with cobbles]		B C(20)	3.00 3.00	7213			
	4.00	[Sandy clay with cobbles]		B C(18)	4.00 4.00	7214		23/07/2007	3.70
	5.00	[Sandy clay with cobbles]		B C(20)	5.00 5.00	7215		23/07/2007	3.70(20)
	6.00	[Sandy clay with cobbles]		B C(20)	6.00 6.00	7216			
	7.00	[Sandy clay with cobbles]		B C(20)	7.00 7.00	7217			
	8.00	[Sandy clay with cobbles]		B C(23)	8.00 8.00	7218			
	9.00	[Sandy clay with cobbles]		B C(22)	9.00 9.00	7219			
		10.00							

BOREHOLE 4681BH.GPJ COREHOLE.GDT 18/12/07

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
Hole terminated at scheduled deep.
Water strike at 3.70m, sealed off at 4.50m.
Chiselling from 1.70m to 1.80m for 30mins., 6.80m to 6.70m for 15mins. and 8.90m to 9.0m for 15 mins.

<p>B Bulk Disturbed Sample D Small disturbed sample W Water sample U(9) Undisturbed sample (drive blows)</p>	<p>Key to Symbols</p> <p>S(9) Standard Penetration Test(N value) C(9) Cone Penetration Test(N value) Z Waterstrike depth Z Water level depth 20mins after strike 17.20(E) Depth to water (E)nd of shift 12.20(S) Depth to water (S)tart of shift</p>
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Site Investigations Ltd

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey

HOLE ID: BH08

Client: Amil Properties Ltd.

Elevation: m.O.D.

Consultant:

Co-ordinates: E N

Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford

Hole Diameter: 200 mm

Boring Commenced: 23/07/2007

Drilled by: P. Tindel

Boring Completed: 23/07/2007

Logged by: E. Durero

Type of Boring: Cable Percussion

Sheet 2 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
	10.00			B C(24)	10.00 10.00	7220	10.50	23/07/2007	-(E)
	11.0								
	12.0								
	13.0								
	14.0								
	15.0								
	16.0								
	17.0								
	18.0								
	19.0								
	20.0								

BOREHOLE 4681BH G.P.J. COREHOLE.GDT 18/12/07

Remarks: (Note: Stratum bands <300mm are not indicated pictorially)
 Hole terminated at scheduled deep.
 Water strike at 3.70m, sealed off at 4.50m.
 Chiselling from 1.70m to 1.80m for 30mins., 6.80m to 6.70m for 15mins. and 8.90m to 8.0m for 15 mins.

B Bulk Disturbed Sample	S(8) Standard Penetration Test(N value)
D Small disturbed sample	C(9) Cone Penetration Test(N value)
W Water sample	W Waterstrike depth
U(9) Undisturbed sample (drive blows)	W Water level depth 20mins after strike
	17.20(E) Depth to water (E)nd of shift
	12.20(S) Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey **HOLE ID:** BH09

Client: Amil Properties Ltd.	Elevation: m.O.D.
Consultant:	Co-ordinates: E N
Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford	Hole Diameter: 200 mm
Boring Commenced: 26/07/2007	Drilled by: P. Tindel
Boring Completed: 27/07/2007	Logged by: E. Durero
Type of Boring: Cable Percussion	

Sheet 1 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
MADE GROUND(Concrete above hardcore.)	0.00	[Cross-hatch pattern]							
Stiff brown slightly sandy gravelly CLAY with cobbles.	1.00	[Dotted pattern with circles]		B C(18)	1.00 1.00	7250			
	2.00		B C(18)	2.00 2.00	7251				
	3.00		B C(15)	3.00 3.00	7252				
	4.00		B C(15)	4.00 4.00	7253				
	5.00		B C(16)	5.00 5.00	7254			26/07/2007 4.70 28/07/2007 4.70(20)	
Stiff brown slightly sandy gravelly CLAY.	6.00	[Dotted pattern]		B C(20)	6.00 6.00	7255	6.50	26/07/2007	-(E)
	7.00		B C(23)	7.00 7.00	7256	6.50	27/07/2007	-(S)	
	8.00		B C(24)	8.00 8.00	7257				
	9.00		B C(23)	9.00 9.00	7258				

BOREHOLE 4681BH(GPJ) COREHOLE.GDT 18/12/07

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
 Hole terminated at scheduled deep.
 Water strike at 4.70m, sealed off at 5.90m.
 Chiselling from 2.60m to 2.70m for 15mins., from 5.90m to 6.0m for 16mins., from 7.40m to 7.50m for 15 mins. and from 9.80m to 9.70m for 15mins.

Key to Symbols	
B Bulk Disturbed Sample	S(9) Standard Penetration Test(N value)
D Small disturbed sample	C(9) Cone Penetration Test(N value)
W Water sample	☼ Waterstrike depth
U(9) Undisturbed sample (drive blows)	☼ Water level depth 20mins after strike
	17.20(E) Depth to water (E)nd of shift
	12.20(S) Depth to water (S)tart of shift

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey **HOLE ID:** BH09

Client: Amil Properties Ltd.	Elevation: m.O.D.
Consultant:	Co-ordinates: E N
Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford	Hole Diameter: 200 mm
Boring Commenced: 26/07/2007	Drilled by: P. Tindel
Boring Completed: 27/07/2007	Logged by: E. Durero
Type of Boring: Cable Percussion	

Sheet 2 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
	10.0			B C(25)	10.00 10.00	7259	10.00	27/07/2007	-1E
	11.0								
	12.0								
	13.0								
	14.0								
	15.0								
	16.0								
	17.0								
	18.0								
	19.0								
	20.0								

BOREHOLE 4881BH.GPJ COREHOLE.GDT 18/12/07

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
Hole terminated at scheduled deep.
Water strike at 4.70m, sealed off at 5.60m.
Chiselling from 2.60m to 2.70m for 15mins., from 5.90m to 6.0m for 15mins., from 7.40m to 7.50m for 15 mins. and from 9.60m to 9.70m for 15mins.

- B Bulk Disturbed Sample
- D Small disturbed sample
- W Water sample
- U(9) Undisturbed sample (drive blows)

Key to Symbols

- S(9) Standard Penetration Test(N value)
- C(9) Cone Penetration Test(N value)
- W Waterstrike depth
- W-20 Water level depth 20mins after strike
- 17.20(E) Depth to water (E)nd of shift
- 12.20(S) Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey **HOLE ID:** BH10

Client: Amil Properties Ltd.	Elevation: m.O.D.
Consultant:	Co-ordinates: E N
Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford	Hole Diameter: 200 mm
Boring Commenced: 31/07/2007	Drilled by: P. Tindel
Boring Completed: 31/07/2007	Logged by: E. Durero
Type of Boring: Cable Percussion	

Sheet 1 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
Topsoil	0.00	- r -							
Stiff grey brown sandy gravelly CLAY	0.20			B C(20)	1.00 1.00	7260			
	2.00		B C(21)	2.00 2.00	7261				
	3.00		B C(21)	3.00 3.00	7262				
Stiff grey sandy gravelly CLAY with cobbles.	3.20			B C(24)	4.00 4.00	7263			
	5.00		B C(24)	5.00 5.00	7264				
	6.00		B C(24)	6.00 6.00	7265				
	7.00		B 4(24)	7.00 7.00	7266				
	8.00		B C(21)	8.00 8.00	7267				
	9.00		B C(23)	9.00 9.00	7268				

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
 Hole terminated at scheduled deep.
 Water strike at 4.70m, sealed off at 5.90m.
 Chiselling from 2.50m to 2.70m for 15mins., from 5.90m to 6.0m for 15mins., from 7.40m to 7.50m for 15 mins. and from 9.60m to 9.70m for 15mins.

Key to Symbols	
B Bulk Disturbed Sample	S(9) Standard Penetration Test(N value)
D Small disturbed sample	C(9) Cone Penetration Test(N value)
W Water sample	z= Waterstrike depth
U(8) Undisturbed sample (drive blows)	Z= Water level depth 20mins after strike
	17.20(E) Depth to water (E)nd of shift
	12.20(S) Depth to water (S)tart of shift

Site Investigations Ltd

BOREHOLE 4881BH.GPJ COREHOLE.GDT 18/12/07

BOREHOLE RECORD

(where relevant, refer to attached coring record for rock core details)

CONTRACT: Ballyowen Ramsfortpark, Gorey **HOLE ID:** BH10

Client: Amil Properties Ltd.	Elevation: m.O.D.
Consultant:	Co-ordinates: E N
Site Address: Ballyowen Ramsfortpark, Gorey, Co. Wexford	Hole Diameter: 200 mm
Boring Commenced: 31/07/2007	Drilled by: P. Tindel
Boring Completed: 31/07/2007	Logged by: E. Durero
Type of Boring: Cable Percussion	

Sheet 2 of 2

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Progress/Water		
				Type	Depth (m)	Ref No.	Hole Depth (m)	Date	Water Depth (m)
	10.0			B C(26)	10.00 10.00	7289	10.00	31/07/2007	dry(E)
	11.0								
	12.0								
	13.0								
	14.0								
	15.0								
	16.0								
	17.0								
	18.0								
	19.0								
	20.0								

BOREHOLE 4681BH.GPJ COREHOLE.GDT 18/12/07

Remarks: (Note: Stratum bands <200mm are not indicated pictorially)
 Hole terminated at scheduled deep.
 Water strike at 4.70m, sealed off at 5.90m.
 Chiselling from 2.60m to 2.70m for 15mins., from 5.90m to 6.0m for 15mins., from 7.40m to 7.50m for 15 mins. and from 9.60m to 9.70m for 15mins.

Key to Symbols	
B Bulk Disturbed Sample	S(9) Standard Penetration Test(N value)
D Small disturbed sample	C(9) Cone Penetration Test(N value)
W Water sample	W Waterstrike depth
U(9) Undisturbed sample (drive blows)	W _{20mins} Water level depth 20mins after strike
	17.20(E) Depth to water (E)nd of shift
	12.20(S) Depth to water (S)tart of shift

Site Investigations Ltd

Notes on the Methodology and Limitations of Cable Percussion Boring

The notes below outline the general procedures adopted in this geotechnical site investigation for cable percussion boreholes and the associated in-situ tests and sampling techniques. The procedures are in accordance with BS5930:1999 - 'British Standard Code of Practice for Site Investigation', and BS1377:1990 - 'British Standard Methods of Test for Soils for Civil Engineering Purposes.

The standard method of boring in soil for site investigation is known as the cable percussion method. It consists of using a shell in non cohesive soils and a clay cutter in cohesive soils, both operated on a wire cable. Very hard soils, boulders and other hard obstructions are broken up by chiselling and the fragments removed with the shell. Where ground conditions make it necessary, the boreholes are lined with 200mm diameter steel casing. While the use of the shell & auger method of boring gives the maximum data on soil conditions, some mixing of laminated soil is inevitable. For this reason thin lenses of granular material may not be noticed.

Undisturbed samples cannot be obtained in coarse soils or in fine soils containing coarse gravel or cobbles.

Disturbed samples are taken from the boring tools at depths such that a representative sample is obtained from the top of each stratum and at regular intervals within each stratum. The samples are then sealed and sent to the laboratory where they are visually examined and tested as per the Client's schedule.

Borehole water levels are recorded, together with the depths at which seepage of water or inflows are detected and the observations are presented on the borehole logs. In general these observations do not give an accurate indication of the actual ground water conditions as the borehole is rarely left standing at the relevant depth for a sufficient time for the water level to reach equilibrium, a permeable stratum may have been sealed off by the borehole casing, or water may have been added to the borehole to facilitate progress.

Standard Penetration Tests are carried out in all the boreholes. The results of these tests, together with the depths at which the tests were taken are presented on the borehole records. The test consists of a thick wall sampler tube, 50mm external diameter, being driven into the soil by a monkey weighing 65Kg and with a free drop of 760mm. For gravels and glacial till the driving shoe is replaced by a solid 60° cone.

The Standard Penetration Test number, referred to as the 'N' value, is the number of blows required to drive the tube 300mm, after an initial seating penetration of 150mm. The number gives a guide to the consistency or density of the soil and can also be used to estimate the bearing capacity and compressibility of the soil.

The cable percussion boring method is not particularly suited for identification of MADE GROUND or FILL as the small size of the hole decreases the probability of picking up any inclusions such as man made materials.

Appendix II

Trial Pit Records and Photographs

TRIAL PIT RECORD

Contract: Ballyowen Ramsfortpark, Gorey

Hole ID: **TP1**

Client: Amil Properties Ltd.

Consultant:

Site Address: : Ballyowen Ramsfortpark, Gorey, Co. Wexford

Elevation: m.O.D.

Excavation Commenced: 31/07/2007

Co-ordinates: E314920.000 N260314.000

Excavation Completed: 31/07/2007

Logged by: E. Durero

Type of Excavator: JCB 3CX

Sheet 1 of 1

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Water Depth (m)	Date
				Type	Depth (m)	Ref No.		
MADE GROUND(Reddish sandy gravel.)	0.0	0.00						
MADE GROUND(Grey sandy gravel.)	0.30							
Firm reddish brown slightly sandy gravelly CLAY.	0.60			B	0.80	0781		
Grey brown gravelly SAND	1.0	1.00		B	1.50	0782	1.60	31/07/2007
Stiff brown sandy gravelly CLAY	1.80			B	2.00	0783		
	3.60	Hole End						
	4.0							
	5.0							

TRIAL PIT 4881TP.GPJ COREHOLE.GDT 18/12/07

Note: If deemed necessary, pit face sketches are given on the last sheet.
Strata descriptions refer to all faces unless otherwise specified.

Remarks:
Coordinates based on handheld GPS only.

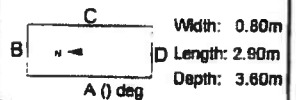
Water seepage from 1.6m to 1.8m

Pit is stable.

Key to Symbols

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- V(60) In-situ hand shear vane test(kPa)
- P Hand Penetrometer Test(N value)
- Σ^W Waterstrike depth
- Σ^W Water level depth 20mins after strike

Pit Orientation and Dimensions



Site Investigations Ltd

TRIAL PIT RECORD

Contract: Ballyowen Ramsfortpark, Gorey

Hole ID:

TP2

Client: Amil Properties Ltd.

Consultant:

Site Address: : Ballyowen Ramsfortpark, Gorey, Co. Wexford

Elevation: m.O.D.

Excavation Commenced: 31/07/2007

Co-ordinates: E314999.000 N260257.000

Excavation Completed: 31/07/2007

Logged by: E. Durero

Type of Excavator: JCB 3CX

Sheet 1 of 1

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Water Depth (m)	Date
				Type	Depth (m)	Ref No.		
Topsoil	0.00	- - -						
Firm mottled brown and grey slightly sandy gravelly CLAY	0.20	(Pattern: small circles and dashes)		B	0.50	0766		
	1.0							
	2.0							
	3.0							
	3.00	Hole End						
	4.0							
	5.0							

TRIAL PIT 4681TP.GPJ COREHOLE.GDT 07/08/07

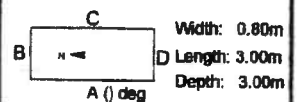
Note: If deemed necessary, pit face sketches are given on the last sheet.
Strata descriptions refer to all faces unless otherwise specified.

Remarks:
Coordinates based on handheld GPS only.
Pit is dry and stable.

Key to Symbols

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- V(60) In-situ hand shear vane test(kPa)
- P Hand Penetrometer Test(N value)
- X₂₀₀ Waterstrike depth
- X₁₂₀₀ Water level depth 20mins after strike

Pit Orientation and Dimensions



TRIAL PIT RECORD

Contract: Ballyowen Ramsfortpark, Gorey

Hole ID: **TP3**

Client: Amil Properties Ltd.

Consultant:

Site Address: : Ballyowen Ramsfortpark, Gorey, Co. Wexford

Elevation: m.O.D.

Excavation Commenced: 31/07/2007

Co-ordinates: E315048.000 N260344.000

Excavation Completed: 31/07/2007

Logged by: E. Durero

Type of Excavator: JCB 3CX

Sheet 1 of 1

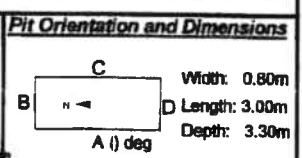
DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Water Depth (m)	Date
				Type	Depth (m)	Ref No.		
MADE GROUND(Black sandy gravel with cobbles.)	0.0	0.00						
Firm grey brown sandy gravelly CLAY.	0.50	0.50		B	1.00	0768		
	1.0							
	2.0							
	3.0							
	3.30	Hole End						
	4.0							
	5.0							

TRIAL PIT 4681 TP COREHOLE.GDT 07/08/07

Note: If deemed necessary, pit face sketches are given on the last sheet.
Strata descriptions refer to all faces unless otherwise specified.

Remarks:
Coordinates based on handheld GPS only
Pit is dry and stable.

- Key to Symbols**
- B Bulk disturbed sample
 - D Small disturbed sample
 - U Undisturbed sample
 - V(60) In-situ hand shear vane test(kPa)
 - P Hand Penetrometer Test(N value)
 - W Waterstrike depth
 - W Water level depth 20mins after strike



Site Investigations Ltd

TRIAL PIT RECORD

Contract: Ballyowen Ramsfortpark, Gorey

Hole ID: **TP4**

Client: Amil Properties Ltd.

Consultant:

Site Address: : Ballyowen Ramsfortpark, Gorey, Co. Wexford

Elevation: m.O.D.

Excavation Commenced: 31/07/2007

Co-ordinates: E315038.000 N260375.000

Excavation Completed: 31/07/2007

Logged by: E. Durero

Type of Excavator: JCB 3CX

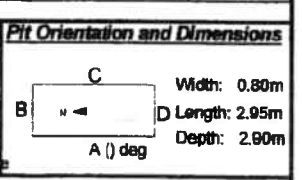
Sheet 1 of 1

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Water Depth (m)	Date
				Type	Depth (m)	Ref No.		
MADE GROUND(Black sandy gravel with cobbles.)	0.00	[Cross-hatch pattern]						
MADE GROUND(Grey sandy gravel with cobbles.)	0.20	[Cross-hatch pattern]						
Stiff grey brown slightly sandy gravelly CLAY.	0.40	[Dotted pattern]						
	1.0	[Dotted pattern]		B	1.00	0769		
	2.0	[Dotted pattern]						
	2.90	[Dotted pattern]						
	3.0	[Dotted pattern]						
	4.0	[Dotted pattern]						
	5.0	[Dotted pattern]						

TRIAL PIT 4681TP.GPJ COREHOLE.GDT 07/06/07

Note: If deemed necessary, pit face sketches are given on the last sheet.
 Strata descriptions refer to all faces unless otherwise specified.
Remarks:
 Coordinates based on handheld GPS only.
 Pit is dry and stable.

- Key to Symbols**
- B Bulk disturbed sample
 - D Small disturbed sample
 - U Undisturbed sample
 - V(60) In-situ hand shear vane test(kPa)
 - P Hand Penetrometer Test(N value)
 - W Water-broke depth
 - Σ (max) Water level depth 20mins after strike



TRIAL PIT RECORD

Contract: Ballyowen Ramsfortpark, Gorey

Hole ID:

TP5

Client: Amil Properties Ltd.

Consultant:

Site Address: : Ballyowen Ramsfortpark, Gorey, Co. Wexford

Elevation: m.O.D.

Excavation Commenced: 31/07/2007

Co-ordinates: E315001.000 N260406.000

Excavation Completed: 31/07/2007

Logged by: E. Durero

Type of Excavator: JCB 3CX

Sheet 1 of 1

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Water Depth (m)	Date
				Type	Depth (m)	Ref No.		
MADE GROUND(Reddish brown clayey sandy gravel.)	0.00	[Cross-hatch pattern]						
MADE GROUND(Black sandy gravel.)	0.20	[Cross-hatch pattern]						
Firm mottled brown and grey sandy gravelly CLAY.	0.40	[Dotted pattern]						
	1.00	[Dotted pattern]		B	1.00	0770		
Firm mottled brown and grey CLAY.	1.70	[Dotted pattern]						
	2.00	[Dotted pattern]		B	2.00	0771		
Brown clayey very sandy GRAVEL.	2.50	[Dotted pattern]						
	2.70	[Dotted pattern]		B	2.70	0772		
	3.00	Hole End						
	4.00							
	5.00							

Note: If deemed necessary, pit face sketches are given on the last sheet.
Strata descriptions refer to all faces unless otherwise specified.

Remarks:

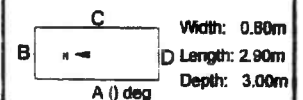
Coordinates based on handheld GPS only.

Pit is dry and stable.

Key to Symbols

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- V(80) In-situ hand shear vane test(kPa)
- P Hand Penetrometer Test(N value)
- Ψ 1m Waterstrike depth
- Σ 1m Water level depth 20mins after strike

Pit Orientation and Dimensions



TRIAL PIT 4651TP.GPJ COREHOLE.GDT 07/08/07

TRIAL PIT RECORD

Contract: Ballyowen Ramsfortpark, Gorey

Hole ID: **TP6**

Client: Amil Properties Ltd.

Consultant:

Site Address: : Ballyowen Ramsfortpark, Gorey, Co. Wexford

Elevation: m.O.D.

Excavation Commenced: 31/07/2007

Co-ordinates: E315050.000 N260459.000

Excavation Completed: 31/07/2007

Logged by: E. Durero

Type of Excavator: JCB 3CX

Sheet 1 of 1

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Water Depth (m)	Date
				Type	Depth (m)	Ref No.		
MADE GROUND(Black sandy gravel.)	0.0	0.00						
Stiff grey brown sandy gravelly CLAY.	0.40	0.40		B	1.00	0773		
	1.0							
	2.0							
	3.0	2.95	Hole End					
	4.0							
	5.0							

TRIAL PIT #681TP.GPJ COREHOLE.GDT 07/09/07

Note: If deemed necessary, pit face sketches are given on the test sheet.
Strata descriptions refer to all faces unless otherwise specified.

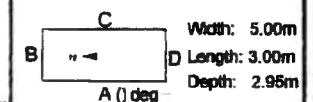
Remarks:
Coordinates based on handheld GPS only.

Pit is dry and stable.

Key to Symbols

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- V(60) In-situ hand shear vane test(kPa)
- P Hand Penetrometer Test(N value)
- W Waterstrike depth
- W Water level depth 20mins after strike

Pit Orientation and Dimensions



TRIAL PIT RECORD

Contract: Ballyowen Ramsfortpark, Gorey

Hole ID: **TP7**

Client: Amil Properties Ltd.

Consultant:

Site Address: : Ballyowen Ramsfortpark, Gorey, Co. Wexford

Elevation: m.O.D.

Excavation Commenced: 31/07/2007

Co-ordinates: E315059.000 N260511.000

Excavation Completed: 31/07/2007

Logged by: E. Durero

Type of Excavator: JCB 3CX

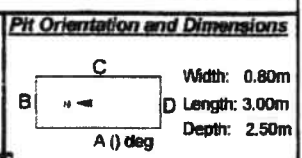
Sheet 1 of 1

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Water Depth (m)	Date
				Type	Depth (m)	Ref No.		
MADE GROUND(Black sandy gravel.)	0.00	XXXX						
Stiff grey brown sandy gravelly CLAY.	0.15							
	1.00			B	1.00	0776		
Very stiff mottled light and dark brown very sandy very gravelly CLAY	1.40			B	1.50	0777		
	2.50		Hole End					
	3.00							
	4.00							
	5.00							

TRIAL PIT 4681TP.GPJ COREHOLE.GDT 07/08/07

Note: If deemed necessary, pit face sketches are given on the last sheet.
 Strata descriptions refer to all faces unless otherwise specified.
Remarks:
 Coordinates based on handheld GPS only.
 Water seepage at 2.3m
 Pit is stable.

Key to Symbols
 B Bulk disturbed sample
 D Small disturbed sample
 U Undisturbed sample
 V(60) In-situ hand shear vane test(kPa)
 P Hand Penetrometer Test(N value)
 W Waterstrike depth
 W Water level depth 20mins after strike



TRIAL PIT RECORD

Contract: Ballyowen Ramsfortpark, Gorey

Hole ID: **TP8**

Client: Amil Properties Ltd.

Consultant:

Site Address: : Ballyowen Ramsfortpark, Gorey, Co. Wexford

Elevation: m.O.D.

Excavation Commenced: 31/07/2007


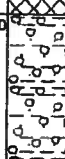
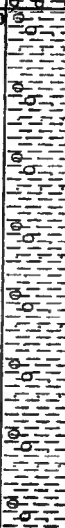
Co-ordinates: E315105.000 N260525.000

Excavation Completed: 31/07/2007

Logged by: E. Durero

Type of Excavator: JCB 3CX

Sheet 1 of 1

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Water Depth (m)	Date
				Type	Depth (m)	Ref No.		
MADE GROUND(Black sandy gravel.)	0.00							
Clayey sandy GRAVEL.	0.20			B	0.50	0778		
Stiff grey brown sandy gravelly CLAY.	0.80			B	1.00	0779		
	2.90	Hole End						

TRIAL PIT 4881TP.GP.J. COREHOLE.GDT 07/08/07

Note: If deemed necessary, pit face sketches are given on the last sheet.
Strata descriptions refer to all faces unless otherwise specified.

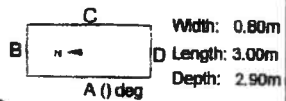
Remarks:
Coordinates based on handheld GPS only.

Pit is dry and stable.

Key to Symbols

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- V(80) in-situ hand shear vane test(kPa)
- P Hand Penetrometer Test(N value)
- W Waterstrike depth
- Σ Water level depth 20mins after strike

Pit Orientation and Dimensions



TRIAL PIT RECORD

Contract: Ballyowen Ramsfortpark, Gorey

Hole ID:

TP9

Client: Amil Properties Ltd.

Consultant:

Site Address: : Ballyowen Ramsfortpark, Gorey, Co. Wexford

Elevation: m.O.D.

Excavation Commenced: 31/07/2007

Co-ordinates: E315108.000 N260469.000

Excavation Completed: 31/07/2007

Logged by: E. Durero

Type of Excavator: JCB 3CX

Sheet 1 of 1

DESCRIPTION OF STRATA	Unit Depth (m)	Legend	Elevation (M.O.D.)	Samples/Tests			Water Depth (m)	Date
				Type	Depth (m)	Ref No.		
Topsoil	0.00	- - -						
Stiff grey brown sandy gravelly CLAY.	0.60	[Hatched]		B	0.50	0774		
Brown clayey sandy GRAVEL.	1.00	[Circles]		B	1.20	0775		
Stiff grey brown sandy gravelly CLAY.	1.50	[Hatched]						
	2.00	[Hatched]						
	2.90	[Hatched]						
	3.00	[Hatched]						
	4.00	[Hatched]						
	5.00	[Hatched]						

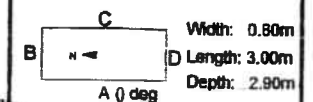
Note: If deemed necessary, pit face sketches are given on the last sheet. Strata descriptions refer to all faces unless otherwise specified.

Remarks:
Coordinates based on handheld GPS only.
Pit is dry and stable.

Key to Symbols

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- V(60) In-situ hand shear vane test(kPa)
- P Hand Penetrometer Test(N value)
- W Waterstrike depth
- W₂₀ Water level depth 20mins after strike

Pit Orientation and Dimensions



TRIAL PIT 4881TP.GPJ COREHOLE.GDT 070807



Ballyowen, Ramsfortpark, Gorey

TP1



Ballyowen, Ramsfortpark, Gorey

TP1



Ballyowen, Ramsfortpark, Gorey

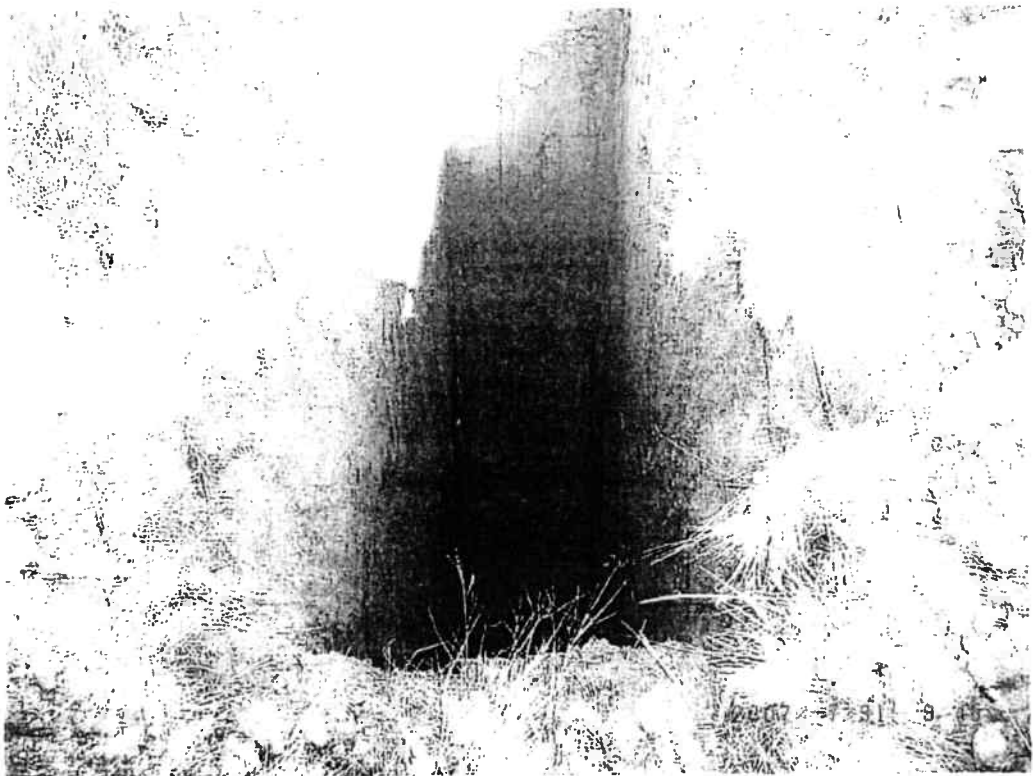
TP1



2007 7 31 9 11 17

Ballyowen, Ramsfortpark, Gorey

TP2



Ballyowen, Ramsfortpark, Gorey

TP2



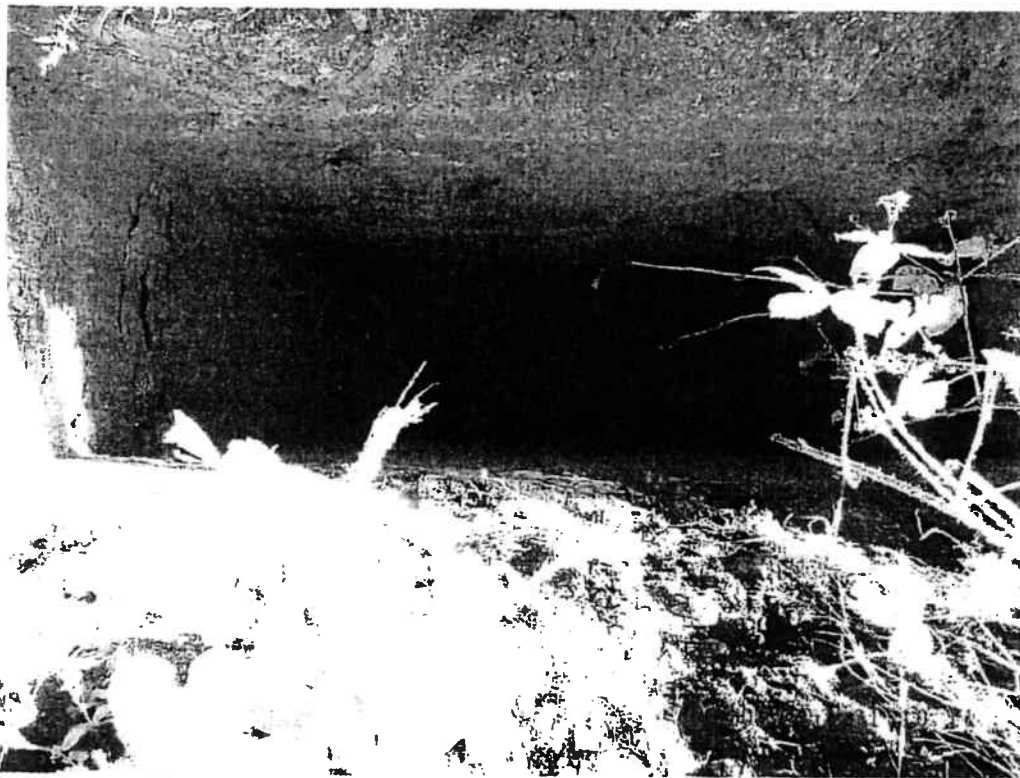
Ballyowen, Ramsfortpark, Gorey

TP2



Ballyowen, Ramsfortpark, Gorey

TP3



Ballyowen, Ramsfortpark, Gorey

TP3



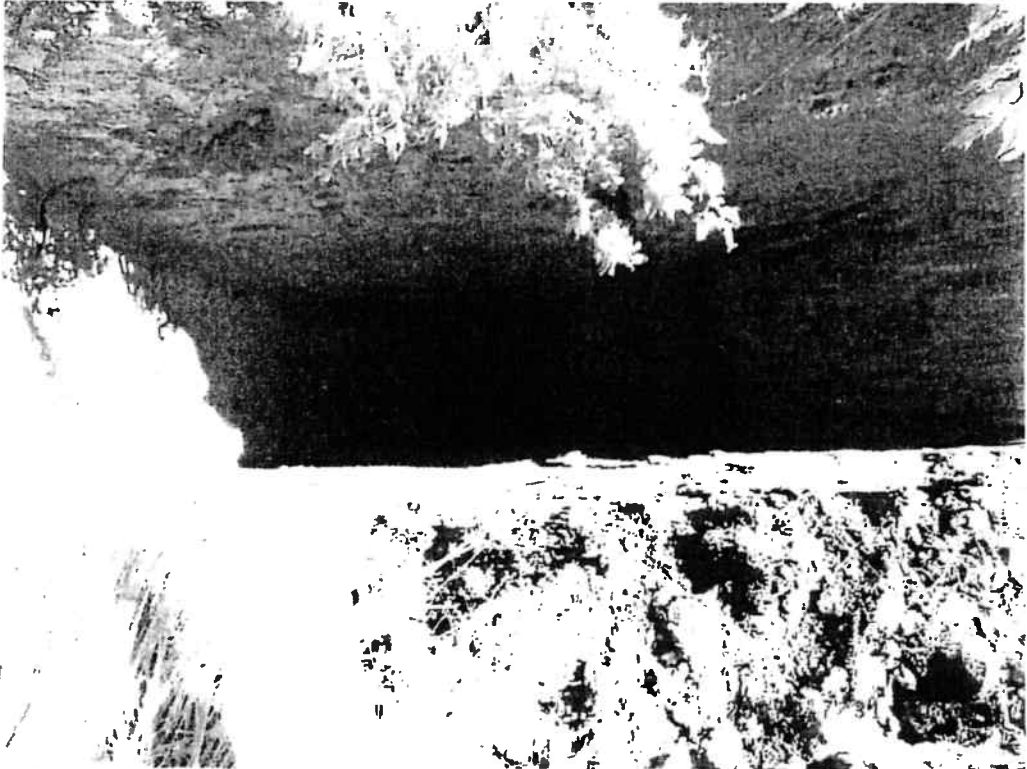
Ballyowen, Ramsfortpark, Gorey

TP3



Ballyowen, Ramsfortpark, Gorey

TP4



Ballyowen, Ramsfortpark, Gorey

TP4



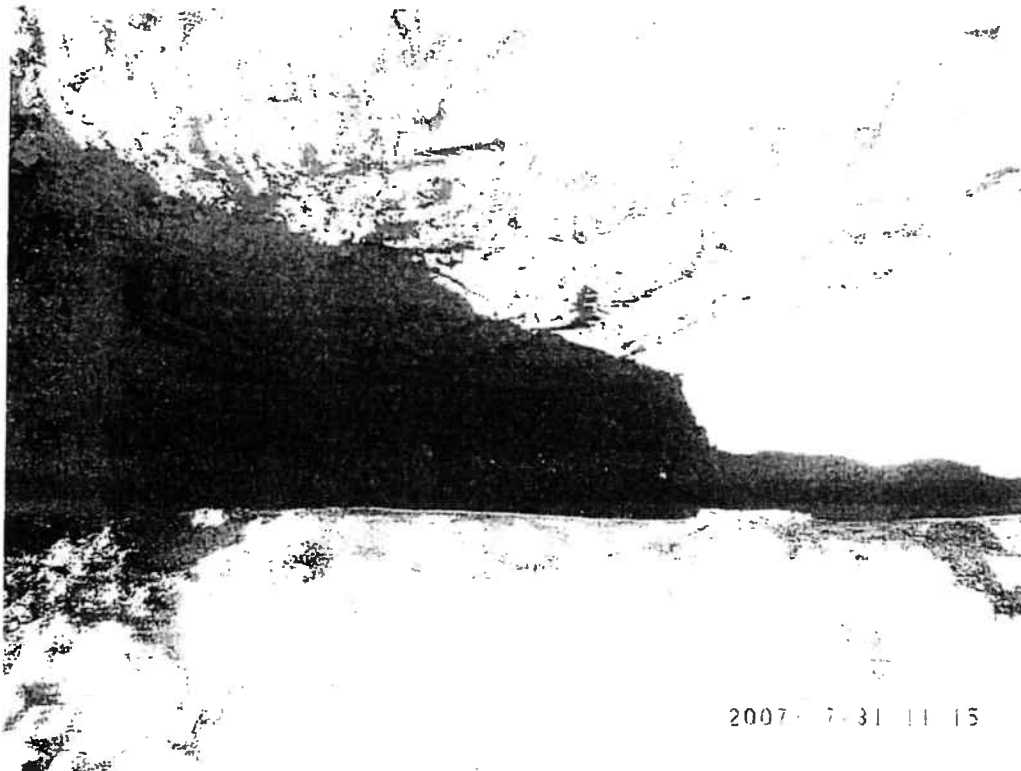
Ballyowen, Ramsfortpark, Gorey

TP4



Ballyowen, Ramsfortpark, Gorey

TP5



2007-07-31 11:15

Ballyowen, Ramsfortpark, Gorey

TP5



Ballyowen, Ramsfortpark, Gorey

TP5



Ballyowen, Ramsfortpark, Gorey

TP6



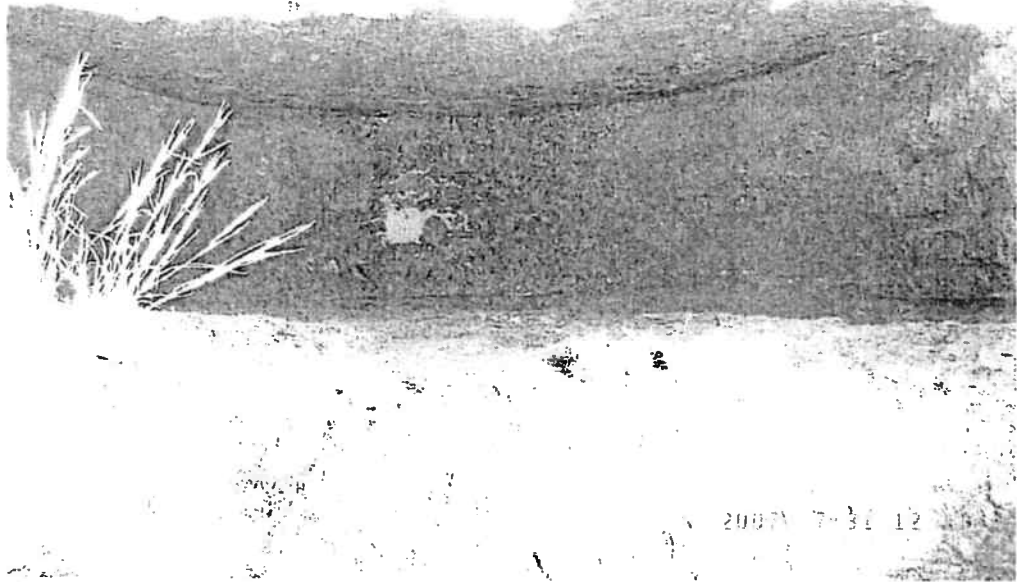
Ballyowen, Ramsfortpark, Gorey

TP6



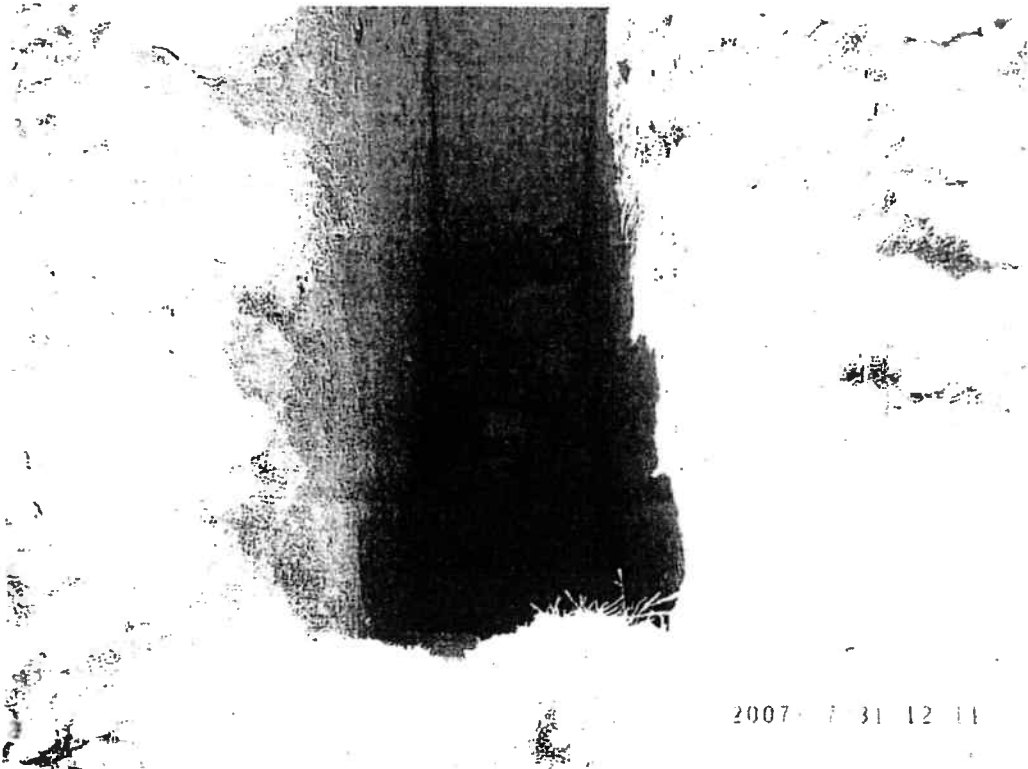
Ballyowen, Ramsfortpark, Gorey

TP6



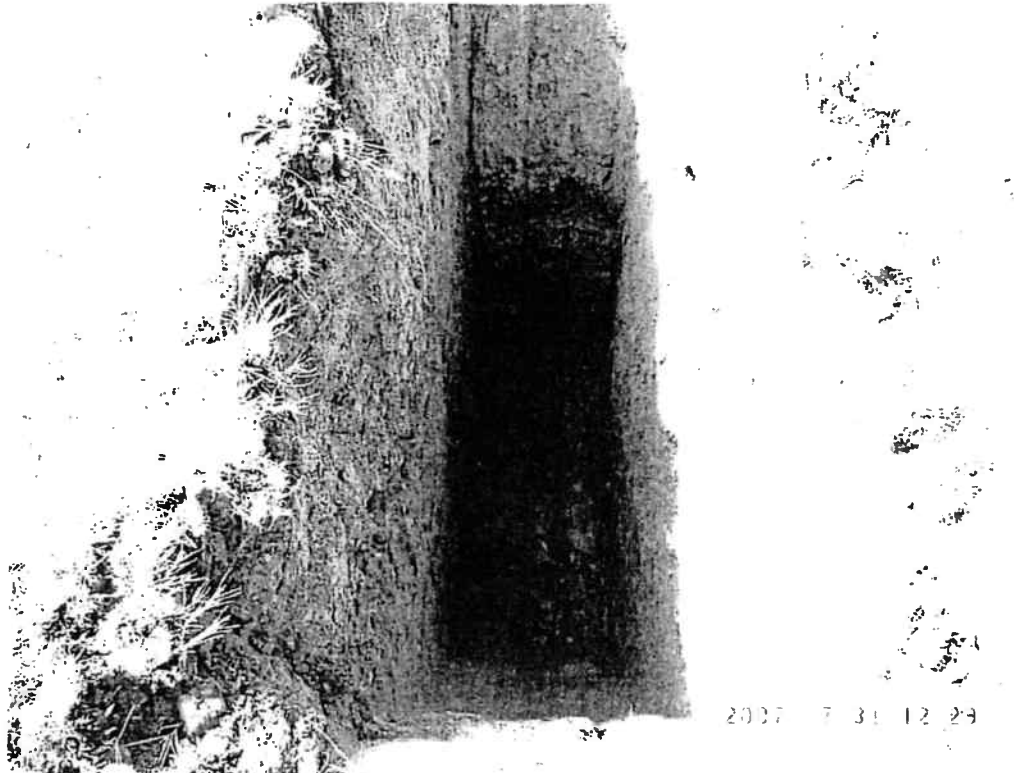
Ballyowen, Ramsfortpark, Gorey

TP7



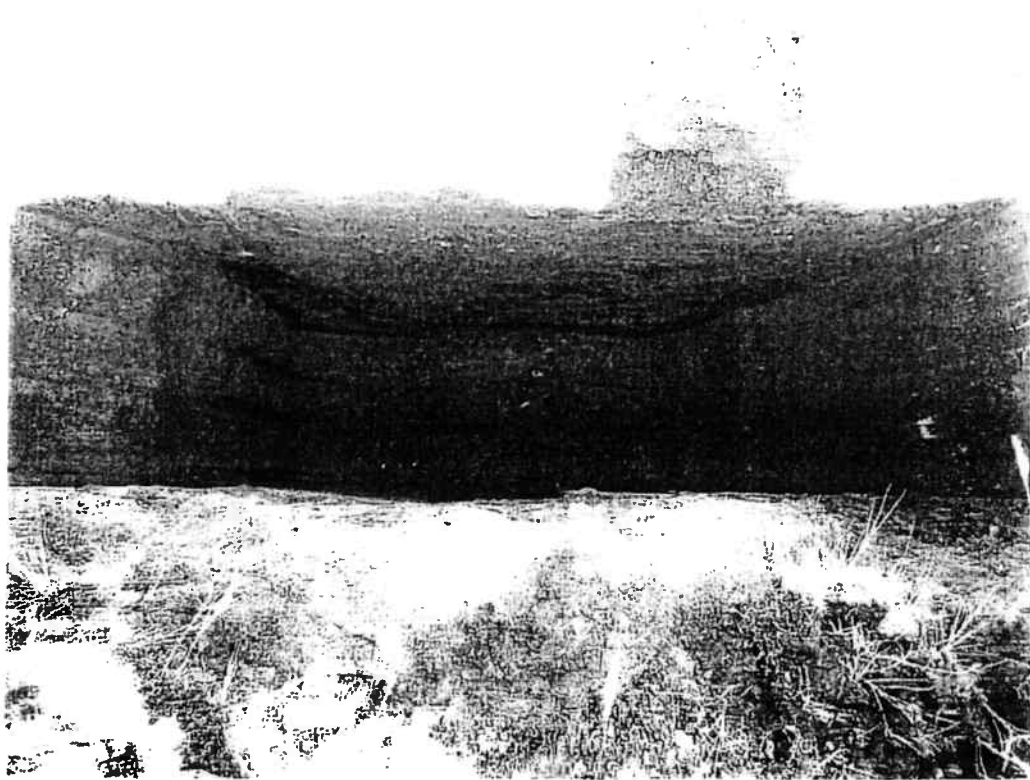
Ballyowen, Ramsfortpark, Gorey

TP7



Ballyowen, Ramsfortpark, Gorey

TP8



Ballyowen, Ramsfortpark, Gorey

TP8



Ballyowen, Ramsfortpark, Gorey

TP8



Ballyowen, Ramsfortpark, Gorey

TP9



Ballyowen, Ramsfortpark, Gorey

TP9

2007-03-31 11:53

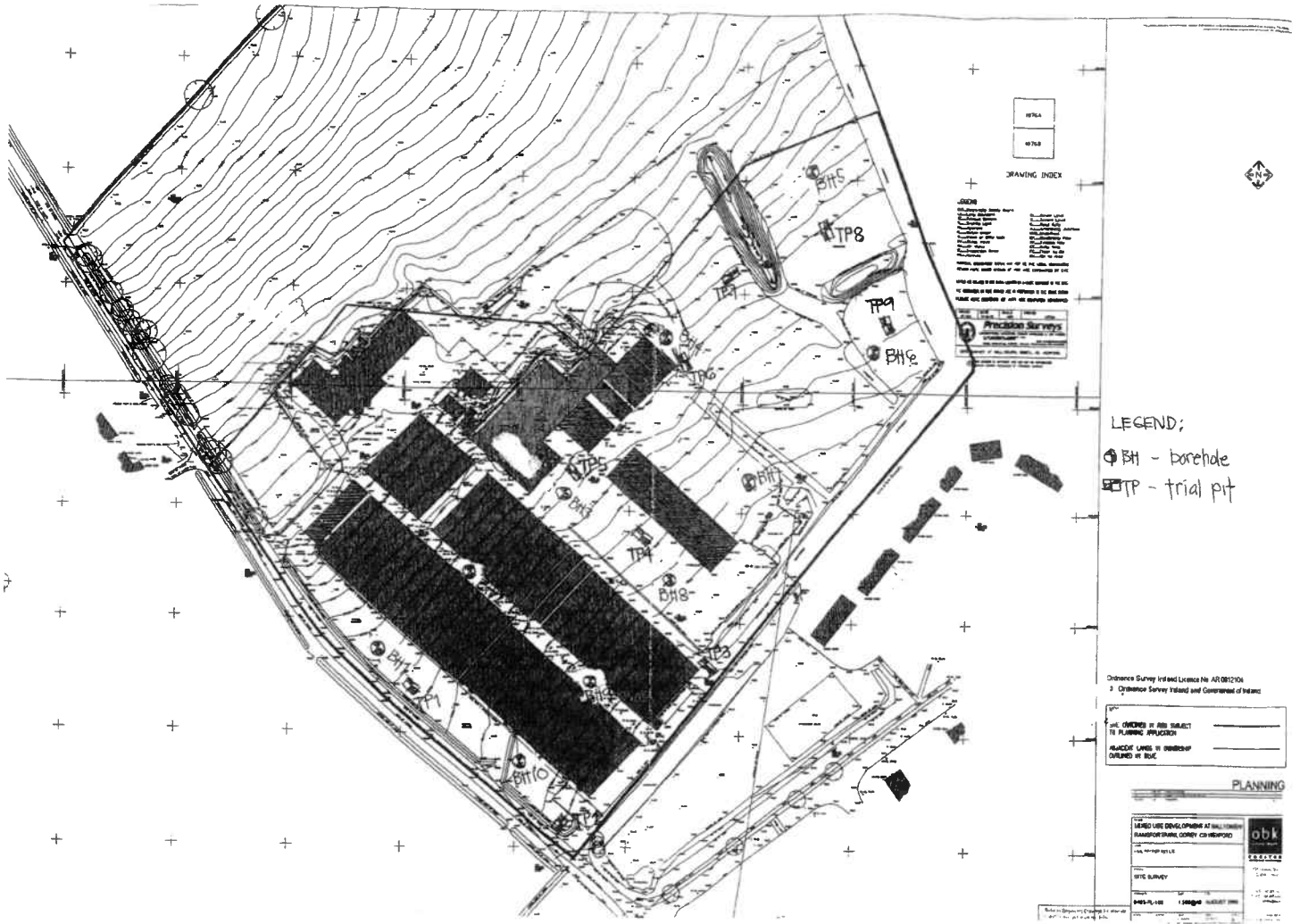


Ballyowen, Ramsfortpark, Gorey

TP9

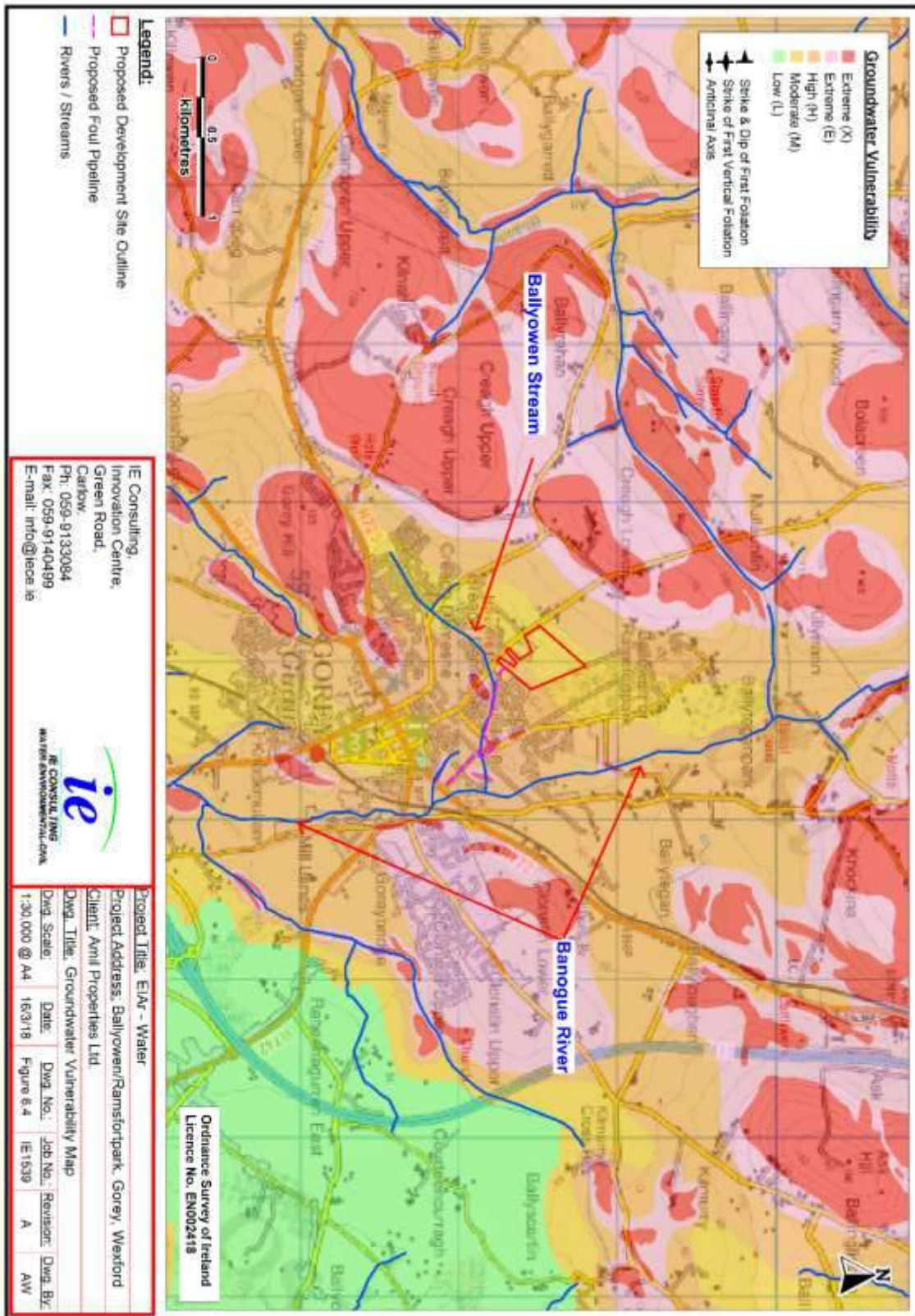
Appendix III

Exploratory Hole Location Plan



APPENDIX C – WATER

Groundwater Vulnerability Map



APPENDIX D – NOISE

ATTACHMENT 8.1
- NOISE LOCATIONS MAPS -



Notes:

— Site Location

NM1 314860, 160375

NM2 315263, 160404

**PROPOSED DEVELOPMENT AT
CREAGH, GOREY, CO. WEXFORD**

NOISE MONITORING LOCATIONS



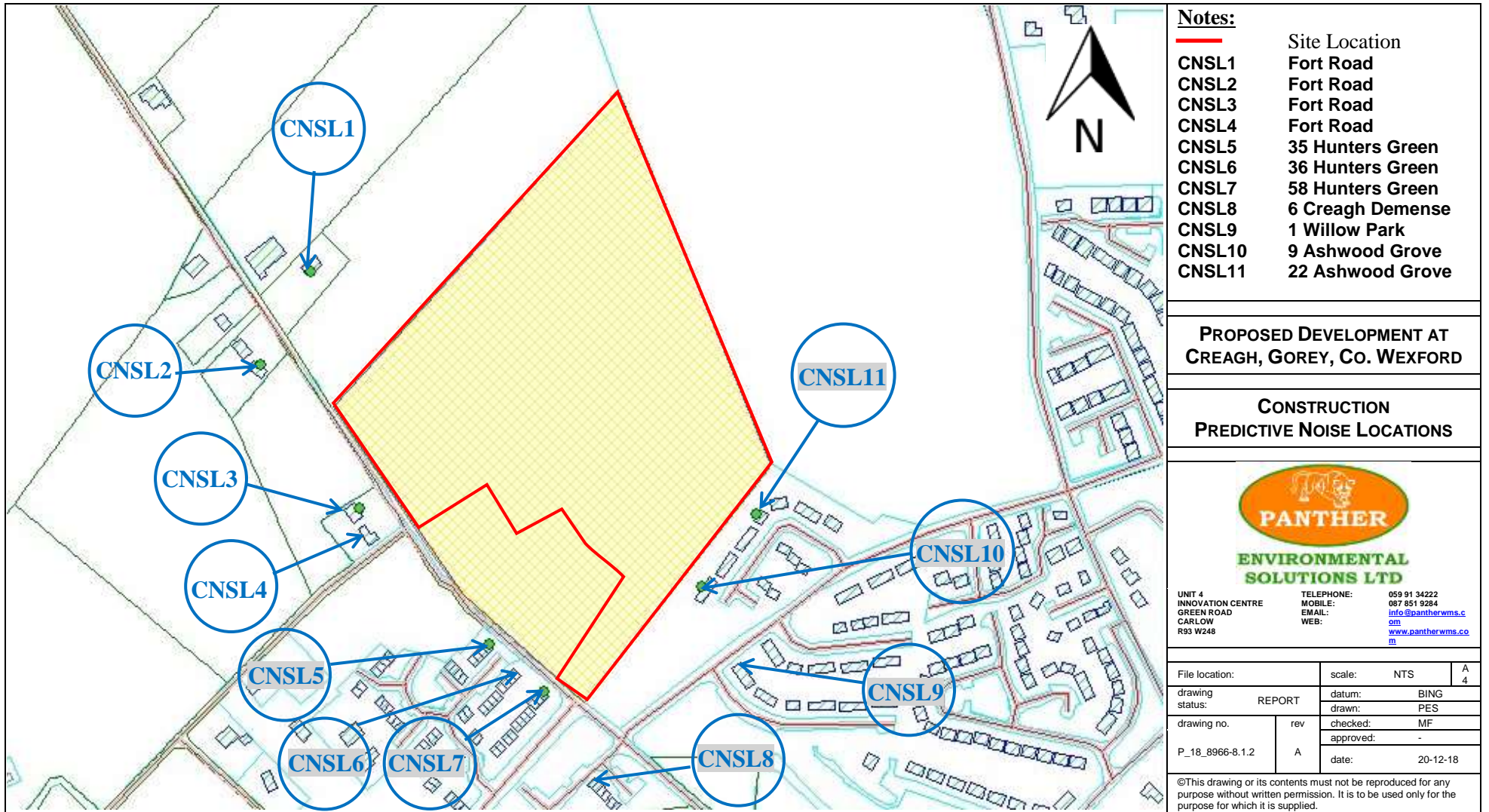
**ENVIRONMENTAL
SOLUTIONS LTD**

UNIT 4
INNOVATION CENTRE
GREEN ROAD
CARLOW
R93 W248

TELEPHONE: 059 91 34222
MOBILE: 087 851 9284
EMAIL: info@pantherwms.com
WEB: www.pantherwms.com

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drawing status:	REPORT	datum:	BING
drawing no.	rev	drawn:	PES
P_18_8966-8.1.1	A	checked:	MF
		approved:	-
		date:	20-12-18

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Notes:

	Site Location
NSL1	House 16
NSL2	House 20
NSL3	House 52
NSL4	House 62
NSL5	House 120
NSL6	House 130
NSL7	House 138
NSL8	House 139
NSL9	House 156
NSL10	House 159
NSL11	House 239
NSL12	House 246
NSL13	Apartment 01
NSL14	Apartment 03
NSL15	Apartment 05
NSL16	Apartment 07
NSL17	Apartment 08
NSL18	Apartment 11
NSL19	Apartment 12
NSL20	Apartment 13
NSL21	Apartment 15
NSL22	Apartment 23
NSL23	Apartment 24
NSL24	Apartment 25
NSL25	Crèche

**PROPOSED DEVELOPMENT AT
CREAGH, GOREY, CO. WEXFORD**

**INTERNAL
PREDICTIVE NOISE LOCATIONS**

PANTHER
ENVIRONMENTAL
SOLUTIONS LTD

UNIT 4
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APPENDIX E – ARCHAEOLOGY

Appendix 13.1: Legal Status of Cultural, Archaeological and Architectural Heritage Sites

National Monuments Act 1930-2004

The term 'National Monument' was initially defined by the 1930 National Monuments Act as:

'a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic, or archaeological interest attaching thereto.'

Four subsequent Amendment Acts 1954-2004 widened the content and scope of the Act. This definition does not restrict inclusion based on date and includes land adjacent to a national monument, which is required to preserve the amenities of the monument. National monuments may be acquired by the Minister by agreement or compulsory order. A national monument (excluding dwellings) in the ownership/guardianship of the State or Local Authority may not be interfered with without written consent of the Minister.

There are no National Monuments within or in close proximity to the proposed development. There are two in the wider vicinity: Ardmulchan Passage Tomb (NM546), and Ardmulchan Ringfort (NM 496), which are situated 0.55km and 0.44km respectively from the proposed line of development, and will not be impacted upon by the proposed development.

Under the National Monuments Acts 1930-2004, archaeological sites and monuments are protected under several mechanisms. These comprise the Record of Monuments and Places, the Register of Historic Monuments and use of Preservation Orders.

Record of Monuments and Places

The Record of Monuments and Places (RMP) was established under Section 12 of the 1994 National Monuments (Amendment) Act. Under the terms of this Act, the Minister is required to establish and maintain a record of the monuments and places where the Minister believes there are monuments present. This RMP gives protection without having to establish that a monument is falling into decay. The term 'monument' as used in this Act encompasses all artificial structures, regardless of date, whether or not they are of archaeological or architectural interest, but excludes buildings used for ecclesiastical purposes. All monuments, whether or not they are in State ownership/guardianship, or can be designated or subject to any legal protection, could potentially be classed as 'National Monuments'. A 'Historic Monument' includes:

'a prehistoric monument and any monument associated with the commercial, cultural, economic, industrial, military, religious or social history of the place where it is situated or of the county.'

Any monument pre-dating AD1700 is automatically protected as a historic monument. Monuments post-dating AD 1700 have been increasingly included in the RMP, mostly represented by architectural and industrial heritage sites.

The earlier Sites and Monuments Record (SMR) and the Archaeological Survey of Ireland, both initiated after the 1930 National Monuments Act, form the basis of the statutory RMP. Therefore the RMP includes all previously known archaeological sites, but also potential archaeological sites. As a result of this Act, it is unlawful to carry out work on a Recorded Monument without the consent of the Department of the Arts, Heritage and Gaeltacht. Written consent for any development on such a site must be sought.

Appendix 13.2 lists 5 RMP sites within a 600m radius of the proposed development area.

Should works at AP6 and AP7 uncover evidence of archaeological significance, those archaeological features or material would be legally protected under the National Monuments Act 1930-2004. In that event, it is envisaged that the mitigation strategy as set out in 6.2 Recommendations Prior to Construction would apply.

Register of Historic Monuments

The Register of Historic Monuments was established under Section 5 of the 1987 National Monuments (Amendment) Act. It is unlawful to interfere with a Registered Monument, except in a case of urgent necessity, and the written consent of the Minister is required. This register has been largely replaced by the RMP, following the 1994 National Monuments (Amendment) Act, but it still holds records of monuments under Preservations Orders, Temporary Preservation Orders and under ownership/guardianship of the State.

There are no sites listed in the Register of Historic Monuments within or in close proximity to the proposed development.

Preservation Orders

In certain circumstances that threaten an existing monument, Preservation Orders and Temporary Preservation Orders can be issued under the National Monuments Acts 1930-2004, making it unlawful to interfere with the monument or the land adjacent to it without the written consent of Minister.

There are no sites under Preservation Order within or in close proximity to the proposed development.

Heritage Act 1995

'Architectural heritage' is defined in the Heritage Act 1995 as:

'all structures, buildings, traditional and designed, and groups of buildings including streetscapes and urban vistas, which are of historical, archaeological, artistic, engineering, scientific, social or technical interest, together with their setting, attendant grounds, fixtures, fittings and contents, and, without prejudice to the generality of the foregoing, includes railways and related buildings and structures and any place comprising the remains or traces of any such railway, building or structure.'

The Act created the Heritage Council and also protects all heritage buildings held by a local authority.

Architectural Heritage (National Inventory) & Historic Monuments Act, 1999

'Architectural heritage' is defined in the Architectural Heritage (National Inventory) & Historic Monuments Act, 1999, as meaning all:

- (a) structures and buildings together with their settings and attendant grounds, fixtures and fittings,
- (b) groups of such structures and buildings, and
- (c) sites, which are of architectural, historic, archaeological, artistic, cultural, scientific, social or technical interest.

The Act requires the Minister to establish a survey that will identify, record and assess the architectural heritage of the country; the National Inventory of Architectural Heritage (NIAH)

National Inventory of Architectural Heritage

The National Inventory of Archaeological Heritage (NIAH) Surveys are designed to assist the local authorities with the compilation of the Record of Protected Structures (see 4.4.1). However, the inclusion of a structure in the NIAH does not in itself provide statutory protection.

The survey of Co Wexford was carried out in between 2005-2008. 2 sites were recorded within a 500m radius of the proposed development. These are listed in Appendix 13.3.

Planning and Development Acts 2000-2014

Under Section 2 of the 2000 Planning and Development Act a 'Protected Structure' is defined as:

(a) a structure, or

(b) a specified part of a structure which is included in a record of protected structures, and, where that record so indicates includes, any specified feature which is within the attendant grounds of the structure and which would not otherwise be included in this definition.'

Local planning authorities have an obligation under Section 51(1) of the Planning and Development Act 2000 to create a Record of Protected Structures (RPS) which includes all structures or parts of structures in their functional areas which, in their opinion, are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. The RPS forms part of a planning authority's development plan.

Record of Protected Structures in City/County Development Plan

Each City/County Development Plan is compiled in accordance with the requirements of the Planning and Development Acts 2000-2014. The plans set out each City/County Council's policy for the conservation and enhancement of a city's natural and built environment and lists items of special environmental or archaeological interest. The inclusion of archaeological objectives by planning authorities in their statutory development plan provides the basis for such authorities to provide for the protection of the archaeological heritage. The majority of sites recorded in the Register of Historic Monuments are generally listed for protection in the City/County Development Plan. In certain circumstances the City/County Councils highlight certain archaeological sites in their respective areas for protection from development under the provisions of the National Monuments (Amendment) Acts. However, these methods of protection can be applied at any stage should the relevant authorities feel a site or monument is in sufficient danger. The 2000 Local Government (Planning & Development) Act introduced a range of new measures for the protection of architectural heritage,

'for the purpose of protecting structures, or parts of structures, which form part of the architectural heritage and which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest'.

Provision was made for the compilation of a Record of Protected Structures (RPS); a list of buildings which may not be materially altered or demolished without grant of permission under the Act. Such structures, which include vernacular and country houses, churches, mills, bridges and other notable buildings, are generally listed in the relevant City/County Development Plan in terms of their international, national, regional or local significance. It is the policy of each County Council to seek the preservation of listed structures.

Within a 700m radius of the proposed development, 2 structures are listed on the Co Wexford Record of Protected Structures. These are detailed in Appendix 13.3.

Appendix 13.2: RMP Sites within 2km Radius of Proposed Development

The following extract from the Record of Monuments and Places lists 5 monuments within a 200m radius of the proposed development site. Also listed are those selected RMP sites that are located between 0.5-3km from the development area, and are mentioned within the context of the report.

There are no RMP sites within the proposed development. The nearest RMP site, a ritual site/holy well in the townland of Gorey Corporation Lands (WX007-032), is located at a distance of 100m. Ameliorative measures are recommended for those of the following RMP sites which are situated within a 600m distance from the proposed development.

SMR No.	Class	Townland	ITM Ref (E,N)	Proximity to Proposed Development
WX007-032	Ritual site - holy well	Gorey Corporation Lands	714900, 660227	0.1km
WX007-033	Historic town	Gorey Corporation Lands	715315, 659643	0.6km+
WX007-017	Rath	Ballowen Ramsfortpark or	714869, 661434	0.6km
WX007-018	Burial Ground	Ballowen Ramsfortpark or	715454, 661300	0.6km
WX007-019	Ritual site - holy well	Ballytegan Park	715577, 661144	0.6km
WX006-090	Designed Landscape Feature	Creagh Upper	713647, 660104	1.2km
WX007-085005	Kiln	Gorey Corporation Lands	714877, 659261	1km
WX007-082	Metalworking site	Gorey Corporation Lands	715156, 659394	0.9km
WX007-033002	Graveyard	Gorey Corporation Lands	715375, 659565	0.8km
WX007-033001	Church	Gorey Corporation Lands	715375, 659565	0.8km
WX007-033002	Tomb - Chest Tomb	Gorey Corporation Lands	715375, 659565	0.8km
WX007-061	Standing Stone	Gorey Corporation Lands	715863, 659457	1.3km
WX007-055 & WX007-055001	Urn Burial	Gorey Corporation Lands	715737, 659201	1.4km

SMR No.	Class	Townland	ITM Ref (E,N)	Proximity to Proposed Development
WX007-080	Excavation – miscellaneous (Pottery)	Gorey Corporation Lands	715212, 659237	1.1km
WX012-034003	Fulacht fia	Raheenagurren West	716415, 658049	2.6km
WX012-034001	Fulacht fia	Raheenagurren West	716300, 658076	2.6km
WX012-034002	Fulacht fia	Raheenagurren West	716330, 658093	2.6km
WX012-030	Rath	Raheenagurren West	716326, 658540	2.3km
WX012-001	Rath	Raheenagurren West	716559, 658889	2.1km
WX012-002	Rath	Raheenagurren West	716747, 658548	2.5km
WX012-003	Rath	Raheenagurren West	716377, 658179	2.5km
WX012-034008	Burnt mound	Raheenagurren West	716359, 658138	2.6km
WX012-034009	Burnt mound	Raheenagurren West	716380, 658133	2.6km
WX012-034006	Kiln - corn-drying	Raheenagurren West	716437, 658064	2.7km
WX012-033002	Cremation pit	Coolnaveagh	715644, 657800	2.6km
WX012-033001	Ring-ditch	Coolnaveagh	715590, 657760	2.6km
WX007-085004	Fulacht fia	Ramstown Lower	714920, 659173	1.1km
WX007-085002	Fulacht fia	Ramstown Lower	714960, 659182	1.1km
WX007-085006	Burnt mound	Ramstown Lower	714904, 659164	1.1km
WX007-085003	Burnt mound	Ramstown Lower	714977, 659190	1.1km
WX007-085007	Burnt mound	Ramstown Lower	715047, 659177	1.1km
WX006-059001	Rath	Ballyrahan	712814, 660495	1.9km
WX006-059002	Rath	Ballyrahan	712820, 660524	1.9km
WX006-085	Rath	Ballyrahan	712747, 660600	2km
WX007-035	Rath	Courteencurragh	717630, 660083	2.6km
WX007-036	Rath	Courteencurragh	717880, 660105	2.8km
WX006-062	Ritual site - holy well	Kilnahue	713746, 659462	1.4km
WX007-083	Ritual site – holy well	Ballytegan Park	715418, 661994	1.3km
WX006-049	Standing stone	Ballingary Lower	713089, 661684	2km

SMR No.	Class	Townland	ITM Ref (E,N)	Proximity to Proposed Development
WX006-087	Standing stone (present location)	Ballingary Lower	713095, 661646	2km

Appendix 13.3: Architectural Heritage Sites within 2km Radius of Proposed Development

The following extract from the Record of Protected Structures and National Inventory of Architectural Heritage lists 2 structures within a 500m radius of the proposed development site. Also listed are those selected NIAH sites that are located between 0.5-2km from the development area and that are mentioned within the context of the report.

Registration Number/RPS	Class	Townland	ITM Ref (E,N)	Proximity to Proposed Development
RPS: WCC0224	House – ‘St. Anne’s’	Gorey Corporation Lands	715135, 660013	0.4km
RPS: WCC0259 NIAH: 15601024	House – ‘Mayfield’	Gorey Corporation Lands	715124, 659841	0.5km
NIAH: 15601038	Bridge	Gorey Corporation Lands	715778, 659986	0.85km
RPS: WCC0263 NIAH: 15601090	Railway Station	Gorey Corporation Lands	715500, 659156	1.3km
RPS: WCC0222 NIAH: 15700716	House – ‘Clonatin House’	Clonatin Upper	716758, 660055	1.7km
NIAH: 15700711	House – ‘Ramsfort House’	Ballytegan Park	716124, 661467	1km
RPS: WCC0217 NIAH: 15701132	Workhouse	Ramstown Lower	714571, 658678	1.7km
NIAH: 15701133			714554, 658645	

APPENDIX F – LANDSCAPE AND VISUAL

APPENDIX 1: Landscape Plan Showing Mitigation Measures



LEGEND

- HARD LANDSCAPE**
- Asphalt Roadway with in-situ concrete kerbs (to Engineers Specification)
Main Spine Road - 6m width
Remaining Road Network - 4.8m width with Flush Kerb
 - Raised Table with in-situ concrete kerbs (to Engineers Specification)
Granite Sett Ramps with HRA Chip Asphalt surfacing on Table
 - Footpaths/Rear Garden Paths: in-situ concrete, Brushed Finish (to Engineers Specification)
 - Driveways: Permeable PC Concrete Pavers e.g. Tobemore Hydropave Tegula 240x120x80mm
 - Apartment Communal Area: Permeable PC Concrete Pavers e.g. Tobemore Hydropave Tegula 240x120x80mm
 - Rear Garden Terraces: Permeable PC concrete Paving flags 400 x 400mm e.g. Tobemore Mayfair 40mm depth
 - Open Space Feature Paving: Concrete Block Paving with Decorative Banding e.g. Tobemore Tegula 50mm depth
 - Natural Play Spaces (450sq.m): Timber Play Equipment set in Bark Mulch surfacing. Equipment to detailed design stage.
 - Creche - Play Surface: Wetpout Safety Surface
 - Bicycle Parking: Stainless Steel Sheffield Stand Type
 - Concrete Block Wall - Spine Walls - 2.0m high, Rendered and Capped. Colour: TBA (see Detail 01/D1 on 1706_PL_DD_01)
 - Steel Bar Railings - 1.2m high Galvanised & Powder Coated - Black (see Detail 03/D1 on 1706_PL_DD_01)
 - Rear Garden Dividing Boundary - 1.8m high Timber Panel Fence with Concrete Posts. Gates to match Fencing (see Detail 02/D1 on 1706_PL_DD_01)
 - Site Boundary Fence - 1.8m high Green Open Weldmesh Fencing Hand-augered posts to minimise impact on adjacent trees (see Detail 04/D1 on 1706_PL_DD_01)
 - Site Boundary
- SOFT LANDSCAPE**
- Existing Tree to be retained (see Tree Survey for Details: Dr 1706_TS_P_01)
 - Existing Earth Bank to Roadway - areas to be retained. Removed bank areas shown on Arboricultural Impact Drawing (Drawing Number: 1706_TS_P_02). Existing vegetation to be selectively pruned & bolstered with additional native planting where site impact occurs.
 - Existing Trees to be Removed (see Arboricultural Impact Drawing for details (Drawing Number: 1706_TS_P_02))
 - Proposed Tree Planting:
 - Street Trees**
R/B 14-16cm girth, 2m Clear Stem
Acer campestre 'Elegant'
Acer platanoides 'Columnare'
 - Linear Open Space Trees**
R/B 14-16cm girth
Pyrus Chanticleer
Carpinus betulus 'Frans Fontaine'
 - Open Space Trees**
R/B 16-18cm girth
Prunus avium 'Plena', *Betula pendula*, *Alnus glutinosa*, *Quercus robur*, *Sorbus aria*
 - Replacement Trees to Northern Boundary**
- Semi-mature Beech Trees (20-25cm girth) planted at 15 metre centres
 - Amenity Grass with Seasonal Bulbs

- Shrub Planting: Public Areas**
Container Grown, PG - 2ltr
- to include the following species planted at approx 5sq per sq.m. min.
Lavandula 'Hidcote', *Sarcococca humilis*, *Carex oshimensis* 'Evergold', *Hypericum 'Hidcote'*, *Mahonia aquifolium*, *Rosmarinus officinalis*, *Lonicera pileata*, *Viburnum davidii*, *Prunus lusitanica*
- Shrub Planting: Front Gardens**
- Low Maintenance Planting to include Perennial & Fern selection, including planting from the above list of shrubs @ 6 per sq.m.
- Garden Lawns:**
- Coburns Greenlawn Grass Seed Mix 200mm topsoil depth
- Amenity Grass Lawn**
- Coburns UtilityPlay Grass Seed Mix 200mm topsoil depth
- New Mixed Native Hedgerow**
(bare-root planting)
- to include Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Holly (*Ilex sp.*), Guelder Rose (*Viburnum opulus*), Common Dogwood (*Cornus sanguinea*)
- Grass Mounds**
- 1m height maximum
- Existing Hedge**
- to be removed
- Existing Hedge**
- to be retained
Selective pruning, clearance and enhancement as advised by Landscape Architect

NOTES:

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5. Discrepancies to be referred to Murray & Associates for clarification.

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Client:	Strutec
Sheet Title:	Landscape Masterplan
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Project Architect:	Strutec
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APPENDIX 2: Map showing Location of Foul Pipe Route to R772

