HOLLYSTOWN SITES 2 & 3 AND KILMARTIN LOCAL CENTRE SHD

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) VOLUME 3 – APPENDICES

BSM Brady Shipman Martin
Est. 1968
Built. Environment.

Environmental Assessment **Built Environment**

Client: Glenveagh Homes Ltd.

CONTENTS

Appendix 8.1 Bat Survey Report

An Evaluation of the Hollystown Sites 2 and 3 & Kilmartin Local Centre SHD, Tyrrellstown For Potential as Bat Roost Sites and For Feeding and Commuting and Potential Impacts Of the Proposed Development

Brian Keeley B.Sc. (Hons) in Zool.

December 2021

Introduction

Bats are a widespread element of the Irish fauna and make up one quarter of all terrestrial mammal species. They are known to occur from much of the rural landscape which predominates on the island of Ireland, but they are also present within the urban environment and here they occupy buildings and occasionally trees for short or long periods. Buildings are a vital element of the annual cycle of all Irish bat species and at no time more so than the period summer to early autumn, but many bats may also avail of buildings as hibernation sites often when the presence of bats may be impossible to determine. Trees are less commonly noted as roost sites, partly due to a younger tree population for the island than in the rest of Europe and partly due to under-reporting.

Habitat loss or modification is an issue for bats as well as many other species. Changes to a site such as tree-felling and hedgerow clearance and the introduction of new houses and entire estates may remove roost sites and reduce the lands available to bats as a feeding site or in some way prevent full utilisation of the area by bats by interfering with a bat's ability to commute through a site or roost within the site.

Bats are protected by Irish and EU law and to prevent unlawful injury or death, it is essential that a full understanding of the site is available in advance to protect the resident bats from unintentional disturbance and to create a pathway by which a legal derogation and exemption may be designed in consultation with the National Parks and Wildlife Service. This is a service of the Heritage Division of the Department of Housing, Local Government & Heritage, if impacts are likely to be severe.

Prior to further significant changes to a site, it may be necessary to ensure that there will be no impact upon protected species, such as all of Ireland's bats. Bats of less common species may be present within a site unbeknownst to owners and residents and there is a requirement to undertake a survey by suitably qualified ecologists with the appropriate equipment to determine which species are present. Should bats be present, knowledge of the species concerned and the potential consequences of the modifications of the site can assist in identifying measures to alleviate the negative effects of these changes. This is a legal requirement given the protection level for these species to ensure that the nine species' conservation status are not reduced by major changes to an area.

In the northern area of the site (Hollystown Sites 2 and 3), there are also many mature trees surrounding a large farm building, and many free-standing trees and minor buildings including a shed. Of these, the farm buildings offer the highest roost potential. There are many free-standing mature trees within the site (i.e., mature trees that are not clustered into plantations and are therefore more available for access to bats), and these may offer a variety of roost potential from low to very high. In the southern section (Kilmartin Local Centre SHD towards Tyrrellstown centre), there is a large amount of amenity grassland as well as former farmland in addition to tree lines and hedgerow.

Farm building used as storage by the former golf course

Seasonal surveys provide a very detailed picture of the use of a site by bats, as bats may avail of different features within a site at different times of year and for different purposes. Feeding may, for example, be more concentrated in some areas due to better shelter from wind or rain. Trees or buildings may be occupied for various purposes at the different phases in the bat's annual cycle. Bats breed in the period May to August and maternity roosts may be encountered in trees. Individuals or small numbers of bats may use a tree throughout the rest of the year. Male bats may use trees to perch and establish mating perches or roosts in the summer and autumn. Bats may hibernate in trees from late October to the end of March or April.

Similarly, buildings may serve for all of the above functions. In addition, the roosting potential of buildings and trees, these elements may serve as feeding areas for bats and a substrate for their prey. Trees are essential for insect diversity, shelter for wind and rain and as landmarks. Buildings are high-potential as roost sites but may also serve as feeding areas, especially during inclement weather, when insects may shelter from wind or rain and are available as prey for species such as pipistrelle, brown long-eared bat, Natterer's bat etc.

This assessment was undertaken over three visits, commencing in October 2020, and continuing into June and August 2021.

Surveying for bats in early October is a suitable time to address the usage of a site during the mating period and where there is full access to buildings, it is possible to determine the usage of the buildings by bats at other times. Maternity roosts have dispersed by this time. June is the period when bats are born and is an ideal opportunity to locate maternity roosts. This applies both to trees and buildings. This is also the time when the best feeding opportunities are available to pregnant or lactating females and is an ideal time to determine good feeding areas for bats. The third survey in August provides information on the new recruits of the year from the young born in the summer and also provides further information on the mating period as male bats are active attracting mates and establishing mating roosts or perches.

Methodology

October 2020

The survey of the northern lands was undertaken on October 5th, 2020, with the aid of an Echometer 3 (EM3) handheld "real time expansion" (a term used by the manufacturer to explain that the equipment records all signals across the ultrasonic range and then speeds up the signal to create a real-time equivalent of the sounds produced by any bats encountered) bat detector and a Songmeter Bat+ (SM2) ultrasonic all-weather recorder. The SM2 records all ultrasound from a set start time (in this case, 30 minutes before sunset) until the end of the survey period.

The EM3 was held for the entire active survey while the SM2 was positioned on the perimeter of the building for the survey period. The SM2 recorded from 30 minutes prior to sunset up to 20.30 hours and gives a background to the activity in a fixed point as opposed to the EM3 which was handheld and recorded a transect of the site. An examination of available information from Bat Conservation Ireland, previous data from the site and survey results from other areas of Mulhuddart / Tyrrellstown etc was undertaken to compile a list of most likely species in addition to the evaluation of the habitat and known distributions of Irish species.

June 2021

A second survey was undertaken on June 16th to 17th 2021 commencing prior to sunset and continuing for 1.5 hours and re-ceommencing one hour prior to sunrise. This survey was undertaken by two surveyors and commenced with an examination of the storage building and a small pumphouse adjoining the pond. One surveyor remained to observe these buildings while a second commenced a walked transect through the entire site. Following a sustained observation of the buildings, the second surveyor also walked the entire site.

August 2021

A final survey was undertaken on 16th to 17th August 2021 with one surveyor commencing prior to sunset at the storage building and the second observing the mature trees in the site for evidence of emerging bats. Surveying continued as before for a minimum of 1.5 hours

By sunrise, the tremperature had fallen to 13 degrees Celsius. While it was dry, it was also windy both at sunset and at sunrise.

Southern section (Kilmartin Local Centre) June 2021

The initial survey of the "Local Centre" site was undertaken on June 22nd to 23rd 2021 commencing prior to sunset and continuing for 1.5 hours and re-commencing one hour prior to sunrise. This survey was undertaken by one surveyor and commenced with an examination of the trees to the eastern perimeter of the site and the schools to the north (this was an external bat detector survey as no school is affected by this proposal). The survey concentrated for the early part on this area and was later expanded to cover the trees on the western edge of the site. Prior to sunrise, the survey concentrated on the trees along the western and northwestern perimeter with occasional examination of the trees in the south-east. A static monitor was placed at trees in the south-eastern corner of the site and remained here up to sunrise.

Southern section (Kilmartin Local Centre) August 2021

A second survey of the "Local Centre" was undertaken on 12th to 13th August 2021 with one surveyor commencing prior to sunset (which was at 2100 hours) at the southwestern corner of the site at the mature trees along the football grounds and the second observing the mature trees at the northwestern and western area of the site for evidence of emerging bats. Surveying continued for a minimum of 1.5 hours.

Survey constraints

The survey was undertaken in the Kilmartin lands over three separate visits, including the periods of the year when activity is at its highest (June to August) and at a period when bat activity is still relatively sustained except where night temperatures drop severely or there is constant rain. Two of these visits covered all areas of the proposal. Maternity roosts are unlikely to be occupied by large numbers of bats by this date (there is likely to be few individuals present by this time). Prior to dawn in October, bat activity is more often absent as temperatures are low. In June and August, pre-dawn activity is much more likely (except where temperatures have dropped low or where rain is heavy).

This should allow a surveyor to identify feeding and commuting bats and the activity of breeding and mating bats and to determine the presence of important bat roosts, important feeding areas and any commuting corridors of value to bats.

On June 16th, 2021, the temperature at sunset was 16 degrees Celsius. 60% cloud dry insects present. Weather conditions were calm. Sunset was at 21.56 hours and sunrise was at 04.56 hours.

On August 16th to 17th, 2021, while the temperature remained suitable and conditions were dry, it remained windy throughout the night. However, there was bat activity at both phases of the survey and bat activity throughout the site and the night of survey was a representative sample of bat activity within the site.

Weather conditions were mixed for the assessment of the southern section of the site (the "Local Centre"),with the lowest temperature of 22nd June being at around 5.2 degrees Celsius and a maximum in the day of 18.5 degrees Celsius. There was 0.1 mm of rain at 22.00 hours (experienced as occasional drops) and 2 mm by 06.00 hours. There was bat activity up to 04.00 hours but rain from here up to sunrise ended bat activity early.

In all, the site has been examined on three separate occasions, and this assessment provides a good representation of bat usage of this site.

Existing Environment

Bat fauna of Hollystown / Kilmartin sites

(Hollystown Sites 2 and 3)

Roosting species Leisler's bat (*Nyctalus leisleri)*

A Leisler's bat was noted to perch and call from a mature ash tree (tag 2716) close to the farm buildings (used as storage for the former golf course) on August 16th, 2021. This is a mating perch and is protected as a resting place of a protected species (under Annex IV of the Habitats Directive). The bat was noted to call from this perch repeatedly on August 16th, 2021, as well as call in flight over the former golf course area.

No other bat roosts were identified during this survey. There are a number of potential roosts that were not noted to be occupied by bats at any of the three survey dates. This includes mature free-standing trees and the storage building. There was no obvious signs of bat usage of any of these structures.

Bat fauna of Hollystown / Kilmartin sites

(Kilmartin Local Centre SHD)

Roosting species None

No bats were seen to emerge from or enter any tree within or around the site. Bats were present prior to sunrise at the western trees in August 2021 but their final destination was not noted. The houses to the west of the site are the most likely roost site.

Bat species feeding or commuting within the site based on active and passive surveys

(Hollystown Sites 2 and 3)

Common pipistrelle	*Pipistrellus pipistrellus*
Soprano pipistrelle	*Pipistrellus pygmaeus*
Leisler's bat	*Nyctalus leisleri*
Brown long-eared bat	*Plecotus auritus*

Over most of the site, bat activity was primarily common and soprano pipistrelle and was noted in several areas, including feeding in and around the storage / farm building and around tree cover. Bat activity was high on the western perimeter of the northern section of the site at trees along the edge of the existing construction site. Soprano pipistrelle activity was noted in a wider section of the site than common pipistrelle. There were periods of sustained soprano

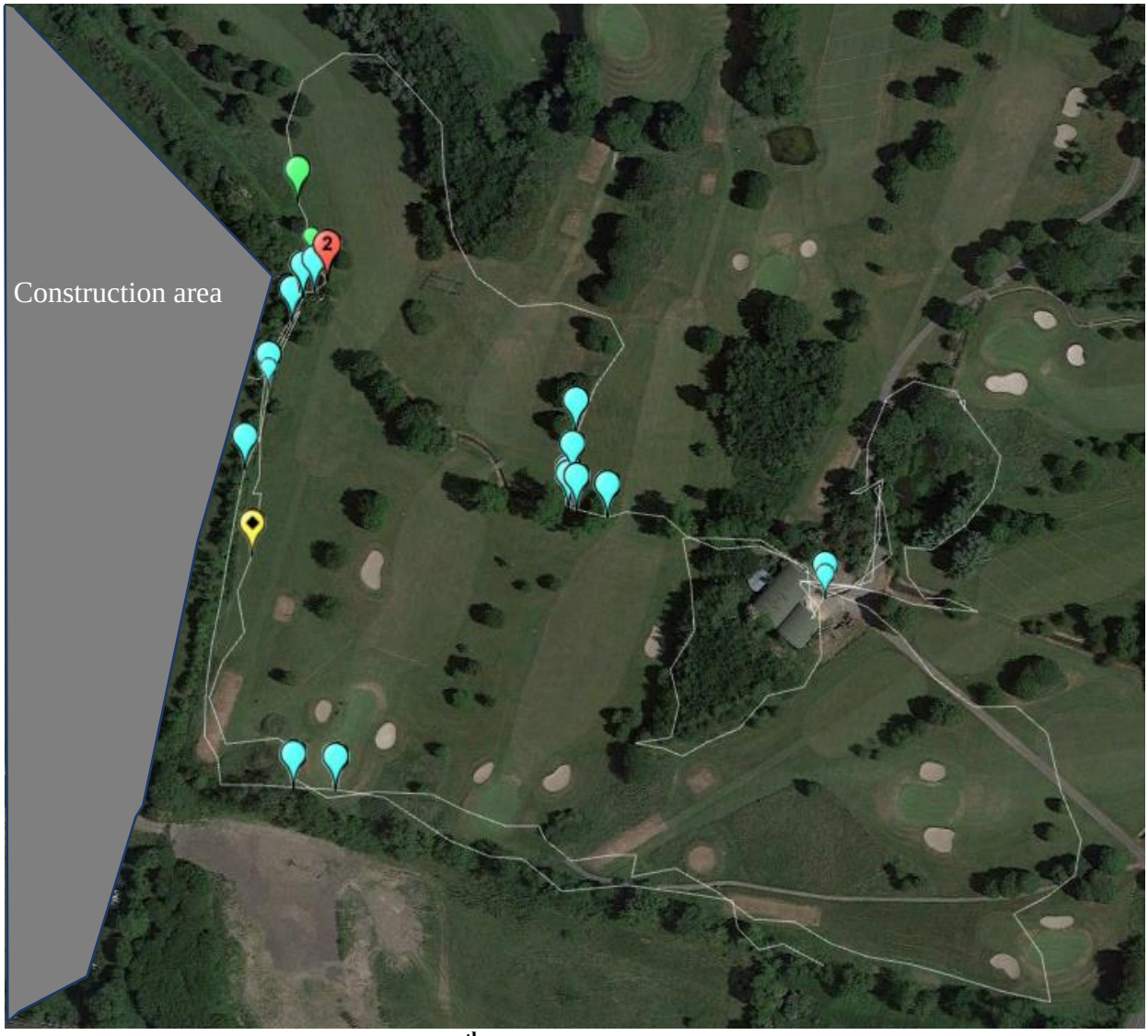
pipistrelle feeding in August 2021 at the main pond and a smaller pond to the north and in tree clusters where up to 4 bats were present at any one time.

Leisler's bat activity was more limited and noted along the western edge of the site but also from one mature tree and from the southern section of the site.

Common pipistrelle activity was noted along the perimeter of the site, at the northern end of the site and occasionally within the site (including at the Leisler's bat ash tree perch).
A brown long-eared bat(s) was noted by a static monitor close to the storage building from 22.12 hours on 16th August and on a high number of occasions up to 05.02 hours (almost 60 recordings) on 17th August 2021. Surprisingly, no signals of this species were recorded from the site in October 2020 or June 2021 in the same area. The absence of the bat in June 2021 suggests that the bat is not breeding within the site but is commuting and feeding and potentially roosting within the site.

Bat species feeding or commuting within the site based on active and passive surveys (Kilmartin Local Centre SHD)
In Kilmartin Local Centre, there was bat activity along the various treelines with much less activity on exposed areas. The trees along the western edge were the key feeding area with soprano pipistrelle activity along the trees in the south-eastern corner (in June 2021) and common and soprano pipistrelle in the western area and Leisler's bats closer to the schools.

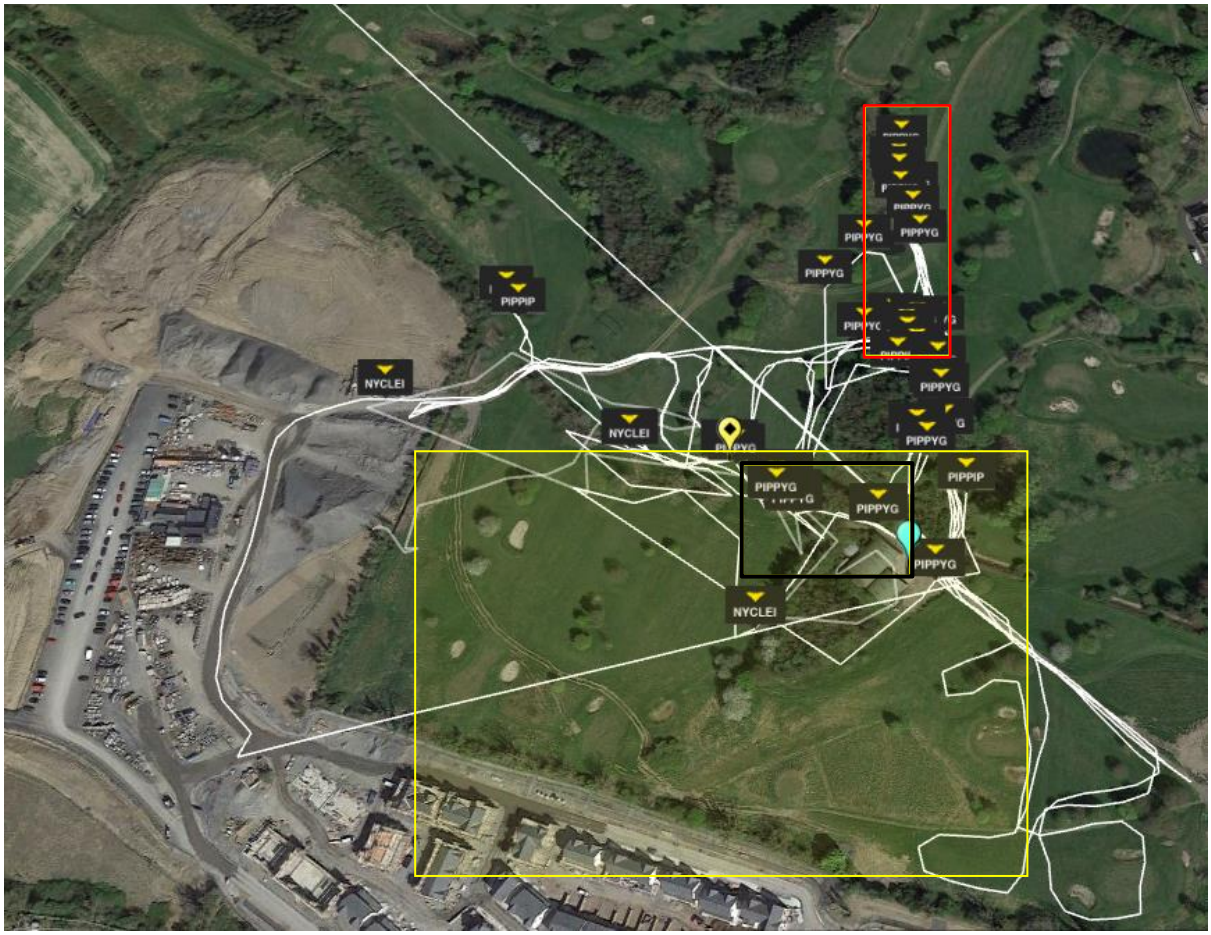
In August 2021, the majority of bat activity was along the western trees with Leisler's bats more spread across the entire site.



Bat activity within the site October 5th, 2020

Legend

Blue paddle	Soprano pipistrelle	Green paddle	Common pipistrelle
Yellow paddle	Leisler's bat	"2" paddle	Common and soprano pipistrelle

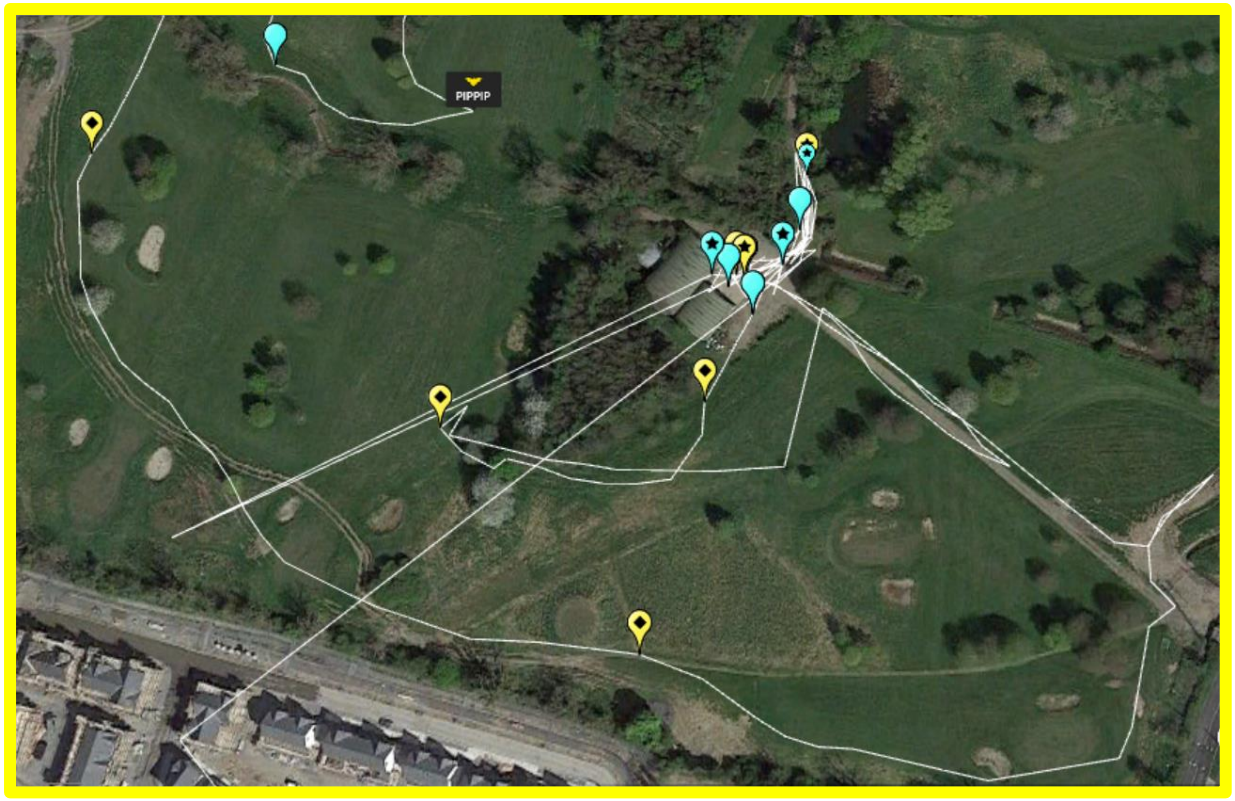


Bat activity within the site 16th to 17th August 2021

Legend

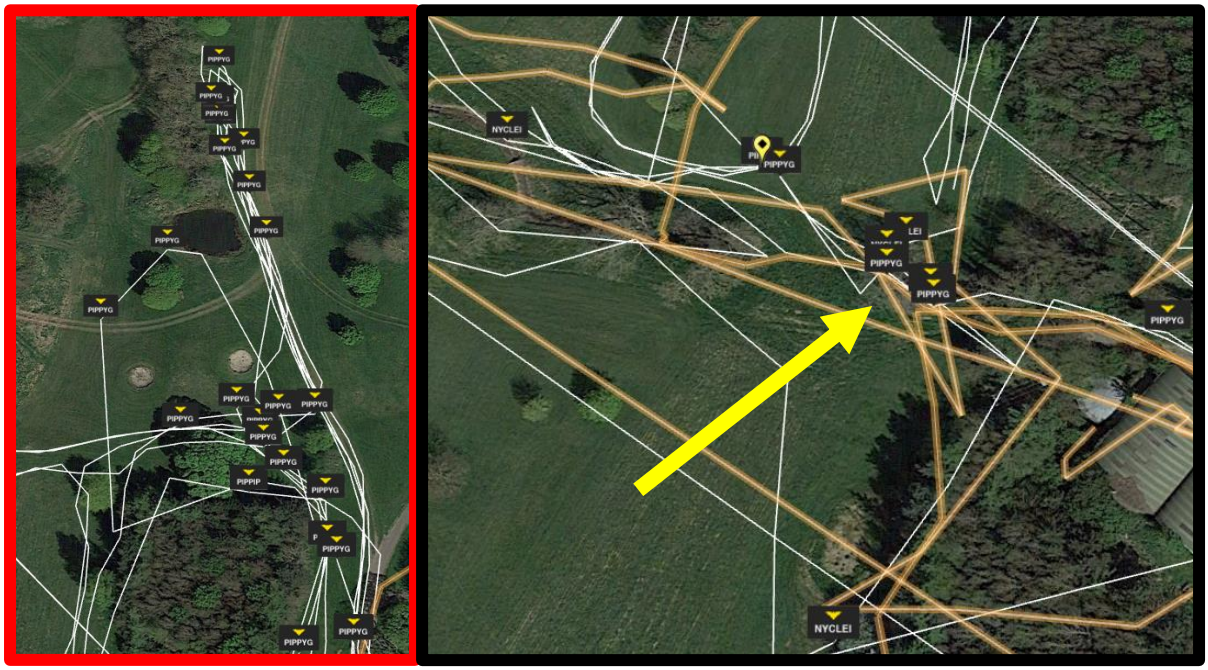
White line	Transects covered during the survey		
"PIPPYG" label	Soprano pipistrelle	"PIPPIP" label	Common pipistrelle
Yellow paddle and "NYCLEI" label	Leisler's bat		

For close-ups of the yellow box, red box and black box see overleaf



Close-up of Kilmartin 2 and 3 bats 16th to 17th August 2021(yellow border 1)

Blue paddle Soprano pipistrelle "PIPPIP" label Common pipistrelle
Yellow paddle Leisler's bat
Stars indicate the presence of bats prior to sunrise



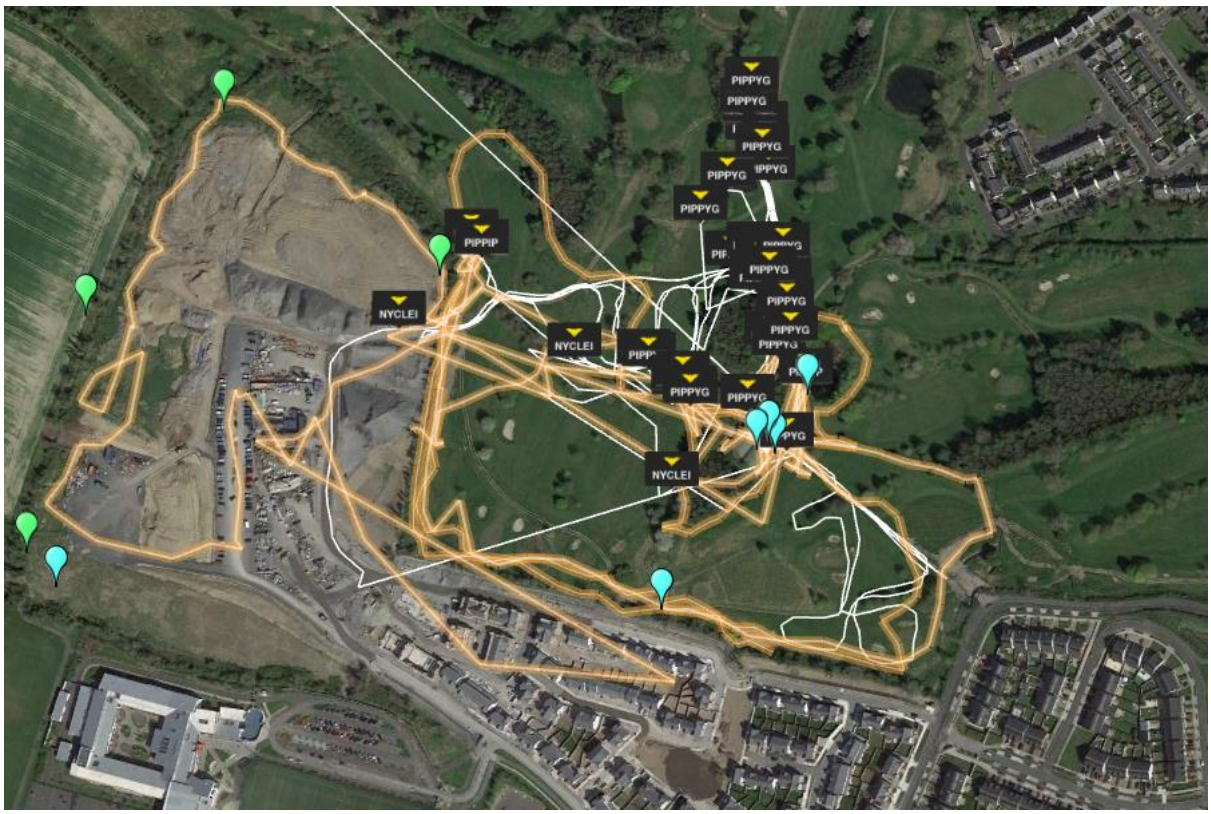
Close-up of Kilmartin 2 and 3 bats 16th to 17th August 2021

(red border 2 (left), black border 3 (right))

The Leisler's mating perch is indicated by the yellow arrow (Irish Grid Reference O0768843032)

“PIPPYG” label	Soprano pipistrelle	“PIPPIP” label	Common pipistrelle
“NYCLEI” label	Leisler’s bat		

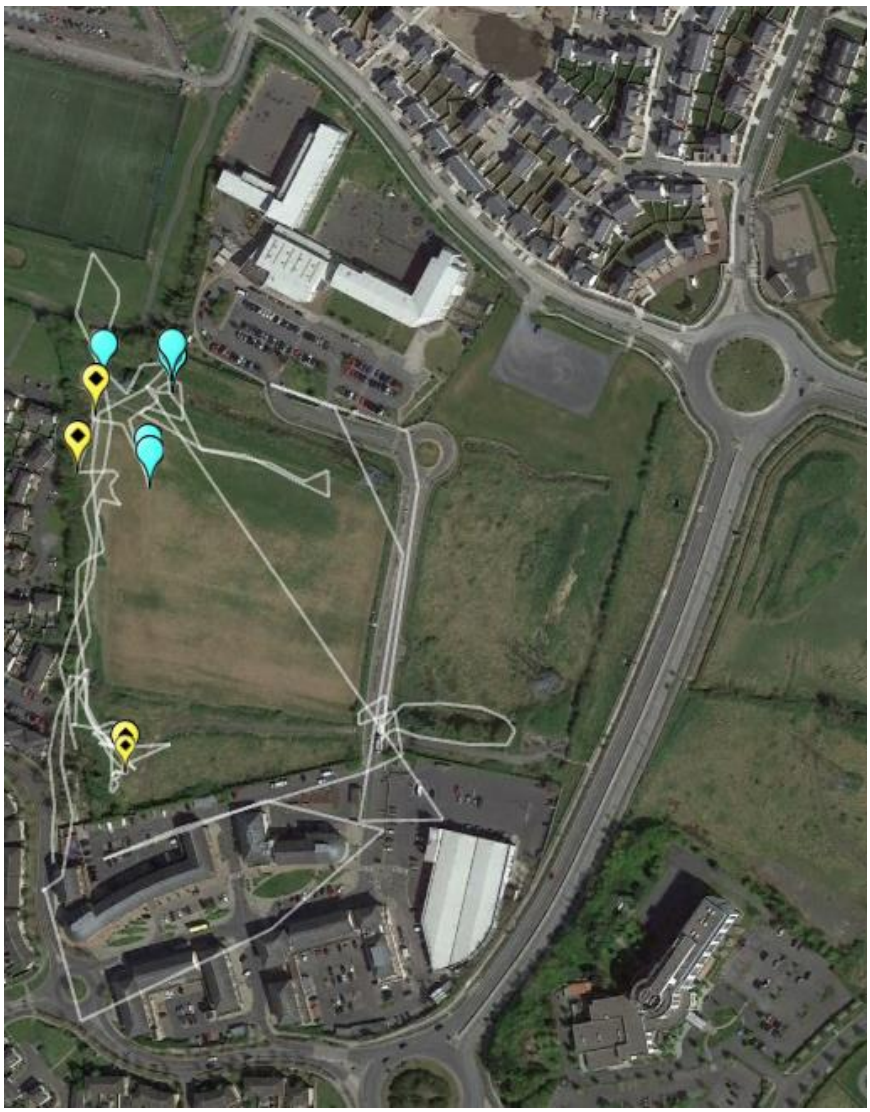
Leisler’s bat mating perch in ash tree August 2021 (Irish Grid Reference O0768843032)



Kilmartin bats 2 and 3, June 2021

Blue paddle and “PIPPYG” label	Soprano pipistrelle
Green paddle and “PIPPIP” label	Common pipistrelle

“NYCLEI” label Leisler’s bat



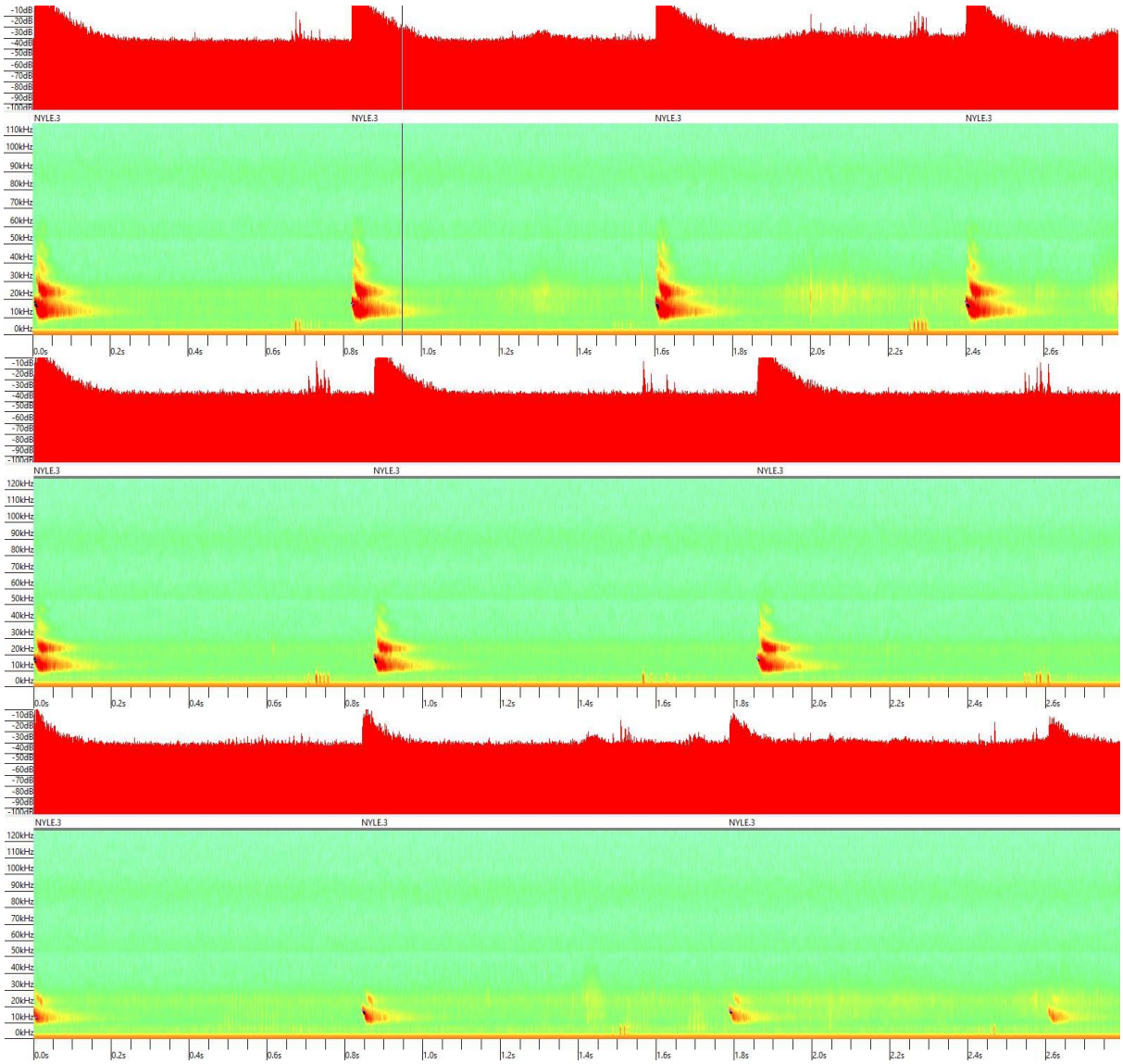
Bat activity within the “Local Centre” site 16th August 2021 surveyor 1

Blue paddle	Soprano pipistrelle
Green paddle	Common pipistrelle
Yellow paddle	Leisler’s bat

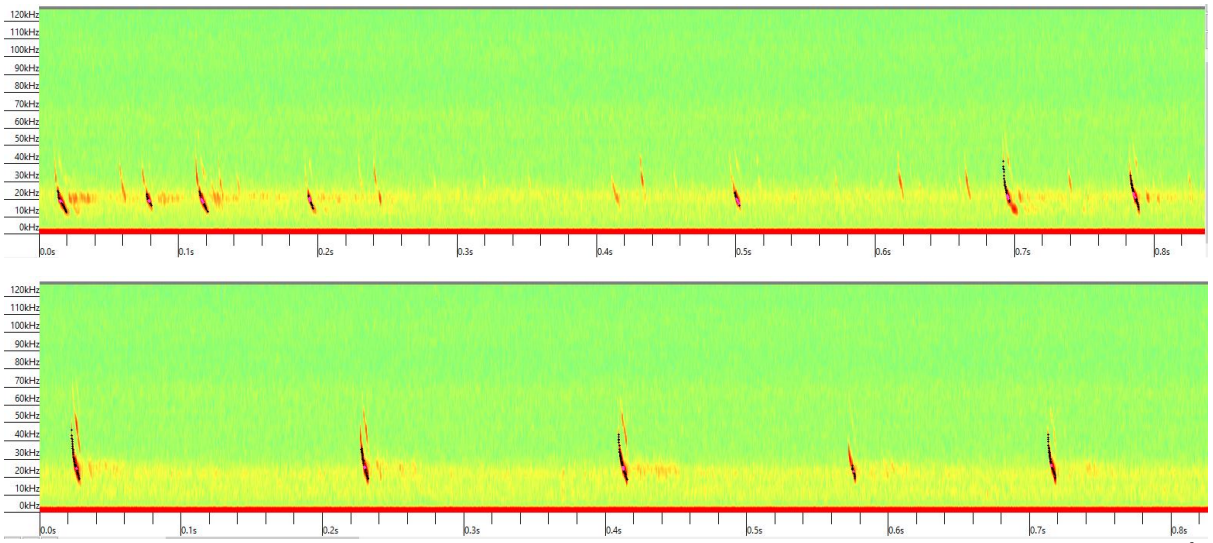
Bat activity in the "Local Centre" 16th August 2021, surveyor 2

Blue paddle	Soprano pipistrelle
Green paddle	Common pipistrelle
Yellow paddle	Leisler's bat

White Lines – Transects of surveyors



Leisler's bat social calls 16th August 2021 from ash tree



Brown long-eared bat signals at the storage building at 01.39 hours and 01.41 hours on 17th August 2021

Proposed development

Potential Impacts

Loss of roosts

There is the loss of an ash tree mating perch (tag 2716) and there is the potential that other roosts within the site may be removed by the proposal that are unidentified. This would typically apply to lesser roosts in buildings (individuals) but may be several bats in trees as these roosts are more difficult to pinpoint due to their frequently short-term use. This is a long-term moderate negative impact without the implementation of mitigation.

Loss of habitat

There will be a limited loss of scrub but a loss of several mature trees which provide good shelter especially around the storage building. This will reduce insect abundance and feeding and commuting corridors. This is a long-term to permanent moderate negative impact without the implementation of mitigation.

Disturbance from lighting

At present, the site is an unlit golf course with minor light overspill entering from housing. Lighting will be introduced for two different functions: 1) Access and safety 2) Security and policing. The former is to allow ease of use at night while the latter ensures a perceived higher security level. There is the potential that lighting may also decrease if used appropriately.

Lighting may affect bat species, in particular, light-intolerant bat species during foraging and if directed at emergence points would affect all bat species, even those that will feed in illuminated areas.

This is a long-term moderate negative impact without the implementation of mitigation.

Mitigation

Derogation to permit the removal of a protected structure

A Derogation must be acquired from the National Parks and Wildlife Service of the Heritage Division of the Department of Housing, Local Government & Heritage to allow the removal of the Leisler's mating perch as this is a protected structure under the Wildlife Act and measures and instruments implementing the Habitats Directive. The granting of this derogation is separate from the planning process and may be acquired where measures that have been proposed will not lead to the detriment of the conservation status of the protected species concerned. The issuing of a derogation is at the discretion of the NPWS once the conditions have been satisfied that Leisler's bats will not face an overall negative impact in terms of the conservation of the species.

The following measures are proposed to form a bat conservation mitigation programme:

1. **Provision of alternative bat roosts**

Bat boxes

9 timber bat boxes and 12 x 2F Schwegler boxes and a pole-mounted rocket box shall be erected within unlit areas away from traffic and likely disturbance within the site. These must be no less than 3 metres above ground in uncluttered areas facing in a southerly direction. Boxes may be attached to buildings, trees, or poles. The area sterilised by the power lines offers an ideal location for a number of poles for bat box installation including the rocket box. The locations of bat boxes shall be agreed with a bat specialist.

Prior to the commencement of exclusion, 3 bat boxes shall be erected on any trees or other features within the site that will *not be removed* (this would include the installation of a pole in the power line zone at a time when the power line is not in operation or by other safe means) to ensure that bats have an alternative roost site in the immediate term if necessary. These shall be erected as discussed above.

Trees

The following trees are proposed for the provision of future roosting opportunities based on observations from tree roosts in Ireland for Leisler's bats:

Oak (*Quercus petraea* and *robur*) (subject to the sourcing of oaks that are devoid of oak processionary moth), Beech (*Fagus sylvatica*), Poplar (*Populus* – this has included *P. alba*), Sweet chestnut (*Castanea sativa*). All of the above species have been noted as bat roosts in addition to ash. As there are severe problems with the spread of Ash Dieback, this species is not proposed at this time.

Retained features from the existing roost

The existing mating perch shall be identified prior to the removal of the tree and if feasible, the roost area shall be cut from the tree and securely attached to a retained tree or pole / bat box (e.g., "rocket box").

Exclusion of bats by a bat specialist or felling when bats are known to be absent

Any bats remaining within the site prior to the commencement of tree felling shall be excluded by means approved by NPWS including by hand capture, bat net or one-way valve by a licensed bat specialist named on the licence issued for that purpose.

NPWS must be informed of all stages of implementation of the derogation. No exclusion shall take place between May and the start of August unless it is unambiguous that the bats present are not breeding females or their young. Exclusion shall preferably occur in September or October to avoid impacts upon nesting birds.

If a bat survey has been undertaken by a bat specialist and bats have been determined to be absent, felling may proceed under the supervision of a bat specialist. If there is any doubt regarding the presence of bats, height access shall be provided to allow the examination of any trees with roost potential prior to felling.

Retention of bat until suitable roost sites have been removed

Should a bat or bats be excluded by a bat specialist and is within an accessible location or if a bat is discovered within an accessible roost, the bat or bats shall be held in care by the bat specialist or a suitably trained individual until the roosts within the site have been removed. Bats shall be fed and provided with water and shelter to ensure the best outcome following release.

Release of bat within the immediate area

Bats that have been retained to permit felling or demolition shall be released close to the development area to allow them to seek out any alternative roost with which they are familiar. This shall be undertaken by a bat specialist or trained bat rehabber.

Checking of mature trees for the presence of bats

A bat specialist shall examine the trees for bat roost potential and for the presence of bats before felling commences. As for buildings, the trees shall be assessed by a bat specialist

from a height access if due for felling in winter or by a bat detector assessment (or a combination of both) if felling occurs at any other time. The discovery of any further bat roosts shall require additional derogations and additional mitigation.

Examination of farm building prior to removal

The farm building used as a storage area for the golf course shall be examined for the presence of bats prior to its removal. This shall be undertaken by a suitably experienced bat specialist. If the building is demolished in winter, the specialist shall examine the structure for evidence of bats. If the survey is undertaken at a time when bats are active, a bat detector survey shall be undertaken of the structure. As above, the discovery of any further bat roosts shall require additional derogations and additional mitigation.

Lighting

Lighting must be designed that will limit overspill from the required area for illumination and prevent light pollution. This should aim to avoid mature trees in particular and shall not illuminate waterbodies and flanking vegetation. LED is the most energy efficient source available and wherever a permanent source of night lighting is unessential, it should be motion-activated.

- •Dark corridor for movement of bats along the grounds of the site. Lighting should be directed downwards away from the treetops.
- •All luminaires shall lack UV elements when manufactured and shall be LED
- •A warm white spectrum (ideally <2700 Kelvin) shall be adopted to reduce blue light component
- Luminaires shall feature peak wavelengths higher than 550 nm
- Tree crowns in the adjacent lands shall remain unilluminated
- Planting shall provide areas of darkness suitable for bats to feed and commute through the site.

Trees must not be illuminated as this would prevent their use for feeding by bats.

Retention or Planting of trees and other vegetation

Several mature broadleaf trees within the former golf course shall be retained to provide feeding opportunities and roost sites and to allow attachment of bat boxes. Species of plant to provide nectar for night-flying insects such as moths should be included in the planting

mix. This could include species such as dog rose, night scented stock, honeysuckle and *Clematis* and other species attractive to moths and other nocturnal insects. Other species from the All-Ireland Pollinators Plan shall also be included.

Monitoring of all bat boxes and other mitigation including planting and lighting

All bat boxes shall be checked by a bat specialist after 2 years and re-positioned if they are unsuitable due to planting. Lighting or disturbance. Lighting shall be assessed by a bat specialist once installed to ensure that there are suitable corridors of movement for bats through the area. The trees proposed for bats and plants for insect diversity shall be examined once established by a bat specialist.

Impacts of the Development following Mitigation

This will result in no negative impacts upon bat species with proper implementation of the proposed measures. The measures proposed meet the requirements proposed in the Commission notice Guidance document on the strict protection of animal species of Community interest under the Habitats Directive, (Brussels, 12.10.2021 C(2021) 7301 final).

APPENDICES

Photographs of the ash tree mating perch

Photographs of the site

Bat signals recorded in 2021 and previously in 2020

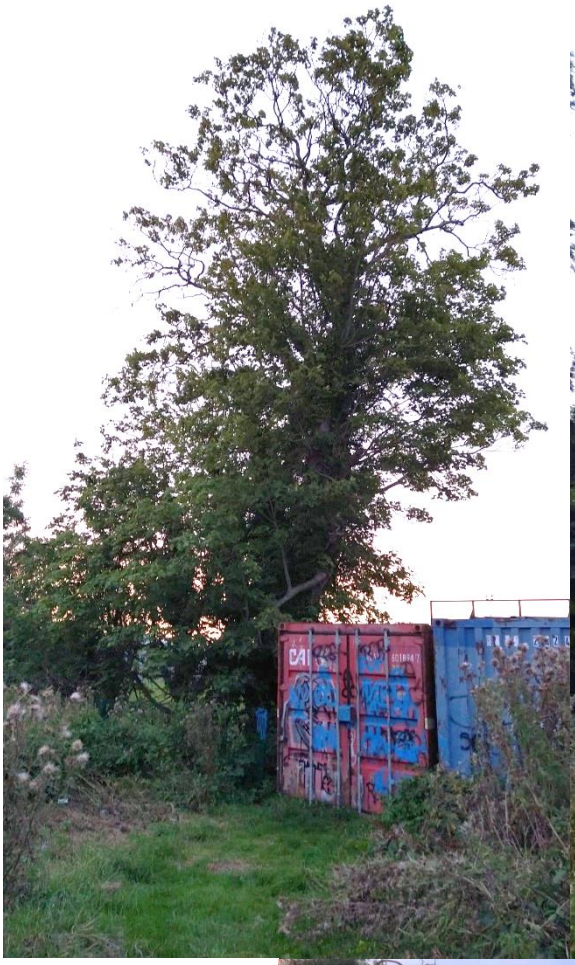
Ash tree (tag 2716) with Leisler's bat mating perch / roost
Irish Grid Reference O 07688 43032

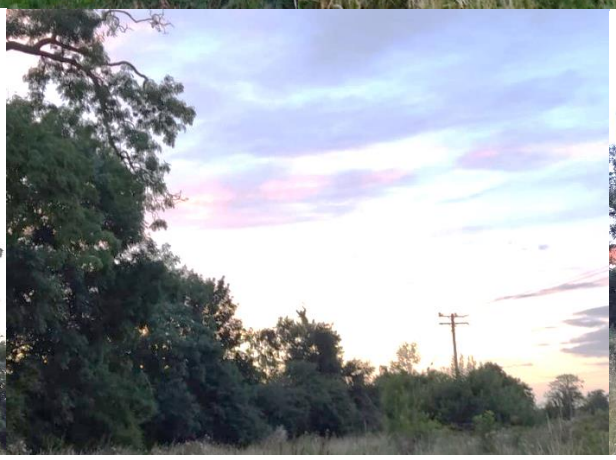
Features offering roosting opportunities within the ash tree (tag 2716) **and at the approximate height from which the Leisler's bat was calling**

Pumphouse (left) at the main pond (right)

Ash with cavities (right)






Trees within the Kilmartin Local Centre proposal


Eastern area of the Local Centre site

There was less bat activity on the eastern section of the site. The trees visible on the horizon of the photo on the left was one area where bat activity was more concentrated.

Bat data from static monitor 16th to 17th August 2021

Date	Time	Auto Id	Pulses	Matching	Manual Id
16/08/2021	20:56:24	Leisler's bat	2	2	Leisler's bat
16/08/2021	21:10:01	Soprano pipistrelle	43	41	Soprano pipistrelle
16/08/2021	22:10:02	Soprano pipistrelle	5	5	Soprano pipistrelle
532 passes in this tie period					
16/08/2021	22:11:02	Common pipistrelle	39	37	Common pipistrelle
16/08/2021	22:11:07	Common pipistrelle	18	17	Common pipistrelle
16/08/2021	22:11:12	Common pipistrelle	23	23	Common pipistrelle
16/08/2021	22:11:17	Common pipistrelle	33	33	Common pipistrelle
16/08/2021	22:12:41	Brown long-eared bat	3	3	Brown long-eared bat
16/08/2021	22:14:48	Brown long-eared bat	9	7	Brown long-eared bat
16/08/2021	22:15:05	Soprano pipistrelle	8	8	Soprano pipistrelle
16/08/2021	22:19:07	Soprano pipistrelle	38	38	Soprano pipistrelle
39 passes in this time period					
16/08/2021	22:20:11	Common pipistrelle	24	16	Common pipistrelle
16/08/2021	22:20:27	Soprano pipistrelle	7	7	Soprano pipistrelle
16/08/2021	22:26:03	Soprano pipistrelle	27	27	Soprano pipistrelle
37 passes in this time period					
16/08/2021	22:26:10	Brown long-eared bat	12	11	Brown long-eared bat
16/08/2021	22:26:15	Brown long-eared bat	3	3	Brown long-eared bat
16/08/2021	22:31:27	Leisler's bat	21	11	Leisler's bat

16/08/2021	22:31:32	Leisler's bat	6	5	Leisler's bat
16/08/2021	22:31:38	Soprano pipistrelle	32	22	Soprano pipistrelle
16/08/2021	22:31:43	Leisler's bat	2	2	Leisler's bat
16/08/2021	22:34:06	Leisler's bat	3	3	Leisler's bat
16/08/2021	22:35:05	Leisler's bat	29	28	Leisler's bat
16/08/2021	22:35:10	Leisler's bat	9	9	Leisler's bat
16/08/2021	22:35:45	Soprano pipistrelle	34	34	Soprano pipistrelle
16/08/2021	22:43:23	Soprano pipistrelle	15	15	Soprano pipistrelle
47 passes up to 22:43:23					
204 soprano pipistrelle passes up to 05:42:05 6 common pipistrelle passes up to 03:03:28 33 Leisler's bat passes in total up to 05:29:34					

Bat signals from Mini 2 static monitor 16th June 2021

DATE	TIME	AUTO ID	PULSES	MATCHING	MANUAL ID
16/06/2021	22:15:29	Leisler's bat	5	5	Leisler's bat
16/06/2021	22:23:19	Soprano pipistrelle	46	45	Soprano pipistrelle
1348 soprano pipistrelle passes in the night of survey 295 common pipistrelle passes 68 Leisler's bat passes					

Bat data from handheld Echometer 3 from August 12th to 13th 2021

DATE	TIME	AUTO ID	PULSES	MATCHING	MANUAL ID
12/08/2021	21:29:00	Leisler's bat	2	2	Leisler's bat
12/08/2021	21:38:58	Soprano pipistrelle	24	22	Soprano pipistrelle
12/08/2021	21:41:40	Common pipistrelle	8	5	Common pipistrelle
13/08/2021	05:15:24	Common pipistrelle	4	4	Common pipistrelle
5 Leisler's bat passes 11 soprano pipistrelle passes 14 common pipistrelle passes					

Bat data from static monitor June 2021(Local Centre) (sorted by species)

DATE	TIME	AUTO ID	PULSES	MATCHING	MANUAL ID
22/06/2021	22:30:07	Common pipistrelle	19	16	Common pipistrelle
22/06/2021	22:25:21	Common pipistrelle	2	2	Pipistrelle
22/06/2021	22:29:29	Common pipistrelle	49	23	Soprano pipistrelle
92 Leisler's bat passes 25 soprano pipistrelle passes 10 common pipistrelle passes 9 pipistrelle passes					

Bat data from static monitor 22nd to 23rd June 2021 in the site close to Tyrrellstown centre (in time order)

DATE	TIME	AUTO ID	PULSES	MATCHING	MANUAL ID
22/06/2021	22:24:36	Soprano pipistrelle	42	42	Soprano pipistrelle
22/06/2021	22:27:27	Leisler's bat	8	8	Leisler's bat
22/06/2021	22:30:07	Common pipistrelle	19	16	Common pipistrelle
23/06/2021	03:49:22	Leisler's bat	3	2	Leisler's bat
91 Leisler's bat passes 26 soprano pipistrelle passes 10 common pipistrelle passes					

Bat signals recorded on EM3 October 2020

Date	Time	Auto Id	Pulses	Manual Id
05/10/2020	19:13:30	Soprano Pipistrelle	16	Soprano Pipistrelle
05/10/2020	19:28:01	Soprano Pipistrelle	17	Soprano Pipistrelle
172 passes between these times				
05/10/2020	20:26:15	Leisler's Bat	6	Leisler's Bat
05/10/2020	20:26:20	Leisler's Bat	4	Leisler's Bat

Bat signals recorded on SM2 October 2020

Date	Time	Auto Id	Pulses	Manual Id
05/10/2020	19:30:50	Soprano Pipistrelle	15	Soprano Pipistrelle
05/10/2020	19:35:44	Common Pipistrelle	3	Common Pipistrelle
56 Soprano	11 common			

An Roinn Tithíochta,
Rialtas Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

Licence No.: DER/BAT 2021 – 136

EUROPEAN COMMUNITIES (BIRDS AND NATURAL HABITATS) REGULATIONS, (S.I. No 477 of 2011)

DEROGATION LICENCE

Granted under Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011, hereinafter referred to as "the Habitats Regulations".

The Minister for Housing, Local Government and Heritage, in exercise of the powers conferred on him by Regulation 54 of the Habitats Regulations hereby grants to **Glenveagh Properties Ltd** supervised by **Brian Keeley BSc**, a licence. It is stated that:

(A) In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social and economic nature.

(B) There is no satisfactory alternative, and the action authorised by this licence will not be detrimental to the maintenance of the population of **bats** referred to below at a favourable conservation status in their natural range.

The licence is issued in respect of the following **bat species**:

- **common pipistrelle** — ***Pipistrellus pipistrellus***
- ***soprano pipistrelle*** — ***Pipistrellus pygmaeus***
- **Leisler's bat** — ***Nycatalus leisler***
- ***Brown long-eared bat*** — ***Plecotus auritus***

. This licence authorises the following:

(a) Roost disturbance;

(b) Damage or destruction of breeding sites or resting places;

(c) Actions authorised within the licence

This licence is subject to the terms and conditions set out overleaf.

Terms and Conditions

1. This licence is granted solely to allow the activities specified in connection with the **felling works** located at **Tyrellstown, Fingal, Co. Dublin** for **Glenveagh Properties Ltd.**

2. All activities authorised by this licence, and all equipment used in connection herewith, shall be carried out, constructed and maintained (as the case may be) so as to avoid unnecessary injury or distress to any species of **BAT**.

3. This licence may be modified or revoked, for stated reasons, at any time.

4. The mitigation measures outlined in the application report (**Derogation Application for Removal of Mature Ash Tree, pgs.24-28**), together with any changes or clarification agreed in correspondence between NPWS and the agent or applicant, are to be carried out. Strict adherence must be paid to all the proposed measures in the application.

5. No work can begin before **December 2nd 2021** and must be completed by **March 31st 2022.**

6. The works will be supervised by a licensed bat specialist **Brian Keeley** appointed under Regulation 4 of the Habitats Regulations.

7. The local National Parks and Wildlife Service field officer **Roy Thompson, Roy.Thompson@housing.gov.ie, 35315393237** should be contacted prior to the commencement of any activity, and if bats are detected on site during the course of the work, under the terms of this licence.

8. A report shall be submitted to Wildlife Licensing Unit, National Parks and Wildlife Service Department of Housing, Local Government and Heritage, R. 2.03, 90 North King Street, Smithfield, Dublin 7, D07 N7CV on completion of the actions which this licence authorises, describing the activities carried out in pursuance of this licence.

Claire Crowley
(a person authorised by the Minister to sign on his behalf)

02/12/2021

Wildlife Licensing Unit

National Parks and Wildlife Service

Housing, Local Government and Heritage

R. 2.03

90 North King Street

Smithfield

Dublin 7

D07 N7CV

NOTES (1 to 2).

- This licence is granted for the period specified and subject to compliance with the conditions specified. Anything done other than in accordance with the terms of this licence may constitute an offence.

- This licence applies to **bats** and to no other species.

Appendix 8.2 Outline Biosecurity Plan

Appendix 8.2 Outline Biosecurity Plan

Introduction

This document presents an outline Biosecurity Plan for the construction phase of the proposed Hollystown Sites 2 and 3 & Kilmartin Local Centre strategic housing development (SHD) at Hollystown and Kilmartin, Dublin 15 ('the proposed development' hereafter).

It has been prepared by Brady Shipman Martin, and will be finalised by the appointed contractor in agreement with the Local Authority, in advance of the commencement of the proposed works, and implemented throughout the proposed works. The final Biosecurity Plan may be integrated into the Construction & Environmental Management Plan (CEMP).

The objective of the Biosecurity Plan is to minimise the risk of introduction and / or dispersal of invasive alien species during the construction phase of the proposed development. For the purposes of this plan, 'biosecurity' refers to measures implemented to prevent and / or minimise the risk of the introduction or dispersal of invasive alien species.

Background

The proposed development is described in the main text of the Environmental Impact Assessment Report (Volume 2).

No species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477/2011) were recorded at the site of the proposed development during the surveys undertaken for the purposes of the proposed development. This does not rule out the possibility that invasive alien plant species could become established at the site of the proposed development before the construction phase; or that invasive alien species could be introduced to the site, or dispersed within the site, or from the site to other areas; during the proposed works.

Relevant Legislation

Management of invasive alien species during the construction phase of the proposed development will comply with all relevant legislation, including the following:

- Noxious Weeds Act, 1936;
- Wildlife Acts, 1976 to 2021;
- Waste Management Acts, 1996 to 2021, and related legislation;
- Safety, Health and Welfare at Work Acts, 2005 to 2021, and related legislation;
- Regulation (EC) No. 1107/2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC;
- Commission Regulation (EU) No 1141/2010 laying down the procedure for the renewal of the inclusion of a second group of active substances in Annex I to Council Directive 91/414/EEC and establishing the list of those substances;
- European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477/2011);
- European Communities (Plant Protection Products) Regulations 2012 (SI No. 159/2012);
- European Communities (Sustainable Use of Pesticides) Regulations 2012 (SI No. 155/2012);
- Commission Implementing Regulation (EU) No 354/2013 on changes of biocidal products authorised in accordance with Regulation (EU) No 528/2012; and

- Regulation (EU) No 1143/2014 on the prevention and management of the introduction and spread of invasive alien species.

Of particular relevance are Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011). Regulation 49 has the effect of prohibiting the introduction and dispersal of certain species listed in Parts 1 and 2 of the Third Schedule of the Regulations. Regulation 50 has the effect of prohibiting the possessing for sale, breeding, reproduction or propagation; or selling, transporting, distributing, introducing or releasing; certain species listed in Parts 1, 2 and 3 of the Third Schedule of the Regulations, or vector material thereof.

Additionally, the Wildlife (Amendment) Act, 2000, of the Wildlife Act (1976) makes it an offence to cause an exotic species of flora (including flowers, roots, seeds or spores thereof) to grow in the wild in any place in the State.

Relevant Policies

The Biosecurity Plan shall be in accordance with the relevant aims, objectives, targets and recommendations of the following policy documents (and any subsequent iterations of same):

- European Commission (2020). *Communication: EU Biodiversity Strategy for 2030*.
- Department of Culture, Heritage and the Gaeltacht (2017). *National Biodiversity Action Plan 2017 – 2021*.
- Department of Agriculture, Food and the Marine (2020). *Plant Health & Biosecurity Strategy 2020 – 2025*.
- National Biodiversity Data Centre (2021). *All-Ireland Pollinator Plan (2021 – 2025)*.

Relevant Guidelines

The Biosecurity Plan shall be informed by the following guidance documents:

- National Roads Authority (2010). *Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads*.
- Burns, T., Dolan, L. M. J. & Whelan, P. M. (n.d.). *A Guide to Landscape Treatments for National Road Schemes in Ireland*. [Report prepared for National Roads Authority].
- Kelly, J. (2012). *Horticulture Code of Good Practice: To prevent the introduction and spread of Invasive Non-native Species*. [Report prepared for the Northern Ireland Environment Agency and the Irish National Parks and Wildlife Service].
- Department of Agriculture, Food and the Marine (n.d.). *"Good Plant Protection Practice".*
- Invasive Species Ireland (2008). *Best Practice Management Guidelines: Japanese Knotweed (Fallopia japonica)*.

Recommended Measures

At a minimum, the following measures are recommended:

Pre-construction Survey & Management Recommendations

The Applicant will be responsible for ensuring that a pre-construction survey for invasive alien plant species is carried out of the entire site by a suitably qualified ecologist prior to the commencement of on-site works. At a minimum, this survey shall identify any species listed in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477/2011) but should also

aim to identify any other invasive alien plant species that may post a risk of significant ecological impacts.

Where invasive alien plant species are identified on the site or in the immediate vicinity, appropriate and proportionate management measures shall be set out by a suitably qualified ecologist. In the first instance, the approach in respect of invasive alien plant species identified on the site should be to avoid insofar as possible the disturbance of vegetation or soil (e.g. mowing, hedge cutting, vegetation clearance, excavation, footfall and plant movements) in affected areas, allowing an appropriate buffer area. Exclusion zones with may be established with fencing and signage to this effect.

Where physical or chemical control measures are recommended, a corresponding risk assessment should be undertaken, taking into account the relative costs and benefits in relation to ecology, human health, economic costs, etc., of the management options under consideration. Any physical or chemical control works to be undertaken shall be fully compliant with the relevant legislative provisions, in accordance with the National Roads Authority *Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads* (2010) and carried out by suitably qualified personnel with all appropriate safety precautions and environmental protection measures in place.

The transportation and disposal of invasive alien plant species material is a very high risk activity in terms of the risk of introduction and dispersal and, where required, shall be carried out by suitably qualified personnel in accordance with all applicable legislation and (where relevant) under licence from the National Parks and Wildlife Service.

Where physical or chemical control measures are implemented, periodic monitoring will be undertaken during the appropriate survey period, as recommended by the project ecologist or the specialist who undertook the control efforts in question, to determine whether the efforts have been successful. Where required, follow-up control efforts will be implemented.

Landscape Planting

Landscape planting will not use any invasive alien plant species, will aim to maximise the proportion of native species used, and will be conducted with reference to the above-listed policies and guidance documents, particularly:

- Burns, T., Dolan, L. M. J. & Whelan, P. M. (n.d.). *A Guide to Landscape Treatments for National Road Schemes in Ireland*. [Report prepared for National Roads Authority].
- Kelly, J. (2012). *Horticulture Code of Good Practice: To prevent the introduction and spread of Invasive Non-native Species*. [Report prepared for the Northern Ireland Environment Agency and the Irish National Parks and Wildlife Service].
- National Biodiversity Data Centre (2021). *All-Ireland Pollinator Plan (2021 – 2025)*.

Materials Management

- Invasive species may be introduced to a site through the importation of soils, aggregates, stones and other materials from off-site. The contractor will be responsible for ensuring that such materials imported to the site of the proposed development are free of invasive alien species, e.g. through documentation from the provider and / or inspection of the source site in question.
- The on-site storage of soils will be managed in order to minimise the risk of colonisation by invasive alien plant species. Stockpiles of soil, for instance, shall not be situated in proximity to known occurrences of invasive alien plant species. Where soil stockpiles are expected to be *in situ* for long

periods (≥1 year), these shall be seeded with a native grass mix to reduce the potential for colonisation.

Works In and Adjacent to Watercourses

Invasive species are dispersed easily in the aquatic environment and along riparian corridors / river banks. For this reason, access to surface watercourses and their banks (as well as works in these areas) should be avoided, other than where strictly required for the purposes of the proposed works.

Works in the aquatic environment will be carried out with particular care to avoid the introduction or dispersal of invasive alien species. Works in these areas should be carried out in accordance with the *check-clean-dry* protocol (with designated wash-down areas with cleaning equipment, wheel-washes and boot-washes provided, where appropriate) and with regard to the following documents:

- Inland Fisheries Ireland (2020). *Planning for Watercourses in the Urban Environment*.
- Inland Fisheries Ireland (2016). *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*.
- National Roads Authority (2008). *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes*.

Responsible Person

The contactor will appoint a responsible person from among the site personnel (e.g. a Site Environmental Manager or similar) to oversee the implementation of the Biosecurity Plan and associated record keeping. This person will liaise with the project ecologist and any other relevant persons, as necessary, to ensure the proper implementation of all biosecurity measures as set out in the final Biosecurity Plan.

Appendix 9.1 Impact Rating & Assessment Criteria

Table 1 Glossary of Impacts following EPA Guidance Documents (Draft 2017 Guidelines)

Impact Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment
	Neutral	A change which does not affect the quality of the environment
	Negative/ Adverse	A change which reduces the quality of the environment
Significance	Imperceptible	An effect capable of measurement but without noticeable consequences
	Not significant	An effect which causes noticeable changes in the character of the environment but without noticeable consequences
	Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
	Moderate Effects	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends
	Significant Effects	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment
	Profound Effects	An impact which obliterates sensitive characteristics
Extent & Context	Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect
	Context	Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Probability	Likely Effects	The effects that can reasonably be expected to occur as a result of the planned project if all mitigation measures are properly implemented
	Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration	Momentary	Effects lasting from seconds to minutes
	Brief	Effects lasting less than a day
	Temporary	Effects lasting less than a year
	Short-term	Effects lasting one to seven years
	Medium-term	Effects lasting seven to fifteen years
	Long-term	Effects lasting fifteen to sixty years
	Permanent	Effects lasting over sixty years
	Reversible Effects	Effects that can be undone, for example through remediation or restoration
	Frequency of Effects	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly daily, weekly, monthly, annually.
Type	Indirect Effects (a.k.a. Secondary Effects)	Impact on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative	The addition of many small impacts to create one larger, more significant impact
	'Do Nothing'	The environment as it would be in the future should no development of any kind be carried out
	Worst case Effects	The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable	When the full consequences of a change in the environment cannot be described
	Irreversible	When the character, distinctiveness, diversity, or

	reproductive capacity of an environment is permanently lost
Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken effect
Synergistic	Where the resultant effect is of greater significance than the sum of its constituents

Appendix 9.2 Ground Investigation Trial Pit & Borehole Logs

Ground Investigations Ireland Ltd
www.gii.ie

Site Development at Hollystown Golf Club			**Trial Pit Number** SA01
Machine : 3.5T Excavator **Method :** Trial Pit	**Dimensions** 2.10m X 0.50m X 1.70m	**Ground Level (mOD)**	**Client** DBFL	**Job Number** 7929-07-18
	Location	**Dates** 01/08/2018	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10) 0.10	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets.		
					(0.50) 0.60	Stiff brown slightly sandy slightly gravelly CLAY with rare sub-angular to sub-rounded cobbles of limestone and granite. Gravel is sub-angular to sub-rounded fine to coarse limestone and granite.		
					(0.90) 1.50	Stiff greyish brown slightly sandy gravelly CLAY with rare sub-angular to sub-rounded cobbles of limestone and granite. Gravel is sub-angular to sub-rounded fine to coarse limestone and granite. Trial pit completed at scheduled depth. Complete at 1.50m		

Plan

Remarks

No Groundwater encountered.
Trial pit stable.
Soakaway completed in trial pit.
Trial pit backfilled on completion on of soakaway test.

Scale (approx)	Logged By	Figure No.
1:25	Tmcl	7929-07-18.SA01

Ground Investigations Ireland Ltd
www.gii.ie

Site Development at Hollystown Golf Club			**Trial Pit Number** SA02
Machine : 3.5T Excavator **Method :** Trial Pit	**Dimensions** 2.10m X 0.50m X 1.70m	**Ground Level (mOD)**	**Client** DBFL	**Job Number** 7929-07-18
	Location	**Dates** 01/08/2018	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10) 0.10	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets.		
					(0.20) 0.30	Firm brown slightly sandy gravelly CLAY with rare sub-angular cobbles of limestone. Gravel is angular to sub-angular fine to coarse limestone.		
					(0.90)	Firm greyish brown slightly sandy gravelly CLAY with occasional sub-angular cobbles of limestone. Gravel is sub-angular fine to coarse limestone.		
					1.20	Firm to stiff dark brown sandy gravelly CLAY with occasional sub-rounded boulders of limestone. Gravel is sub-angular to sub-rounded fine to coarse limestone.		
					(0.50) 1.70	Trial pit completed at scheduled depth.		
						Complete at 1.70m		

Plan

Remarks

No Groundwater encountered.
Trial pit stable.
Soakaway completed in trial pit.
Trial pit backfilled on completion on of soakaway test.

Scale (approx)	Logged By	Figure No.
1:25	Tmcl	7929-07-18.SA02

Ground Investigations Ireland Ltd
www.gii.ie

Site Development at Hollystown Golf Club			**Trial Pit Number** SA03
Machine : 3.5T Excavator **Method :** Trial Pit	**Dimensions** 2.10m X 0.50m X 1.70m	**Ground Level (mOD)**	**Client** DBFL	**Job Number** 7929-07-18
	Location	**Dates** 01/08/2018	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					0.05	FILL: Dark grey slightly sandy gravelly Clay. Gravel is angular to sub-angular fine to coarse limestone.		
					(0.25)			
					0.30	MADE GROUND: Brown slightly sandy slightly gravelly Clay with rare sub-angular limestone cobbles and rare fragments of plastic.		
					(0.50)	Stiff brown slightly sandy slightly gravelly CLAY with occasional sub-rounded limestone cobbles.		
					0.80			
					(0.45)	Firm to stiff grey mottled brown slightly sandy gravelly CLAY. Gravel is sub-angular to sub-rounded limestone.		
					1.25			
					(0.45)	Firm dark grey slightly sandy slightly gravelly CLAY with occasional sub-angular cobbles of limestone. Gravel is sub-angular to sub-rounded limestone.		
					1.70	Trial pit completed at scheduled depth.		
						Complete at 1.70m		

Plan

Remarks

Groundwater encountered at 1.65m BGL - slight seepage.
Trial pit stable.
Soakaway completed in trial pit.
Trial pit backfilled on completion on of soakaway test.

Scale (approx)	Logged By	Figure No.
1:25	Tmcl	7929-07-18.SA03

Ground Investigations Ireland Ltd
www.gii.ie

Site Kilmartin Town Centre			**Trial Pit Number** SA01
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 2.35m X 0.70m X 1.80m	**Ground Level (mOD)**	**Client**	**Job Number** 8323-12-18
	Location 707407.1 E 742462 N	**Dates** 08/01/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20) 0.20	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets and rare fragments of metal.		
					(0.55) 0.75	MADE GROUND: Brown slightly sandy slightly gravelly Clay with rare fragments of wood.		
					(0.25) 1.00	Firm grey/brown slightly sandy gravelly CLAY with rare sub-rounded cobbles.		
					(0.35) 1.35	Stiff grey slightly sandy gravelly CLAY.		
					(0.45) 1.80	Grey slightly sandy very clayey angular to sub-angular fine to coarse GRAVEL of Mudstone (Weathered Rock).		
						Obstruction: Weathered Rock. Complete at 1.80m		

Plan

Remarks

No Groundwater encountered.
Trial pit stable.
Soakaway test carried out in Trial pit.
Trial pit backfilled on completion of soakaway test.

Scale (approx)	Logged By	Figure No.
1:25	Tmcl	8323-12-18.SA01

Ground Investigations Ireland Ltd
www.gii.ie

Site Kilmartin Town Centre			**Trial Pit Number** SA02
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 2.25m X 0.60m X 1.70m	**Ground Level (mOD)**	**Client**	**Job Number** 8323-12-18
	Location 707624.8 E 742549.6 N	**Dates** 08/01/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets.		
					0.30			
					(0.20)	Firm brown slightly sandy gravelly CLAY.		
					0.50			
					(0.50)	Stiff grey mottled brown slightly sandy gvravelly CLAY with rare sub-angular cobbles.		
					1.00			
					(0.70)	Stiff grey mottled brown slightly sandy gravelly CLAY with occasional angular to sub-rounded cobbles of limestone and mudstone.		
			Slight ingress(1) at 1.70m.		1.70	Trial pit terminated at 1.70m due to encountering groundwater.		▽1
						Complete at 1.70m		

Plan

Remarks

Groundwater encountered at 1.70m BGL.
Trial pit stable.
Soakaway test carried out in Trial pit.
Trial pit backfilled on completion of soakaway test.

Scale (approx)	Logged By	Figure No.
1:25	Tmcl	8323-12-18.SA02

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Kilmartin Town Centre	TP01

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
				8323-12-18
	Location 707621.4 E 742618.9 N	Dates 08/01/2019	Project Contractor Ground Investigations Ireland	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets.		
					0.20	Soft to firm brown slightly sandy slightly gravelly CLAY.		
					(0.40)			
0.50	B				0.60	Firm grey mottled brown slightly sandy slightly gravelly CLAY with rare sub-rounded cobbles of limestone.		
					(0.90)			
1.10	B							
					1.50	Firm to stiff grey mottled brown slightly sandy gravelly CLAY.		
					(0.30)			
					1.80	Stiff dark grey slightly sandy gravelly CLAY with rare sub-rounded to rounded cobbles and rare boulders of limestone.		
1.90	B				(0.50)			
					2.30	Obstruction: Boulder.		
						Complete at 2.30m		

Plan

Remarks

No Groundwater encountered.
Trial pit stable.
Plate Test carried out at 0.50m BGL in trial pit.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	Tmcl	8323-12-18.TP01

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Kilmartin Town Centre	TP02

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
				8323-12-18
	Location 707695 E 742569.9 N	Dates 08/01/2019	Project Contractor Ground Investigations Ireland	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					0.05	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets.		
					(0.45)	MADE GROUND: Brown slightly sandy slightly gravelly Clay with fragments of plastic.		
0.50	B				0.50	Soft to firm light brown slightly sandy slightly gravelly CLAY.		
					(0.50)			
1.10	B				1.00	Firm to stiff grey mottled brown slightly sandy gravelly CLAY.		
					(0.50)			
					1.50	Stiff dark grey slightly sandy gravelly CLAY with occasional angular to sub-angular cobbles.		
					(0.40)			
1.90	B				1.90	Dark grey angular to sub-angular fine to coarse GRAVEL with ocasional angular to sub-angular cobbles.(Weathered Rock)		
					(0.65)			
			Slow ingress(1) at 2.40m.		2.55	Obstruction: Rock.		▽1
						Complete at 2.55m		

Plan

Remarks

Groundwater encountered at 2.40m BGL (slow ingress).
Trial pit spalling below 1.90m
Plate Test carried out at 0.50m BGL in trial pit.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	Tmcl	8323-12-18.TP02

Ground Investigations Ireland Ltd
www.gii.ie

Site Kilmartin Town Centre			**Trial Pit Number** TP03
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number** 8323-12-18
	Location 707466.4 E 742435.4 N	**Dates** 08/01/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20-1.00	B				(0.10) 0.10	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets.		
					(0.20) 0.30	MADE GROUND: Dark brown slightly sandy very gravelly Clay with rare fragments of metal.		
					(0.50) 0.80	Firm to stiff grey slightly sandy slightly gravelly CLAY.		
					(0.40) 1.20	Grey slightly sandy slightly clayey angular to sub-angular fine to coarse Gravel.(Weathered Rock)		
						Obstruction: Rock. Complete at 1.20m		

Plan

Remarks

No Groundwater encountered.
Trial pit stable.
Plate Test carried out at 0.50m BGL in trial pit.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	Tmcl	8323-12-18.TP03

Ground Investigations Ireland Ltd
www.gii.ie

Site Kilmartin Town Centre			**Trial Pit Number** TP04
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number** 8323-12-18
	Location 707605 E 742423.3 N	**Dates** 08/01/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10) 0.10	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets and tree roots.		
					(0.35)	MADE GROUND: Dark greyish brown slightly sandy slightly gravelly Clay with rare fragments of concrete.		
0.40	B				0.45	Firm grey slightly sandy slightly gravelly silty CLAY.		
1.10	B				(1.25)			
					1.70	Grey slightly clayey angular fine to coarse GRAVEL of Mudstone. (Weathered Rock)		
2.00	B				(0.50)			
			Fast ingress(1) at 2.20m.		2.20	Obstruction: Rock		▽1
						Complete at 2.20m		

Plan

Remarks

Groundwater encountered at 2.20m BGL (Fast seepage).
Trial pit spalling below 1.80m
Plate Test carried out at 0.50m BGL in trial pit.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	Tmcl	8323-12-18.TP02

Ground Investigations Ireland Ltd
www.gii.ie

Site Kilmartin Town Centre			**Trial Pit Number** TP05
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number** 8323-12-18
	Location 707414.1 E 742438.4 N	**Dates** 08/01/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10) 0.10	Brown slightly sandy slightly gravelly TOPSOIL with fragments of plastic and grass rootlets.		
					(0.35)	MADE GROUND: Brown slightly sandy slightly gravelly CLAY with fragments of plastic.		
0.40	B				0.45	Firm to stiff grey slightly sandy slightly gravelly CLAY.		
					(0.60)			
					1.05 (0.10) 1.15	Grey slightly sandy clayey angular to sub-angular fine to coarse Gravel.(Weathered Rock). Obstruction: Rock.		
						Complete at 1.15m		

Plan

Remarks

No Groundwater encountered.
Trial pit stable.
Plate Test carried out at 0.50m BGL in trial pit.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	Tmcl	8323-12-18.TP05

Kilmartin Town Centre - Trial Pit Photographs

TP01

TP02


JCB

TP03

TP04

TP05

SA01

SA02

Ground Investigations Ireland Ltd
www.gii.ie

Site Kilmartin Town Centre			**Borehole Number** BH01
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 2.40m	**Ground Level (mOD)**	**Client**	**Job Number** 8323-12-18
	Location	**Dates** 24/01/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.20) 0.20	TOPSOIL: Brown sandy gravelly Clay with rootlets		
0.50-0.50	B					(0.50) 0.70	MADE GROUND: Brown sandy gravelly Clay with lenses of grey Silt		
1.00-1.45 1.00-1.00	SPT(C) N=17 B			2,3/3,3,5,6		(0.40) 1.10	Firm brown slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded		
1.50-1.50	B					(0.40) 1.50	Stiff brown/gey slightly sandy gravelly CLAY with occasional sub-rounded cobbles. Gravel is fine to coarse sub-angular to sub-rounded		
2.00-2.23 2.00-2.00	SPT(C) 50/75 B			3,5/8,42		(0.80) 2.30	Stiff grey with orange and brown mottling slightly sandy gravelly silty CLAY with occasional sub-angular cobbles. Gravel is fine to coarse sub-angular		
						2.40	OBSTRUCTION- Probable Bedrock		
							Complete at 2.40m		

Remarks
No groundwater encountered
Borehole terminated on presumed bedrock
Borehole backfilled upon completion
Chiselling from 2.30m to 2.40m for 1 hour.

Scale (approx)	Logged By
1:50	S Kealy

Figure No. 8323-12-18.BH01

Ground Investigations Ireland Ltd
www.gii.ie

Site	Borehole Number
Kilmartin Town Centre	BH02

Machine : Dando 2000 Method : Cable Percussion	Casing Diameter 200mm cased to 2.40m	Ground Level (mOD)	Client	Job Number 8323-12-18
	Location	Dates 24/01/2019	Project Contractor Ground Investigations Ireland	Sheet 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						0.10 (0.20)	TOPSOIL: Brown sandy gravelly Clay with rootlets		
						0.30 (0.30)	MADE GROUND: Brown sandy gravelly Clay		
0.50-0.50	B					0.60 (0.40)	Firm brown slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded		
1.00-1.23 1.00-1.00	SPT(C) 50/75 B			3,7/11,39		1.00	Firm grey with orange and brown mottling sandy gravelly silty CLAY with occasional sub-angular to angular cobbles. Gravel is fine to coase angular to sub-angular		
1.50-1.50	B					(0.80)	Very stiff grey slightly sandy gravelly CLAY with occasional sub-rounded cobbles. Gravel is fine to coarse angular to sub-angular		
1.90-2.05 2.00-2.00	SPT(C) 50/0 B			25,25/50		1.80 1.90	OBSTRUCTION: Probable Bedrock		
							Complete at 2.40m		

Remarks
No groundwater encountered
Borehole terminated on presumed Bedrock
Borehole backfilled upon completion
Chiselling from 1.40m to 1.90m for 1.3 hours.

Scale (approx)	Logged By
1:50	S Kealy

Figure No.
8323-12-18.BH01

Ground Investigations Ireland Ltd
www.gii.ie

Site Kilmartin Town Centre			**Borehole Number** BH03
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 2.50m	**Ground Level (mOD)**	**Client**	**Job Number** 8323-12-18
	Location	**Dates** 24/01/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.20) 0.20	TOPSOIL: Brown sandy gravelly Clay with Topsoil		
						(0.50)	MADE GROUND: Brown sandy gravelly Clay		
0.50-0.50	B					0.70			
1.00-1.45 1.00-1.00	SPT(C) N=11 B			1,2/2,3,3,3		(1.20)	Firm brown slightly sandy slightly silty gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded		
1.50-1.50	B					1.90			
2.00-2.15 2.00-2.00	SPT(C) 50/0 B			5,17/50		(0.50)	Very stiff black sandy gravelly CLAY with occasional sua-angualr to sub-rounded cobbles. Gravel is fine to coarse sub-angular to sub-rounded		
						2.40 2.50	OBSTRUCTION: Probable Bedrock		
							Complete at 2.50m		

Remarks
No groundwater encountered
Borehole terminated on presumed Bedrock
Borehole backfilled upon completion
Chiselling from 2.30m to 2.50m for 1 hour.

Scale (approx)	Logged By
1:50	S Kealy

Figure No. 8323-12-18.BH03

Appendix 9.3 Ground Investigation Soil Testing Laboratory Reports

Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Conor Finnerty
Date :	29th January, 2019
Your reference :	8323-12-2018
Our reference :	Test Report 19/757 Batch 1
Location :	Kilmartin
Date samples received :	17th January, 2019
Status :	Final report
Issue :	1

Two samples were received for analysis on 17th January, 2019 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Where Waste Acceptance Criteria Suite (EC Decision of 19 December 2002 (2003/33/EC)) has been requested, all analyses have been performed using the relevant EN methods where they exist.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Ground Investigations Ireland
Reference: 8323-12-2018
Location: Kilmartin
Contact: Conor Finnerty
JE Job No.: 19/757

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1	2											
Sample ID	TP01	TP03											
Depth	1.10	0.20-1.00											
COC No / misc													
Containers	T	T											
Sample Date	08/01/2019	08/01/2019											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	17/01/2019	17/01/2019											

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Antimony	2	3									<1	mg/kg	TM30/PM15
Arsenic #	10.3	20.6									<0.5	mg/kg	TM30/PM15
Barium #	57	195									<1	mg/kg	TM30/PM15
Cadmium #	2.2	1.3									<0.1	mg/kg	TM30/PM15
Chromium #	38.2	51.1									<0.5	mg/kg	TM30/PM15
Copper #	31	30									<1	mg/kg	TM30/PM15
Lead #	13	63									<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Molybdenum #	4.4	2.6									<0.1	mg/kg	TM30/PM15
Nickel #	42.2	58.4									<0.7	mg/kg	TM30/PM15
Selenium #	1	3									<1	mg/kg	TM30/PM15
Zinc #	77	168									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	0.04									<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	0.04									<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	0.04									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06									<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22									<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64									<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02									<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1									<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	94	99									<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30									<30	mg/kg	TM5/PM8/PM16

Client Name: Ground Investigations Ireland
Reference: 8323-12-2018
Location: Kilmartin
Contact: Conor Finnerty
JE Job No.: 19/757

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1	2									LOD/LOR	Units	Method No.
Sample ID	TP01	TP03											
Depth	1.10	0.20-1.00											
COC No / misc													
Containers	T	T											
Sample Date	08/01/2019	08/01/2019											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	17/01/2019	17/01/2019											
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1 SV									<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1 SV									<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1 SV									<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2									<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4									<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7									<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7									<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7									<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26									<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	<0.1	<0.1 SV									<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10									<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10									<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1 SV									<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1 SV									<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1 SV									<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2									<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4									<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	<7									<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7									<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	<7									<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	<26									<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	<52	<52									<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	<0.1	<0.1 SV									<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10									<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	<10									<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5 SV									<5	ug/kg	TM31/PM12
Benzene #	<5	<5 SV									<5	ug/kg	TM31/PM12
Toluene #	<5	<5 SV									<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5 SV									<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5 SV									<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5 SV									<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5									<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35									<35	ug/kg	TM17/PM8

Client Name: Ground Investigations Ireland
Reference: 8323-12-2018
Location: Kilmartin
Contact: Conor Finnerty
JE Job No.: 19/757

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1	2									LOD/LOR	Units	Method No.
Sample ID	TP01	TP03											
Depth	1.10	0.20-1.00											
COC No / misc													
Containers	T	T											
Sample Date	08/01/2019	08/01/2019											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	17/01/2019	17/01/2019											
Natural Moisture Content	12.8	21.9									<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	11.4	18.0									<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3									<0.3	mg/kg	TM38/PM20
Chromium III	38.2	51.1									<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.38	0.89									<0.02	%	TM21/PM24
pH #	8.53	8.24									<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1021	0.1113										kg	NONE/PM17
Mass of dried test portion	0.09	0.09										kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 8323-12-2018
Location: Kilmartin
Contact: Conor Finnerty
JE Job No.: 19/757

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1	2											
Sample ID	TP01	TP03											
Depth	1.10	0.20-1.00											
COC No / misc													
Containers	T	T											
Sample Date	08/01/2019	08/01/2019											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	17/01/2019	17/01/2019											

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Dissolved Antimony #	<0.002	<0.002									<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02									<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025									<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025									<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.003	0.005									<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.03	0.05									<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005									<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005									<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015									<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015									<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007									<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07									<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005									<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05									<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.013	<0.002									<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.13	<0.02									<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002									<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02									<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003									<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03									<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	<0.003									<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	<0.03									<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001									<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001									<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01									<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1									<0.1	mg/kg	TM26/PM0
Fluoride	<0.3	0.9									<0.3	mg/l	TM173/PM0
Fluoride	<3	9									<3	mg/kg	TM173/PM0
Sulphate as SO4 #	0.6	13.5									<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	6	135									<5	mg/kg	TM38/PM0
Chloride #	<0.3	0.4									<0.3	mg/l	TM38/PM0
Chloride #	<3	4									<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	<2	<2									<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	<20									<20	mg/kg	TM60/PM0
pH	7.80	7.22									<0.01	pH units	TM73/PM0
Total Dissolved Solids #	178	108									<35	mg/l	TM20/PM0
Total Dissolved Solids #	1781	1080									<350	mg/kg	TM20/PM0

Client Name: Ground Investigations Ireland
Reference: 8323-12-2018
Location: Kilmartin
Contact: Conor Finnerty
JE Job No.: 19/757

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1	2														
Sample ID	TP01	TP03														
Depth	1.10	0.20-1.00														
COC No / misc																
Containers	T	T														
Sample Date	08/01/2019	08/01/2019														
Sample Type	Soil	Soil														
Batch Number	1	1														
Date of Receipt	17/01/2019	17/01/2019														
Solid Waste Analysis												Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Total Organic Carbon #	0.38	0.89										3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025 SV										6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035										1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30										500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22										-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64										100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																	
Arsenic #	<0.025	<0.025										0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.03	0.05										20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005										0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015										0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07										2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001										0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.13	<0.02										0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02										0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05										0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02										0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03										0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	<0.03										4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	1781	1080										4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	<20	<20										500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1021	0.1113										-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	88.0	81.1										-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.888	0.879										-	-	-		l	NONE/PM17
Eluate Volume	0.64	0.65										-	-	-		l	NONE/PM17
pH #	8.53	8.24										-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1										1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	<3	9										-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	6	135										1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<3	4										800	15000	25000	<3	mg/kg	TM38/PM0

Client Name: Ground Investigations Ireland
Reference: 8323-12-2018
Location: Kilmartin
Contact: Conor Finnerty

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
19/757	1	TP01	1.10	1	No interpretation possible
19/757	1	TP03	0.20-1.00	2	No interpretation possible

Client Name: Ground Investigations Ireland
Reference: 8323-12-2018
Location: Kilmartin
Contact: Conor Finnerty

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
19/757	1	TP01	1.10	1	22/01/2019	**General Description (Bulk Analysis)**	soil-stones
					22/01/2019	**Asbestos Fibres**	NAD
					22/01/2019	**Asbestos ACM**	NAD
					22/01/2019	**Asbestos Type**	NAD
					22/01/2019	**Asbestos Level Screen**	NAD
19/757	1	TP03	0.20-1.00	2	22/01/2019	**General Description (Bulk Analysis)**	soil-stones
					22/01/2019	**Asbestos Fibres**	NAD
					22/01/2019	**Asbestos ACM**	NAD
					22/01/2019	**Asbestos Type**	NAD
					22/01/2019	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland

Reference: 8323-12-2018

Location: Kilmartin

Contact: Conor Finnerty

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
19/757	1	TP01	1.10	1	EPH	Sample received in inappropriate container
19/757	1	TP03	0.20-1.00	2	EPH	Sample received in inappropriate container

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/757

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

Appendix - Methods used for WAC (2003/33/EC)

JE Job No.: 19/757

Leachate tests	
10l/kg; 4mm	I.S. EN 12457-2:2002 Specified particle size; water added to L/S ratio; capped; agitated for 24 ± 0.5 hours; eluate settled and filtered over 0.45 µm membrane filter.
Eluate analysis	
As	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ba	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cd	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cr total	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cu	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Hg	I.S. EN 13370 rec. EN 1483 (CVAAS)
Mo	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ni	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Pb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Sb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Se	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Zn	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Chloride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Fluoride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Sulphate	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Phenol index	I.S. EN 13370 rec. ISO 6439 (4-Aminoantipyrine spectrometic methods after distillation)* (BY HPLC - Jones Env)
DOC	I.S. EN 1484
TDS	I.S. EN 15216
Compositional analysis	
TOC	I.S. EN 13137 Method B: carbonates removed with acid; TOC by combustion.
BTEX	GC-FID
PCB7**	I.S. EN 15308 analysis by GC-ECD.
Mineral oil	I.S. EN 14039 C10 to C40 analysis by GC-FID.
PAH17***	I.S. EN 15527 PAH17 analysis by GC-MS
Metals	I.S. EN 13657 - Aqua regia digestion: EN ISO 11885 (ICP-OES)
Other	
Dry matter	I.S. EN 14346 sample is dried to a constant mass in an oven at 105 ± 3 °C; Method B Water content by direct Karl-Fischer-titration and either volumetric or coulometric detection.
LOI	I.S. EN 15169 Difference in mass after heating in a furnace up to 550 ± 25 °C.
ANC	CEN/TS 15364 Determined by amouns of acid or base needed to cover the pH range

Notes:

*If not suitable due to LOD, precision, etc., any other suitable method can be used, e.g. AFS, ICP-MS
**PCB-28, PCB-52, PCB-101, PCB-118, PCB-138, PCB-153 and PCB-180

***Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.

JE Job No: 19/757

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

JE Job No: 19/757

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes

JE Job No: 19/757

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Modified US EPA methods 245.7 and 200.7. Determination of Mercury by Cold Vapour Atomic Fluorescence.	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AR	Yes
NONE	No Method Code	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				
NONE	No Method Code	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	

Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Stephen Kealy
Date :	12th February, 2019
Your reference :	8323-12-18
Our reference :	Test Report 19/1819 Batch 1
Location :	Kilmartin
Date samples received :	6th February, 2019
Status :	Final report
Issue :	1

Two samples were received for analysis on 6th February, 2019 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Lucas Halliwell
Project Co-ordinator

Client Name: Ground Investigations Ireland
Reference: 8323-12-18
Location: Kilmartin
Contact: Stephen Kealy
JE Job No.: 19/1819

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1	2											
Sample ID	BH01	BH03											
Depth	1.00	1.50											
COC No / misc													
Containers	T	T											
Sample Date	24/01/2019	24/01/2019											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	06/02/2019	06/02/2019											
Sulphate as SO4 (2:1 Ext) #	0.6737	0.0107										<0.0015	g/l	TM38/PM20
pH #	8.05	8.59										<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 8323-12-18
Location: Kilmartin
Contact: Stephen Kealy

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 19/1819						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/1819

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 19/1819

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No

Appendix 9.4 NRA & IGI Hydrogeology Rating Criteria

Table 9.1 Criteria for rating site importance of Geological Features (NRA)

Importance	Criteria	Typical Example
Very High	Attribute has a high quality, significance or value on a regional or national scale Degree or extent of soil contamination is significant on a national or regional scale Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale.	Geological feature rare on a regional or national scale (NHA) Large existing quarry or pit Proven economically extractable mineral resource
High	Attribute has a high quality, significance or value on a local scale. Degree or extent of soil contamination is significant on a local scale. Volume of peat and/or soft organic soil underlying route is significant on a local scale.	Contaminated soil on site with previous heavy industrial usage Large recent landfill site for mixed wastes Geological feature of high value on a local scale (County Geological Site) Well drained and/or high fertility soils Moderately sized existing quarry or pit Marginally economic extractable mineral resource
Medium	Attribute has a medium quality, significance or value on a local scale Degree or extent of soil contamination is moderate on a local scale Volume of peat and/or soft organic soil underlying route is moderate on a local scale	Contaminated soil on site with previous light industrial usage Small recent landfill site for mixed wastes Moderately drained and/or moderate fertility soils Small existing quarry or pit Sub-economic extractable mineral resource
Low	Attribute has a low quality, significance or value on a local scale Degree or extent of soil contamination is minor on a local scale. Volume of peat and/or soft organic soil underlying route is small on a local scale	Large historical and/or recent site for construction and demolition wastes. Small historical and/or recent landfill site for construction and demolition wastes. Poorly drained and/or low fertility soils. Uneconomically extractable mineral resource.

Table 9.2 Criteria for rating impact magnitude at EIS stage – Estimation of magnitude of impact on soil / geology attribute (NRA)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute	Loss of high proportion of future quarry or pit reserves
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Loss of moderate proportion of future quarry or pit reserves
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of	Loss of small proportion of future quarry or pit reserves
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	No measurable changes in attributes
Minor Beneficial	Results in minor improvement of attribute quality	Minor enhancement of geological heritage feature
Moderate Beneficial	Results in moderate improvement of attribute quality	Moderate enhancement of geological heritage feature
Major Beneficial	Results in major improvement of attribute quality	Major enhancement of geological heritage feature

The NRA criteria for estimation of the importance of hydrogeological attributes at the site during the EIA stage are summarised in Table 4 below.

Table 9.3 Criteria for rating Site Attributes - Estimation of Importance of Hydrogeology Attributes (NRA)

Magnitude of Impact	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status
Very High	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple well fields Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes
High	Attribute has a high quality or value on a local scale	Regionally Important Aquifer Groundwater provides large proportion of baseflow to local rivers Locally important potable water source supplying >1000 homes Outer source protection area for regionally important water source
Medium	Attribute has a medium quality or value on a local scale	Locally Important Aquifer Potable water source supplying >50 homes Outer source protection area for locally important water source
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer Potable water source supplying <50 homes

Table 9.4 Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Hydrogeology Attribute (NRA)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute and /or quality and integrity of attribute	Removal of large proportion of aquifer. Changes to aquifer or unsaturated zone resulting in extensive change to existing water supply springs and wells, river baseflow or ecosystems. Potential high risk of pollution to groundwater from routine run-off. Calculated risk of serious pollution incident >2% annually.
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Removal of moderate proportion of aquifer. Changes to aquifer or unsaturated zone resulting in moderate change to existing water supply springs and wells, river baseflow or ecosystems. Potential medium risk of pollution to groundwater from routine run-off. Calculated risk of serious pollution incident >1% annually.
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Removal of small proportion of aquifer. Changes to aquifer or unsaturated zone resulting in minor change to water supply springs and wells, river baseflow or ecosystems. Potential low risk of pollution to groundwater from routine run-off. Calculated risk of serious pollution incident >0.5% annually.
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Calculated risk of serious pollution incident <0.5% annually.

Table 9.5: Rating of Significant Environmental Impacts at EIS Stage (NRA)

Importance of Attribute	Magnitude of Importance			
	Neglible	**Small Adverse**	**Moderate Adverse**	**Large Adverse**
Extremely High	Imperceptible	Significant	Profound	Profound
Very High	Imperceptible	Significant/moderate	Profound/Significant	Profound
High	Imperceptible	Moderate/Slight	Significant/moderate	Profound/Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/Moderate

Appendix 10.1 NRA Hydrology Rating Criteria

Table 10.1: Criteria for rating impact magnitude at EIS stage – Estimation of magnitude of impact on hydrology attributes (NRA, 2009)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute and/ or quality and integrity of attribute	Loss or extensive change to a water body or water dependent habitat
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Calculated risk of serious pollution incident >1% annually2
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Increase in predicted peak flood level >10mm1
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Negligible change in predicted peak flood level1
Minor Beneficial	Results in minor improvement of attribute quality	Calculated reduction in pollution risk of 50% or more where existing risk is <1% annually2
Moderate Beneficial	Results in moderate improvement of attribute quality	Calculated reduction in pollution risk of 50% or more where existing risk is >1% annually2
Major Beneficial	Results in major improvement of attribute quality	Reduction in predicted peak flood level >100mm1

Additional examples are provided in the NRA Guidance Document

1 Refer to Annex 1, Methods E and F, Annex 1 of HA216/06

1 Refer to Appendix B3 / Annex 1, Method D, Annex 1 of HA216/06

Source: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 10.2 Criteria for Rating Impact Significance of Hydrological Attributes (NRA, 2009)

Importance	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	River, wetland or surface water body ecosystem protected by EU legislation e.g. 'European sites' designated under the Habitats Regulations or 'Salmonid waters' designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988.
Very High	Attribute has a high quality or value on a regional or national scale	River, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes Quality Class A (Biotic Index Q4, Q5) Flood plain protecting more than 50 residential or commercial properties from flooding Nationally important amenity site for wide range of leisure activities
High	Attribute has a high quality or value on a local scale	Salmon fishery Locally important potable water source supplying >1000 homes Quality Class B (Biotic Index Q3-4) Flood plain protecting between 5 and 50 residential or commercial properties from flooding Locally important amenity site for wide range of leisure activities
Medium	Attribute has a medium quality or value on a local scale	Coarse fishery Local potable water source supplying >50 homes Quality Class C (Biotic Index Q3, Q2- 3) Flood plain protecting between 1 and 5 residential or commercial properties from flooding
Low	Attribute has a low quality or value on a local scale	Locally important amenity site for small range of leisure activities Local potable water source supplying <50 homes Quality Class D (Biotic Index Q2, Q1) Flood plain protecting 1 residential or commercial property from flooding Amenity site used by small numbers of local people

Source: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Appendix 11.1 Construction Air Quality Management & Monitoring Plan

Byrne Environmental
CONSULTING LTD

ENVIRONMENTAL MONITORING, ASSESSMENT & MANAGEMENT
Acoustics, Air Quality, Environmental Impact Assessment
& Waste Management Specialists

Red Bog, Skyrne Road, Dunshaughlin, Co. Meath
Tel/Fax: 01-8024001 Mobile: 086-8152252
Email: ian@byrneenvironmental.ie
Web: www.byrneenvironmental.ie

SITE-SPECIFIC AIR QUALITY MANAGEMENT & MONITORING PLAN

RELATING TO A PROPOSED

DEVELOPMENT

AT

HOLLYSTOWN

26th November 2021

Ian Byrne MSc, MIOA, Dip Environmental & Planning Law

1.0 CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT & MONITORING PLAN

This document describes the management and monitoring methodologies that shall be implemented throughout the construction phase to ensure that air quality impacts on local third-party properties are minimised.

1.1 Air Quality Control and Mitigation Measures

- Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.

- During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water.

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only.

- Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper.

- The overloading of tipper trucks exiting the site shall not be permitted.

- Road sweeping will be conducted to clean public road surfaces as required.

- Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.

- Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.

- All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.

- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.

- Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening systems if required.

1.2 Air Quality Monitoring Plan

A programme of dust deposition monitoring shall be conducted at site boundary locations in proximity to the closest receptors to the site as indicated in Figure 1 below.

Dust deposition monitoring shall be conducted for the duration of the construction phase.

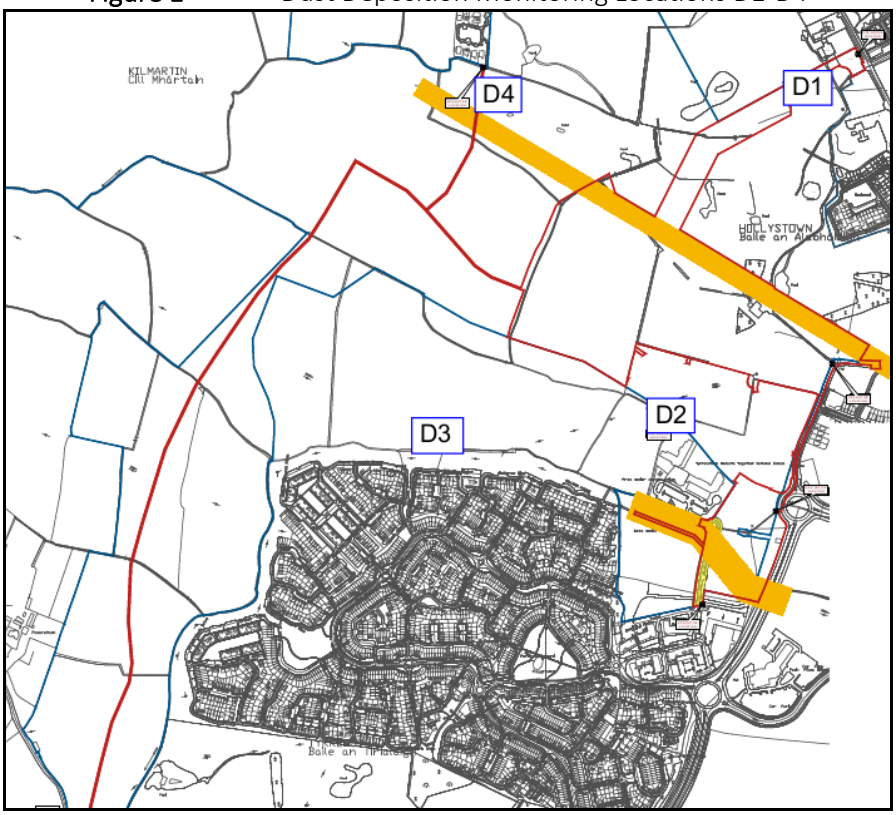
The methodology to be employed for the dust deposition survey is *Standard Method VDI 2119 (Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method) German Institute).*

Bergerhoff Dust Deposit Gauges are the more commonly used gauge in Ireland to assess the impact that certain activities may have on ambient air quality and are normally specified by both the EPA and Local Authorities to assess dust deposition rates at subject sites and at development sites. A value of 350 mg/m^2-day is normally applied as an upper limit. This guideline value is obtained from the German TA Luft (Technical Instructions on Air Quality Control) Para 4.3.1 Emission value for Dustfall *"for the protection against significant nuisances or significant disadvantages due to dustfall."*

Table 1 *VDI 2119 Dust Deposition Limit dust fall Criteria*

Period	Limit Criteria mg/m^2-day
1 month	350

Figure 1 Dust Deposition Monitoring Locations D1-D4



Appendix 14.1 RMP & SMR Sites in the Study Area

Appendix 14.1 SMR / RMP Sites within the Surrounding Area

SMR No. DU013-032	
RMP STATUS	Scheduled for inclusion in the next revision of the RMP
TOWNLAND	Kilmartin
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.[1]	706838,743183
CLASSIFICATION	Enclosure
DIST. FROM DEVELOPMENT	Proposed development within Zone of Notification
DESCRIPTION	An aerial photograph taken by in the 1980s (Dr Gillian Barrett) shows a series of cropmarks representing at least three enclosures (av. diam. c. 60-70m). Portion of an outer enclosing element is visible at the most western site. Not visible at ground level. The site was subject to geophysical survey (Licence no. 11R0152) and subsequent test excavation (Licence no. 12E0063) which identified a linear feature (1.5m wide x 0.4m deep) that mirrored the line of the southern side of the enclosure and may form part of this monument (Kavanagh 2012, 24).
REFERENCE	www.archaeology.ie/ SMR file

SMR No. DU013-039	
RMP STATUS	Scheduled for inclusion in the next revision of the RMP
TOWNLAND	Kilmartin
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.	707050,743231
CLASSIFICATION	Enclosure
DIST. FROM DEVELOPMENT	18m east
DESCRIPTION	Aerial photograph (GB89. AF.03) shows cropmark of a curvilinear enclosure. The site was subject to geophysical survey (Licence no. 11R0152) which a number of isolated anomalies at the location of the monument but subsequent test excavation (Licence no. 12E0063) failed to identify any archaeological remains (Kavanagh 2012, 24).
REFERENCE	www.archaeology.ie/ SMR file

SMR No. DU013-036	
RMP STATUS	Scheduled for inclusion in the next revision of the RMP
TOWNLAND	Kilmartin
PARISH	Mulhuddart
BARONY	Castleknock

[1] Coordinates in Irish Transverse Mercator

SMR No. DU013-036	
I.T.M.	706773,743116
CLASSIFICATION	Enclosure
DIST. FROM DEVELOPMENT	28m east
DESCRIPTION	Aerial photographs (GB89. AF.05 & GB89. AE.07) show cropmark of a circular enclosure defined by a fosse and with a small contiguous cellular enclosure on its southern edge. This inner enclosure is surrounded by a widely spaced outer concentric fosse; a curved fosse extends from the outer enclosure suggesting the existence of a contiguous enclosure to the south-east. The site was subject to geophysical survey (Licence no. 11R0152) which detected linear features that mirrored the location of the monument but subsequent test excavation (Licence no. 12E0063) failed to identify the features conclusively (Kavanagh 2012, 24).
REFERENCE	www.archaeology.ie/ SMR file

SMR No. DU013-037	
RMP STATUS	Scheduled for inclusion in the next revision of the RMP
TOWNLAND	Kilmartin
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.	707004,743376
CLASSIFICATION	Enclosure
DIST. FROM DEVELOPMENT	77m west
DESCRIPTION	Aerial photograph (GB89. AE.12) shows cropmark of a curvilinear enclosure defined by a fosse. The site was subject to geophysical survey (Licence no. 11R0152) and subsequent test excavation (Licence no. 12E0063) which identified a curved linear ditch (1.45m wide, 0.45m deep) (Kavanagh 2012, 24).
REFERENCE	www.archaeology.ie/ SMR file

SMR No. DU013-038	
RMP STATUS	Scheduled for inclusion in the next revision of the RMP
TOWNLAND	Kilmartin
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.	706871,743411
CLASSIFICATION	Ring-ditch
DIST. FROM DEVELOPMENT	121m north
DESCRIPTION	Aerial photograph (GB89. AE.12) shows cropmark of a ring-ditch. The site was subject to geophysical survey (Licence no. 11R0152) and subsequent test excavation (Licence no.

SMR No. DU013-038	
	12E0063). No features of archaeological significance were noted but the water table is quite high in this area (Kavanagh 2012, 24)
REFERENCE	www.archaeology.ie/ SMR file

SMR No. DU013-003	
RMP STATUS	Scheduled for inclusion in the next revision of the RMP
TOWNLAND	Kilmartin
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.	706871,743731
CLASSIFICATION	Earthwork
DIST. FROM DEVELOPMENT	330m northwest
DESCRIPTION	The OS 1837 map edition shows an elongated earthwork marked 'mound' (est. dims. L 15m, Wth.10m). This site is located in lowland tillage. Not visible at ground level.
REFERENCE	www.archaeology.ie/ SMR file

SMR No. DU013-004	
RMP STATUS	Scheduled for inclusion in the next revision of the RMP
TOWNLAND	Hollystown
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.	707484,743474
CLASSIFICATION	Earthwork
DIST. FROM DEVELOPMENT	381m north
DESCRIPTION	An aerial photograph taken in 1971 (FSI 1971/470/69) shows a roughly circular earthwork (diam.65m) on a natural rise in lands that have been incorporated into a golf course. There is no visible trace of this earthwork.
REFERENCE	www.archaeology.ie/ SMR file

SMR No. DU013-006	
RMP STATUS	Scheduled for inclusion in the next revision of the RMP
TOWNLAND	Tyrrelstown
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.	706702,741900
CLASSIFICATION	House - 16th/17th century

SMR No. DU013-006	
DIST. FROM DEVELOPMENT	390m east
DESCRIPTION	Tyrrelstown House occupies the site of a mid-17th century house built by the Bellings family (Ronan 1937, 159-160). Named on the Down Survey (1655-6) map and described in the Civil survey (1654-6) as 'the walls of a great stonehouse' (Simington 1945, 227). It had been damaged in the 1641 Rebellion leaving only walls remaining. Detached five-bay two-storey house, c.1820, attached to earlier two-storey house, c.1720, to rear. Farmyard complex, c.1820 to rear.
REFERENCE	www.archaeology.ie/ SMR file

Appendix 14.2 Architectural Heritage Sites in the Study Area

Appendix 14.2 Architectural Sites within the Surrounding Area

RPS No. 0664	
NIAH NO.	11346001
TOWNLAND	Hollystown
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.[1]	707817 743770
CLASSIFICATION	St. Thomas Church
DIST. FROM DEVELOPMENT	c. 217m north
DESCRIPTION	Late 19th century Church of Ireland church and graveyard.
REFERENCE	Fingal County Development Plan, 2017-2023/NIAH Survey

RPS No. 0665	
NIAH NO.	11347003
TOWNLAND	Hollywood
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.	708328 743502
CLASSIFICATION	Hollywoodrath House
DIST. FROM DEVELOPMENT	c. 416m east
DESCRIPTION	Late 18th or early 19th century seven-bay two-storey house plus gate lodge, gates & gate piers & outbuildings
REFERENCE	Fingal County Development Plan, 2017-2023/NIAH Survey

RPS No. 0673	
NIAH NO.	11347001
TOWNLAND	Tyrrelstown
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.	706699 741898
CLASSIFICATION	Tyrrelstown House
DIST. FROM DEVELOPMENT	c. 442m east
DESCRIPTION	Five-bay two-storey country house, outbuildings and walled garden. Occupies site of 17th century house. Current house appears to comprise 18th and 19th century elements
REFERENCE	Fingal County Development Plan, 2017-2023/NIAH Survey

[1] Coordinates in Irish Transverse Mercator

NIAH No. 11347003	
TOWNLAND	Hollywood
PARISH	Mulhuddart
BARONY	Castleknock
I.T.M.	708210 743184
CLASSIFICATION	Hollywoodrath Gate Lodge
DIST. FROM DEVELOPMENT	c. 355 northeast
DESCRIPTION	Detached three-bay single-storey gate lodge, c.1825, on an L-shaped plan. Projecting central entrance porch. Single-bay single-storey extension to east c.1940. Pair of granite ashlar piers with cast-iron gates and railings.
REFERENCE	Fingal County Development Plan, 2017-2023/NIAH Survey

Appendix 14.3 Legislation Protecting the Archaeological Resource

Appendix 14.3 Legislation Protecting the Archaeological Resource

Protection of Cultural Heritage

The cultural heritage in Ireland is safeguarded through national and international policy designed to secure the protection of the cultural heritage resource to the fullest possible extent (Department of Arts, Heritage, Gaeltacht and the Islands 1999, 35). This is undertaken in accordance with the provisions of the *European Convention on the Protection of the Archaeological Heritage* (Valletta Convention), ratified by Ireland in 1997.

The Archaeological Resource

The *National Monuments Act 1930 to 2014* and relevant provisions of the *National Cultural Institutions Act 1997* are the primary means of ensuring the satisfactory protection of archaeological remains, which includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes. A National Monument is described 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' (National Monuments Act 1930 Section 2). A number of mechanisms under the National Monuments Act are applied to secure the protection of archaeological monuments. These include the Register of Historic Monuments, the Record of Monuments and Places, and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

Ownership and Guardianship of National Monuments

The Minister may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

Register of Historic Monuments

Section 5 of the 1987 Act requires the Minister to establish and maintain a Register of Historic Monuments. Historic monuments and archaeological areas present on the register are afforded statutory protection under the 1987 Act. Any interference with sites recorded on the register is illegal without the permission of the Minister. Two months' notice in writing is required prior to any work being undertaken on or in the vicinity of a registered monument. The register also includes sites under Preservation Orders and Temporary Preservation Orders. All registered monuments are included in the Record of Monuments and Places.

Preservation Orders and Temporary Preservation Orders

Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be

undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

Record of Monuments and Places

Section 12(1) of the 1994 Act requires the Minister for Arts, Heritage, Gaeltacht and the Islands (now the Minister for the Department of Housing, Local Government and Heritage) to establish and maintain a record of monuments and places where the Minister believes that such monuments exist. The record comprises a list of monuments and relevant places and a map/s showing each monument and relevant place in respect of each county in the state. All sites recorded on the Record of Monuments and Places receive statutory protection under the National Monuments Act 1994. All recorded monuments on the proposed development site are represented on the accompanying maps.

Section 12(3) of the 1994 Act provides that 'where the owner or occupier (other than the Minister for Arts, Heritage, Gaeltacht and the Islands) of a monument or place included in the Record, or any other person, proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such a monument or place, he or she shall give notice in writing to the Minister of Arts, Heritage, Gaeltacht and the Islands to carry out work and shall not, except in case of urgent necessity and with the consent of the Minister, commence the work until two months after giving of notice'.

Under the National Monuments (Amendment) Act 2004, anyone who demolishes or in any way interferes with a recorded site is liable to a fine not exceeding €3,000 or imprisonment for up to 6 months. On summary conviction and on conviction of indictment, a fine not exceeding €10,000 or imprisonment for up to 5 years is the penalty. In addition, they are liable for costs for the repair of the damage caused.

In addition to this, under the *European Communities (Environmental Impact Assessment) Regulations 1989,* Environmental Impact Statements (EIS) are required for various classes and sizes of development project to assess the impact the proposed development will have on the existing environment, which includes the cultural, archaeological and built heritage resources. These document's recommendations are typically incorporated into the conditions under which the proposed development must proceed, and thus offer an additional layer of protection for monuments which have not been listed on the RMP.

The Planning and Development Act 2000

Under planning legislation, each local authority is obliged to draw up a Development Plan setting out their aims and policies with regard to the growth of the area over a five-year period. They cover a range of issues including archaeology and built heritage, setting out their policies and objectives with regard to the protection and enhancement of both. These policies can vary from county to county. The Planning and Development Act 2000 recognises that proper planning and sustainable development includes the protection of the archaeological heritage. Conditions relating to archaeology may be attached to individual planning permissions.

Fingal County Development Plan 2017 – 2023

Archaeology is a non-renewable resource in that once an archaeological feature or site is excavated or removed it is gone forever from the landscape. Therefore, any proposed development should consider the potential impact on archaeology in the very earliest stages and seek to avoid affecting archaeological features or sites and their setting. This includes development along or in Fingal's rivers,

coastline, and tidal estuaries. Currently 40% of the recorded archaeological sites within Fingal are sub surface. Therefore, any development has the potential to uncover previously unknown archaeological sites.

Statement of Policy

The Council is committed to the protection and conservation of buildings, areas, structures, sites, and features of archaeological, architectural, historical, artistic, cultural, scientific, social, or technical interest:

- By safeguarding archaeological sites, monuments, objects, and their settings listed in the Record of Monuments and Places (RMP), and any additional newly discovered archaeological remains, and by identifying archaeologically sensitive historic landscapes.
- By protecting the architectural heritage of Fingal through the identification of Protected Structures, the designation of Architectural Conservation Areas (ACAs), the safeguarding of designed landscapes and historic gardens, and the recognition of structures and elements that contribute positively to the vernacular and industrial heritage of the County.
- By favouring the preservation in-situ (or at a minimum preservation by record) of all sites and features of historical and archaeological interest.
- By making our cultural heritage more accessible and maximise its potential as a learning resource.
- By promoting the understanding of Fingal's cultural heritage in terms of its inherent and unique character and to recognise what elements should be preserved, conserved, or enhanced.
- By implementing the objectives and actions of the Fingal Heritage Plan to raise the profile and awareness of Fingal's heritage.
- The Council is dedicated to protecting, conserving, and presenting the County's rich cultural heritage while promoting sustainable economic development and the enrichment of the environment.

Objective CH02

Favour the preservation in situ or at a minimum preservation by record, of archaeological sites, monuments, features, or objects in their settings. In securing such preservation the Council will have regard to the advice and recommendations of the National Monuments Service of the Department of the Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

Objective CH03

Protect all archaeological sites and monuments, underwater archaeology, and archaeological objects, which are listed in the Record of Monuments and Places and all sites and features of archaeological and historic interest discovered subsequent to the publication of the Record of Monuments and Places, and to seek their preservation in situ (or at a minimum, preservation by record) through the planning process.

Objective CH04

Encourage and promote the appropriate management and maintenance of the County's archaeological heritage, including historical burial grounds, in accordance with conservation principles and best practice guidelines.

Objective CH05

Ensure archaeological remains are identified and fully considered at the very earliest stages of the development process, that schemes are designed to avoid impacting on the archaeological heritage.

Objective CH06

Require that proposals for linear development over one kilometre in length; proposals for development involving ground clearance of more than half a hectare; or developments in proximity to areas with a density of known archaeological monuments and history of discovery; to include an Archaeological Impact Assessment and refer such applications to the relevant Prescribed Bodies.

Objective CH07

Ensure that development within the vicinity of a Recorded Monument or Zone of Archaeological Notification does not seriously detract from the setting of the feature and is sited and designed appropriately.

Objective CH09

Recognise the importance of archaeology or historic landscapes and the connectivity between sites, where it exists, in order to safeguard them from developments that would unduly sever or disrupt the relationship and/or inter-visibility between sites.

Objective CH12

Promote best practice for archaeological excavation by ensuring that they are undertaken according to best practice as outlined by the National Monuments Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, The National Museum, and the Institute of Archaeologists of Ireland.

Objective CH13

Actively support the dissemination of the findings of archaeological investigations and excavations through the publication of excavation reports thereby promoting public awareness and appreciation of the value of archaeological resources.

Objective CH14

Identify Zones of Archaeological Notification that contain clusters of Recorded Monuments or have a significant history of the discovery of archaeological sites, features, and objects in order to allow for their designation, protection of their setting and environs.

Objective CH15

Raise public awareness of the cultural heritage and improve legibility by providing appropriate signage or interpretation in areas, sites, villages, and buildings of archaeological and historic significance.

Objective CH16

Develop and implement the findings of the Community Archaeology Strategy for Fingal.

Objective CH17

Support the growth of cultural tourism in the County, including the potential for niche heritage-based tourism products by facilitating the development of heritage events, infrastructure such as heritage trails, walkways, and cycleways etc. and activities such as community excavation.

Objective CH18

Manage the archaeological sites and monuments that Fingal County Council owns or is responsible for according to best practice and according to Conservation Plans where they exist.

Appendix 14.4 Legislation Protecting the Architectural Heritage Resource

Appendix 14.4 Legislation Protecting the Architectural Resource

The main laws protecting the built heritage are the *Architectural Heritage (National Inventory) and National Monuments (Miscellaneous Provisions) Act 1999* and the *Local Government (Planning and Development) Acts 1963–1999*, which has now been superseded by the *Planning and Development Act, 2000*. The Architectural Heritage Act requires the Minister to establish a survey to identify, record and assess the architectural heritage of the country. The background to this legislation derives from Article 2 of the 1985 Convention for the Protection of Architectural Heritage (Granada Convention). This states that:

For the purpose of precise identification of the monuments, groups of structures and sites to be protected, each member state will undertake to maintain inventories of that architectural heritage.

The National Inventory of Architectural Heritage (NIAH) was established in 1990 to fulfil Ireland's obligation under the Granada Convention, through the establishment and maintenance of a central record, documenting and evaluating the architecture of Ireland (NIAH Handbook 2005:2). As inclusion in the inventory does not provide statutory protection, the survey information is used in conjunction with the *Architectural Heritage Protection Guidelines for Planning Authorities* to advise local authorities on compilation of a Record of Protected Structures as required by the *Planning and Development Act, 2000*.

Record of Protected Structures & County Development Plan

Structures of architectural, cultural, social, scientific, historical, technical or archaeological interest can be protected under the Planning and Development Act, 2000, where the conditions relating to the protection of the architectural heritage are set out in Part IV of the act. This act superseded the Local Government (Planning and Development) Act, 1999, and came into force on 1st January 2000.

The act provides for the inclusion of Protected Structures into the planning authorities' development plans and sets out statutory regulations regarding works affecting such structures. Under new legislation, no distinction is made between buildings formerly classified under development plans as List 1 and List 2. Such buildings are now all regarded as 'Protected Structures' and enjoy equal statutory protection. Under the act the entire structure is protected, including a structure's interior, exterior, attendant grounds and also any structures within the attendant grounds.

The act defines a Protected Structure as (a) a structure, or (b) a specified part of a structure which is included in a Record of Protected Structures (RPS), and, where that record so indicates, includes any specified feature which is in the attendant grounds of the structure and which would not otherwise be included in this definition. Protection of the structure, or part thereof, includes conservation, preservation, and improvement compatible with maintaining its character and interest. Part IV of the act deals with architectural heritage, and Section 57 deals specifically with works affecting the character of Protected Structures or proposed Protected Structures and states that no works should materially affect the character of the structure or any element of the structure that contributes to its special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. The act does not provide specific criteria for assigning a special interest to a structure. However, the National Inventory of Architectural Heritage (NIAH) offers guidelines[1] to its field workers as to how to designate

[1] NIAH Handbook 2003 & 2005

a building with a special interest, which are not mutually exclusive. This offers guidance by example rather than by definition:

Archaeological

It is to be noted that the NIAH is biased towards post-1700 structures. Structures that have archaeological features may be recorded, providing the archaeological features are incorporated within post-1700 elements. Industrial fabric is considered to have technical significance, and should only be attributed archaeological significance if the structure has pre-1700 features.

Architectural

A structure may be considered of special architectural interest under the following criteria:

- Good quality or well executed architectural design
- The work of a known and distinguished architect, engineer, designer, craftsman
- A structure that makes a positive contribution to a setting, such as a streetscape or rural setting
- Modest or vernacular structures may be considered to be of architectural interest, as they are part of the history of the built heritage of Ireland.
- Well-designed decorative features, externally and/or internally

Historical

A structure may be considered of special historical interest under the following criteria:

- A significant historical event associated with the structure
- An association with a significant historical figure
- Has a known interesting and/or unusual change of use, e.g. a former workhouse now in use as a hotel
- A memorial to a historical event.

Technical

A structure may be considered of special technical interest under the following criteria:

- Incorporates building materials of particular interest, i.e. the materials or the technology used for construction
- It is the work of a known or distinguished engineer
- Incorporates innovative engineering design, e.g. bridges, canals or mill weirs
- A structure which has an architectural interest may also merit a technical interest due to the structural techniques used in its construction, e.g. a curvilinear glasshouse, early use of concrete, cast-iron prefabrication.
- Mechanical fixtures relating to a structure may be considered of technical significance.

Cultural

A structure may be considered of special cultural interest under the following criteria:

- An association with a known fictitious character or event, e.g. Sandycove Martello Tower, which featured in Ulysses.
- Other structure that illustrate the development of society, such as early schoolhouses, swimming baths or printworks.

Scientific

A structure may be considered of special scientific interest under the following criteria:

- A structure or place which is considered to be an extraordinary or pioneering scientific or technical achievement in the Irish context, e.g. Mizen Head Bridge, Birr Telescope.

Social

A structure may be considered of special social interest under the following criteria:

- A focal point of spiritual, political, national or other cultural sentiment to a group of people, e.g. a place of worship, a meeting point, assembly rooms.
- Developed or constructed by a community or organisation, e.g. the construction of the railways or the building of a church through the patronage of the local community
- Illustrates a particular lifestyle, philosophy, or social condition of the past, e.g. the hierarchical accommodation in a country house, philanthropic housing, vernacular structures.

Artistic

A structure may be considered of special artistic interest under the following criteria:

- Work of a skilled craftsman or artist, e.g. plasterwork, wrought-iron work, carved elements or details, stained glass, stations of the cross.
- Well-designed mass-produced structures or elements may also be considered of artistic interest.

The Local Authority has the power to order conservation and restoration works to be undertaken by the owner of the protected structure if it considers the building to need repair. Similarly, an owner or developer must make a written request to the Local Authority to carry out any works on a protected structure and its environs, which will be reviewed within three months of application. Failure to do so may result in prosecution.

Fingal County Development Plan 2017 – 2023

Objective CH19

Review the Record of Protected Structures on an on-going basis and add structures of special interest as appropriate, including significant elements of industrial, maritime or vernacular heritage and any twentieth century structures of merit.

Objective CH20

Ensure that any development, modification, alteration, or extension affecting a Protected Structure and/or its setting is sensitively sited and designed, is compatible with the special character, and is appropriate in terms of the proposed scale, mass, height, density, layout, materials, impact on architectural or historic features, and junction with the existing Protected Structure.

Objective CH21

Seek that the form and structural integrity of the Protected Structure is retained in any redevelopment and that the relationship between the Protected Structure and any complex of adjoining buildings, designed landscape features, or designed views or vistas from or to the structure is conserved.

Objective CH22

Encourage the sympathetic and appropriate reuse, rehabilitation and retention of Protected Structures and their grounds including public access seeking that the Protected Structure is conserved to a high

standard, and the special interest, character and setting of the building preserved. In certain cases the relaxation of site zoning restrictions may be considered in order to secure the preservation and conservation of the Protected Structure where the use proposed is compatible with the existing structure and this will only be permitted where the development is consistent with conservation policies and the proper planning and sustainable development of the area.

Objective CH23

Support, in accordance with CH22, the development of an integrated tourism and recreational complex on Abbeville Demesne, incorporating facilities which may include: Hotel / Conference Centre, Golf Course, Fitness Centre and at least one other extensive tourist/recreational facility. A strictly limited number of dwelling units, grouped in a courtyard type configuration, the majority of which shall be reserved for tourism use may be considered. The nature and extent of the facilities to be provided shall be determined primarily by the need to conserve and rehabilitate the house and its surroundings, which are of major architectural importance, and the special landscape character and heritage features of the demesne.

Objective CH25

Ensure that proposals for large scale developments and infrastructure projects consider the impacts on the architectural heritage and seek to avoid them. The extent, route, services and signage for such projects should be sited at a distance from Protected Structures, outside the boundaries of historic designed landscapes, and not interrupt specifically designed vistas. Where this is not possible the visual impact must be minimised through appropriate mitigation measures such as high-quality design and/or use of screen planting.

Objective CH26

Prevent the demolition or inappropriate alteration of Protected Structures.

Objective CH27

Demonstrate best practice in relation to the management, care and maintenance of Protected Structures by continuing the programme of commissioning Conservation Plans for the principal heritage properties in the Council's ownership and implementing the policies and actions of these Conservation Plans where they already exist.

Objective CH28

Carry out an audit and assess the condition of all Protected Structures within the Council's ownership and devise a management/maintenance plan for these structures.

Objective CH29

Ensure that measures to up-grade the energy efficiency of Protected Structures and historic buildings are sensitive to traditional construction methods and materials and do not have a detrimental physical, aesthetic or visual impact on the structure. They should follow the principles and direction given in the Department of Arts, Heritage and the Gaeltacht's publication Energy Efficiency in Traditional Buildings.

Appendix 14.5 Impact Assessment and the Cultural Heritage Resource

Appendix 14.5 Impact Assessment and the Cultural Heritage Resource

Potential Impacts on Archaeological and Historical Remains

Impacts are defined as 'the degree of change in an environment resulting from a development' (Environmental Protection Agency 2017). They are described as profound, significant or slight impacts on archaeological remains. They may be negative, positive or neutral, direct, indirect or cumulative, temporary or permanent.

Impacts can be identified from detailed information about a project, the nature of the area affected and the range of archaeological and historical resources potentially affected. Development can affect the archaeological and historical resource of a given landscape in a number of ways.

- Permanent and temporary land-take, associated structures, landscape mounding, and their construction may result in damage to or loss of archaeological remains and deposits, or physical loss to the setting of historic monuments and to the physical coherence of the landscape.
- Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping and the passage of heavy machinery; disturbance by vehicles working in unsuitable conditions; or burial of sites, limiting accessibility for future archaeological investigation.
- Hydrological changes in groundwater or surface water levels can result from construction activities such as de-watering and spoil disposal, or longer-term changes in drainage patterns. These may desiccate archaeological remains and associated deposits.
- Visual impacts on the historic landscape sometimes arise from construction traffic and facilities, built earthworks and structures, landscape mounding and planting, noise, fences and associated works. These features can impinge directly on historic monuments and historic landscape elements as well as their visual amenity value.
- Landscape measures such as tree planting can damage sub-surface archaeological features, due to topsoil stripping and through the root action of trees and shrubs as they grow.
- Ground consolidation by construction activities or the weight of permanent embankments can cause damage to buried archaeological remains, especially in colluviums or peat deposits.
- Disruption due to construction also offers in general the potential for adversely affecting archaeological remains. This can include machinery, site offices, and service trenches.

Although not widely appreciated, positive impacts can accrue from developments. These can include positive resource management policies, improved maintenance and access to archaeological monuments, and the increased level of knowledge of a site or historic landscape as a result of archaeological assessment and fieldwork.

Predicted Impacts

The severity of a given level of land-take or visual intrusion varies with the type of monument, site or landscape features and its existing environment. Severity of impact can be judged taking the following into account:

- The proportion of the feature affected and how far physical characteristics fundamental to the understanding of the feature would be lost;

- Consideration of the type, date, survival/condition, fragility/vulnerability, rarity, potential and amenity value of the feature affected;
- Assessment of the levels of noise, visual and hydrological impacts, either in general or site-specific terms, as may be provided by other specialists.

Impact Definitions

Imperceptible

An impact capable of measurement but without noticeable consequences

Not Significant

Effects which causes noticeable changes in the character of the environment but without noticeable consequences

Slight

An impact which causes changes to the character of the environment which are not significant or profound and do not directly impact or affect an archaeological feature or monument.

An impact that causes some minor change in the character of architectural heritage of local or regional importance without affecting its integrity or sensitivities. Although noticeable, the effects do not directly impact on the architectural structure or feature. Impacts are reversible and of relatively short duration. Appropriate mitigation will reduce the impact.

Moderate

An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends. A moderate effect arises where a change to the site is proposed, which although noticeable, is not such that the archaeological integrity of the site is compromised, and which is reversible. This arises where an archaeological feature can be incorporated into modern day development without damage and that all procedures used to facilitate this are reversible.

An impact that results in a change to the architectural heritage which, although noticeable, is not such that alters the integrity of the heritage. The change is likely to be consistent with existing and emerging trends. Impacts are probably reversible and may be of relatively short duration. Appropriate mitigation is very likely to reduce the impact.

Significant

An impact which, by its magnitude, duration or intensity, alters an important aspect of the environment. An impact like this would be where part of a site would be permanently impacted upon, leading to a loss of character, integrity and data about the archaeological feature/site.

An impact that, by its, magnitude, duration or intensity alters the character and/or setting of the architectural heritage. These effects arise where an aspect or aspects of the architectural heritage is/are permanently impacted upon leading to a loss of character and integrity in the architectural structure or feature. Appropriate mitigation is likely to reduce the impact.

Very Significant

Effects which, by its character, magnitude, duration, or intensity significantly alters the majority of a sensitive aspect of the environment.

Profound

Applies where mitigation would be unlikely to remove adverse effects. Reserved for adverse, negative effects only. These effects arise when an archaeological site is completely and irreversibly destroyed by a proposed development.

An impact that obliterates the architectural heritage of a structure or feature of national or international importance. These effects arise where an architectural structure or feature is completely and irreversibly destroyed by the proposed development. Mitigation is unlikely to remove adverse effects.

Impacts as defined by the EPA 2017 Guidelines (pg. 23).

Appendix 14.6 Mitigation Measures and the Cultural Heritage Resource

Appendix 14.6 Mitigation Measures and the Cultural Heritage Resource

Potential Mitigation Strategies for Cultural Heritage Remains

Mitigation is defined as features of the design or other measures of the proposed development that can be adopted to avoid, prevent, reduce or offset negative effects.

The best opportunities for avoiding damage to archaeological remains or intrusion on their setting and amenity arise when the site options for the development are being considered. Damage to the archaeological resource immediately adjacent to developments may be prevented by the selection of appropriate construction methods. Reducing adverse effects can be achieved by good design, for example by screening historic buildings or upstanding archaeological monuments or by burying archaeological sites undisturbed rather than destroying them. Offsetting adverse effects is probably best illustrated by the full investigation and recording of archaeological sites that cannot be preserved *in situ*.

Definition of Mitigation Strategies

Archaeological Resource

The ideal mitigation for all archaeological sites is preservation *in situ*. This is not always a practical solution, however. Therefore, a series of recommendations are offered to provide ameliorative measures where avoidance and preservation *in situ* are not possible.

Archaeological Test Trenching can be defined as 'a limited programme of intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land, inter-tidal zone or underwater. If such archaeological remains are present field evaluation defines their character, extent, quality and preservation, and enables an assessment of their worth in a local, regional, national or international context as appropriate' (CIfA 2020a).

Full Archaeological Excavation can be defined as 'a programme of controlled, intrusive fieldwork with defined research objectives which examines, records and interprets archaeological deposits, features and structures and, as appropriate, retrieves artefacts, ecofacts and other remains within a specified area or site on land, inter-tidal zone or underwater. The records made and objects gathered during fieldwork are studied and the results of that study published in detail appropriate to the project design' (CIfA 2020b).

Archaeological Monitoring can be defined as 'a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive (CIfA 2020c).

Underwater Archaeological Assessment consists of a programme of works carried out by a specialist underwater archaeologist, which can involve wade surveys, metal detection surveys and the excavation of test pits within the sea or riverbed. These assessments are able to access and assess the potential of an underwater environment to a much higher degree than terrestrial based assessments.

Architectural Resource

The architectural resource is generally subject to a greater degree of change than archaeological sites, as structures may survive for many years but their usage may change continually. This can be reflected in the fabric of the building, with the addition and removal of doors, windows and extensions. Due to their often more visible presence within the landscape than archaeological sites, the removal of such structures can sometimes leave a discernable 'gap' with the cultural identity of a population. However, a number of mitigation measures are available to ensure a record is made of any structure that is deemed to be of special interest, which may be removed or altered as part of a proposed development.

Conservation Assessment consists of a detailed study of the history of a building and can include the surveying of elevations to define the exact condition of the structure. These assessments are carried out by Conservation Architects and would commonly be carried out in association with proposed alterations or renovations on a Recorded Structure.

Building Survey may involve making an accurate record of elevations (internal and external), internal floor plans and external sections. This is carried out using an EDM (Electronic Distance Measurer) and GPS technology to create scaled drawings that provide a full record of the appearance of a building at the time of the survey.

Historic Building Assessment is generally specific to one building, which may have historic significance, but is not a Protected Structure or listed within the NIAH. A full historical background for the structure is researched and the site is visited to assess the standing remains and make a record of any architectural features of special interest. These assessments can also be carried out in conjunction with a building survey.

Written and Photographic record provides a basic record of features such as stone walls, which may have a small amount of cultural heritage importance and are recorded for prosperity. Dimensions of the feature are recorded with a written description and photographs as well as some cartographic reference, which may help to date a feature.

Appendix 17.1 Outline Resource & Construction Waste Management Plan

Byrne Environmental
CONSULTING LTD

ENVIRONMENTAL MONITORING, ASSESSMENT & MANAGEMENT
Acoustics, Air Quality, Environmental Impact Assessment
& Waste Management Specialists

Red Bog, Skyrne Road, Dunshaughlin, Co. Meath
Tel/Fax: 01-8024001 Mobile: 086-8152252
Email: ian@byrneenvironmental.ie
Web: www.byrneenvironmental.ie

OUTLINE
RESOURCE & CONSTRUCTION WASTE MANAGEMENT PLAN

FOR A PROPOSED

STRATEGIC HOUSING DEVELOPMENT

AT

HOLLYSTOWN-KILMARTIN
DUBLIN 15

10th December 2021

Ian Byrne MSc, MIOA, Dip Environmental & Planning Law

TABLE OF CONTENTS **PAGE**

1.0 INTRODUCTION

This document presents the Resource and Construction Waste Management Plan (RWMP) for the control, management and monitoring of waste associated with a proposed Strategic Housing Development at Hollystown – Kilmartin Dublin 15.

The proposed development relates to at a site of c. 25.3 ha at the townlands of Hollystown, Kilmartin, Hollywoodrath, Cruiserath, Yellow Walls, Powerstown, and Tyrrelstown, Dublin 15, which includes lands in the former Hollystown Golf Course and lands identified under the Kilmartin Local Area Plan 2013 (as extended). The lands are bound by the R121 and Hollywoodrath residential development to the east, the under construction Bellingsmore residential development to the south and north, the former Hollystown Golf Course to the north, Tyrrellstown Educate Together National School, St.Luke's National School and Tyrellstown Community Centre to the west and south and the existing Tyrrellstown Local Centre to the south.

The proposed development will consist of the development of 548 no. residential units, consisting of 147 apartments/duplexes and 401 houses, ranging in height from 2 to 5 storeys and including retail/café unit, 2 no. crèches, 1 no. Montessori, 1 no. community hub, car and bicycle parking, open space, public realm and site infrastructure over a site area of c. 25.3 ha. On lands to the north of the application site (referred to as Hollystown Sites 2 & 3) the proposed development includes for 428 units consisting of 401 no. 2 and 3 storey houses and 27 no. apartments set out in 9 no. 3-storey blocks. On lands to the south of the application site and north of the Tyrellstown Local Centre (referred to as Kilmartin Local Centre) the proposed development includes 120 no. apartment/duplex units in 4 no. blocks ranging in height from 3 to 5 storeys. The local centre includes 2 no. crèches (including 1 standalone 2 storey crèche), 1 no. Montessori, a retail/café unit, and 1 no. community hub.

The RWMP has been prepared to demonstrate how the Construction Phase will comply with the following relevant legislation, relevant Best Practice Guidelines and Local Authority Waste Management Policies:

Waste Management Acts 1996
Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)
Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)
Department of the Environment, Heritage and Local Government – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects – July 2006.
The Eastern-Midlands Region Waste Management Plan 2015-2021.
EPA "Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations – Version 3 June 2019
Fingal Development Plan 2017 – 2023
EPA Draft Best Practice Guidelines for the preparation of resource management plans for construction and demolition projects, April 2021

The **Objective of this Waste Management Plan** is to minimise the quantity of waste generated by construction activities, to maximise the use of materials in an efficient manner and to maximise the segregation of construction waste materials on-site to produce uncontaminated waste streams for off-site recycling.

The Waste Management Plan shall be implemented throughout the construction phase of the development to ensure the following:

- That all site activities are effectively managed to minimise the generation of waste and to maximise the opportunities for on-site reuse and recycling of waste materials.
- To ensure that all waste materials are segregated into different waste fractions and stored on-site in a managed and dedicated waste storage area.
- To ensure that all waste materials generated by site activities are removed from site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed / permitted facilities in compliance with the *Waste Management Act 1996* and all associated Waste Management Regulations.

2.0 THE CIRCULAR ECONOMY

Ireland's national waste policy is *'A Waste Action Plan for A Circular Economy – Ireland's National Waste Policy 2020 – 2025 '.*The policy, published September 2020, is intended to move Ireland toward a circular economy in which focus is shifted away from waste disposal, favouring circularity and sustainability by identifying and maximising the value of material through improved design, durability, repair and recycling. By extending the time resources are kept within the local economy, both environmental and economic benefits are foreseen.

The proposed development will implement the above policy as follows:

- Re-Use on-site of all excavated soils and stones as fill material and as landscaping material.

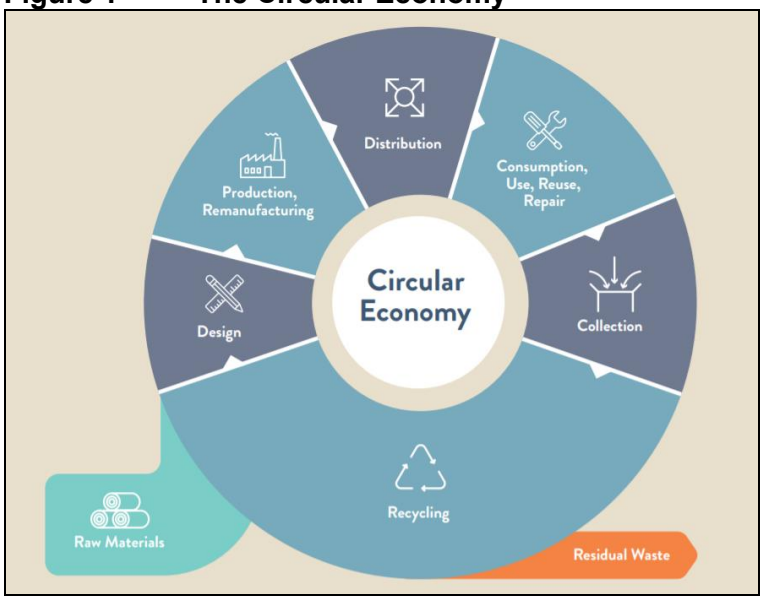
- The purchase of construction materials as needed to prevent over supply and potential for damage whilst in storage.

- The segregation of construction waste streams into separate storage containers to maximise the potential for the re-use of the materials.

- The import of Article 27 soils where possible.

- The Developer of the Project is committed to implementing the relevant aspects of the Circular Economy Policy throughout the construction phase of the development.

Figure 1 The Circular Economy



It is Council policy to conform to the waste hierarchy whereby waste prevention is the most preferred strategy. Where waste generation is unavoidable, re-use is the most preferred fate, followed by recycling and then energy recovery, with disposal (e.g. to landfill) being the least preferred fate.

Figure 2 Waste Hierarchy

3.0 DEVELOPMENT LOCATION

The application site is located in the townlands of Hollystown and Kilmartin, Dublin 15, on currently undeveloped lands and a former golf course. The site is located in a local area with existing residential, educational and retail developments.

4.0 DESCRIPTION OF SITE ACTIVITIES & WASTE ARISINGS

The range of works required for the Construction Phase are summarised in Table 1. The expected construction and demolition waste that will be generated throughout the course of the development are described in Tables 2 & 3 below.

Table 1 Sequence of Construction Works

Activity Sequence	General Description
Identification of Existing Utility Services	Set up bunting, mark location of live services, including E.S.B., Gas etc.
Removal of Vegetation	e.g. Trees and vegetation
Transport of material off site	Soil Stripping Bulk excavation
Substructure	Foundations services infrastructure
Superstructure	Framework, roofing and external finishes
Internal Finishes	Mechanical & Electrical etc.
External Landscaping	Hard and soft landscaping

Table 2 Typical Construction Waste Composition

Description of Waste	%
Mixed Construction & Demolition Waste	33
Wood	28
Plasterboard (Gypsum materials)	10
Ferrous Metals	8
Concrete	6
Mixed other wastes	15
Total	*100*

Table 3 Predicted Waste Generation

Waste Type	Predicted tonnage to be produced	Re-Use		Recyclable		Disposal	
		Tonnage	%	Tonnage	%	Tonnage	%
Mixed C&D	1250	125	10	1000	80	125	10
Timber	1000	400	40	550	55	50	5
Plasterboard	500	150	30	300	60	50	10
Metals	250	12.5	5	225	90	12.5	5
Concrete	200	60	30	130	65	10	5
Mixed waste	800	160	20	480	60	160	20
Total	4000	907.5		2685		407.5	
Soils	55,000m^3	55.000m^3	100				

Table 4 Typical Construction Waste Types

Description of Waste	Corresponding LoW Code
Concrete, Bricks, Tiles and Ceramics	17 01
Concrete	17 01 01
Bricks	17 01 02
Tiles and Ceramics	17 01 03
Mixture of concrete, bricks tiles & ceramics	17 01 07
Wood, Glass and Plastic	17 02
Wood	17 02 01
Glass	17 02 02
Plastic	17 02 03
Bituminous mixtures, coal tar and products	17 03
Bituminous mixtures containing other than those mentioned ir 17 03 01	17 03 02
Bituminous Mixtures including Coal Tar and Tarred products	17.03 02
Metals (including their alloys)	17 04
Copper, Bronze, Brass	17 04 01
Aluminium	17 04 02
Lead	17 04 03
Zinc	17 04 04
Iron and Steel	17 04 05
Tin	17 04 06
Mixed Metals	17 04 07
Insulation and Construction Materials	17 06 04
Gypsum based construction material	17 08 02
Mixed Construction and Demolition Waste other than those mentioned in 17 09 01, 17 09 02, 17 09 03	17 09 04
Sewage Screenings	19 08 01
Paper and Cardboard	20 01 01
Wood other than that mentioned in 20 01 37	20.01 38
Soil and Stones	17 05 04
Mixed Municipal Waste	20 03 01
Hydraulic oils	13 01 01*
Fuel oils and diesel	13 07 01*

5.0 PRINCIPALS OF THE RESOURCE & CONSTRUCTION WASTE MANAGEMENT PLAN

Waste materials generated by construction and demolition activities will be managed according to the *Department of the Environment, Heritage and Local Government's 2006 Publication - Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* and *EPA Draft Best Practice Guidelines for the preparation of resource management plans for construction and demolition projects, April 2021*

The Waste Management Plan specifically addresses the following points:

- Analysis of waste arisings / material surpluses
- Waste Management Responsibilities and Training
- Specific Waste Management
- Objectives for the Project including the potential to re-use existing on-site materials for further use in the construction phase.
- Methods proposed for Waste Prevention, Reuse and Recycling
- Waste Handling Procedures
- Waste Storage Procedures
- Waste Disposal Procedures
- Waste Auditing
- Record Keeping

6.0 WASTE MANAGEMENT & RESPONSIBILITIES

6.1 Project Manager

The Project Manager will be responsible for the overall implementation of the RWMP. The Project Manager will ensure that the reporting and recording requirements are met and all necessary resources are in place to support the implementation of the plan.

The name and contact details of the Project Manager shall be forwarded to the Waste Management Section of Fingal County Council on appointment.

6.2 Nominated Resource & Construction Waste Manager

The Resource and Construction Waste Manager will be responsible for:

- All aspects of waste and resource management throughout the construction phase.

- Assisting the Project Manager on the implementing of the aspects of the Circular Economy as detailed in Section 3 above.

- Recording the volumes and types of construction wastes generated.

- Communicating with Fingal County Council on waste related matters and issuing of waste records.
- Management of the waste storage compound to ensure that all construction waste streams are stored separately and that cross-contamination does not occur.

- Ensuring that all waste loads exiting the site are contained in a vehicle displaying a appropriate NWCPO Permit number.

- Maintaining a receipt of each waste load delivered to acceptance facilities.

- Identifying and reporting on damaged construction materials and identifying how damage to virgin materials shall be prevented.

- Preparation of monthly waste management report detailing waste volumes generated, re-use and recycling rates and details on damaged raw materials and how they can be returned for repair and future re-use.

The name and contact details of the Resource and Construction Waste Manager shall be forwarded to the Waste Management Section of Fingal County Council on appointment.

6.3 Site Personnel

All personnel on site will be responsible for the effective implementation of the plan and associated procedures. All staff will receive Tool-Box training on waste prevention, segregation and best practice guidelines.

6.4 Staff Training

Copies of the RWMP will be made available to all relevant personnel on site. The C&D Waste & Resource Manager will arrange for all site personnel and sub-contractors to be instructed about / receive training on the objectives of the Project C&D waste Management Plan and materials management, and be informed of the responsibilities that fall upon them as a consequence of its provision. The topics to be covered will include;

- Project programme and requirements
- Health and Safety requirements
- C&D WMP
- Materials to be segregated
- Segregation systems and protocols
- Arrangement for the storage and handling of reusable materials and recyclables
- Document control requirements

Where source segregation and materials re-use techniques apply, each member of staff will be given instructions on how to comply with the Project C&D Waste Management Plan and will be displayed for the benefit of site staff.

6.5 Gate Person

Gate Person duties will include the inspect all vehicles exiting site with waste to ensure that they have a Waste Collection Permit Number displayed on the side of the vehicle. If the vehicle does not, the vehicle will be refused exit and the Resource and Construction Waste Manager will ensure that the waste load is returned to the site area from where it came.

7.0 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL

- It is proposed that from the outset of construction activities, a dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the active construction phase of the development site.

- Spill kits shall be located within the site compound with clearly labelled instructions on how they shall be used to clean up fuel/oil spills.

- All vehicle and plant oils and liquid construction materials shall be stored in impermeable storage units.

- All diesel-powered generators shall be inspected on at least a weekly basis by a delegate of the project manager to ensure it is not leaking diesel or oils.

- All empty containers containing residual quantities of oils, greases and hydrocarbon-based liquids shall be stored in a dedicated bunded receptacle.

- In order to ensure that the construction contractor correctly segregate waste materials, it is the responsibility of the site construction manager to ensure all staff are informed by means of clear signage and verbal instruction and made responsible for ensuring site housekeeping and the proper segregation of construction waste materials.

- It will be the responsibility of the Resource and Construction Waste Manager to ensure that a written record of all quantities and natures of wastes exported off-site are maintained on-site in a Waste File at the Project office.

- It is the responsibility of the Resource and Construction Waste Manager that all contracted waste haulage drivers hold an appropriate Waste Collection Permit for the transport of waste loads and that all waste materials are delivered to an appropriately licenced or permitted waste facility in compliance with the following relevant Regulations:

  Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)
  Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)

Waste Management (Facility Permit and Registration) Regulations S.I.821 of 2007 and the Waste Facility Permit under the Waste Management (Facility Permit and Registration) Amendment Regulations S.I.86 of 2008.

- Typical Waste materials that are to be generated or anticipated to be generated by construction works are classified as follows under *Section 17 Construction and Demolition Wastes* of the EPA's Classification of Hazardous Wastes as detailed in Table 1.

- It is proposed that waste materials will be collected and stored in separate clearly labelled skips in a predefined waste storage area in the site compound and that these materials will be collected by a Permitted Waste Contractor holding an appropriate Waste Collection permit in compliance with *Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007) and Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)* and that they will be sent for disposal or further processing to appropriately Permitted / Licensed Waste Facilities in compliance with *Waste Management (Facility Permit and Registration) Regulations S.I. No. 821 of 2007 and the Waste Management (Facility Permit and Registration) Amendment Regulations S.I. No. 86 of 2008.*

- Prior to the commencement of the Resource and Construction Waste Manager shall identify permitted Waste Contractors who shall be employed to collect and dispose of all inert and hazardous wastes arising from the project works. In addition, the Resource and Construction Waste Manager shall identify all waste licensed / permitted facilities that will accept all expected waste exported off-site and will maintain copies of all relevant Waste Permits / Licences as required.

- All waste soils prior to being exported off-site, shall be classified as inert, non-hazardous or hazardous in accordance with the *EPA's Waste Classification Guidance – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* document dated 1st June 2015 to ensure that the waste material is transferred by an appropriately permitted waste collection permit holder and brought to an appropriately permitted or licensed waste facility.

Figure 2 Image of Typical Construction Waste segregation compound design

Figure 3 Oil Spill Kit

Figure 4 Bund for waste oil container storage

Figure 5 Secure bunded container for waste oil & fuel storage

8.0 ON-SITE WASTE REDUCTION REUSE RECYCLING AND RESOURCE MANAGEMENT

Waste will arise on the project mainly from bulk excavation and general construction activities relating to the roads and services. The site management team will order materials and arrange storage in order to minimise the potential for waste on site.

- Materials will be ordered on an *"as needed"* basis to prevent over supply
- Materials shall be correctly stored and handled to minimise the generation of damaged materials
- Materials shall be ordered in appropriate sequence to minimise materials stored on site
- All staff and Sub contractors shall be advised through tool box talks on how to dispose of their waste correctly on-site.
- Concrete blocks, engineering bricks and clay bricks that are surplus will be broken up and used for hardstanding areas.

- Excess wood will be segregated in separate skips and sent for recycling. The site management will police to make sure that the segregation of the wood skip is kept exclusively for wood.

- Plastic arising from general waste or packaging will be segregated and stored in separate skips. Again, the site management team will ensure that there is no contamination of the segregated skips on site.

- Any excess metal generated on site will be kept in the one area and removed off site to a licenced metal recycling facility. The Resource and Construction Waste Manager will keep certification of this on file on site.

- Top soil that is required for the soft landscaping will be measured and this quantity will be retained on site. The soil that will have to be removed off site will be removed to a licenced landfill facility. Resource and Construction Waste Manager shall keep records of the removal and the certification on file on site.

- Any hazardous material discovered during the course of the construction shall be reported to the Resource and Construction Waste Manager. The relevant authorities will be informed and an agreed method for the removal of the hazardous material.

- Construction waste material such as damaged or broken concrete slabs, blocks, bricks and tiles generated that is deemed by the Project Engineer to be suitable for reuse on the Project site for ground-fill material will be processed if necessary, by on-site mobile crushing plant. This initiative shall provide a positive environmental impact to the construction phase as follows:

    - Reduction in the requirement for virgin aggregate materials from quarries
    - Reduction in energy required to extract, process and transport virgin aggregates
    - Reduced HGV movements associated with the delivery of imported aggregates to the site
    - Reduced noise levels associated with reduced HGV movements
    - Reduction in the amount of landfill space required to accept construction waste

Waste Soils & Stones

There will be a requirement to excavate c. 55,000m^3 of soils from the site to facilitate the development. These soils shall be maintained in bunds and shall be re-used as fill and landscaping works.

The soils at the site have been classified by the excavation, sampling and testing of trial pits. The Waste Characterisation Assessment Report conducted by Ground Investigation Ireland included the classification utilising the Haz Waste Online Classification Tool. The results of the assessment conclude that soils can be classified as inert.

Inert Wastes

Material may be processed on site if necessary, using an on-site crusher unit, which will process fill material into suitable size classes for the reuse as on-site construction materials. Mixed waste with large non-uniform stone or compacted soils may be passed through a mobile crusher unit which will render the material into a uniform shape and size which will allow for improved backfilling and compaction to required engineering standards.

Hazardous Wastes

The management of all hazardous waste arisings if they occur, shall be coordinated by the Resource and Construction Waste Manager.

Hazardous wastes such as waste oils and construction liquids shall be stored in dedicated clearly labelled impermeable containers in the waste compound prior to removal off-site.

Contaminated Soil

Where contaminated soils/materials are discovered or occur as a result of accidental spillages of oils or fuels during the construction phase, these areas of ground will be isolated and tested in accordance with the *2002 Landfill Directive (2003/33/EC)* for contamination, and pending the results of laboratory WAC testing, will be excavated and exported off-site by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material will be sent for appropriate treatment / disposal to an appropriately Permitted / Licenced Waste Facility.

Invasive Species listed on the Third Schedule of S.I. 477/2011 (as amended)

An ecological assessment of the site prepared by *Brady Shipman Martin* has concluded that there are no invasive species on site.

9.0 RECORD KEEPING

It is the responsibility of the Resource and Construction Waste Manager that a written record of all quantities and natures of all wastes reused / recycled and exported off-site during the project are maintained in a Waste File at the Project office.

The following information shall be recorded for each load of waste exported off-site:

- Waste Type EWC Code and description.
- Volume of waste collected.
- Waste collection contractor's Waste Collection Permit Number and collection receipt including vehicle registration number.
- Destination of waste load including Waste Permit / Licence number of facility.

- Signed Letters from each acceptance facility for the nature of wastes exported from the site to the waste facility
- Description of how waste at facility shall be treated i.e. disposal / recovery / export

All waste records shall be recorded in electronic format and maintained on site at all times for inspection and shall be issued to Fingal County Council as requested.

10.0 CONSTRUCTION WASTE MANAGEMENT AUDITING

The effectiveness of the Resource and Construction Waste Management Plan and its implementation, will be subject to regular audits by the Resource and Construction Waste Manager throughout the duration of the project in accordance with the Audit Plan (to be developed during the works).

The regular audits shall focus on materials inputs to the project and the waste outputs for each operation identifying additional opportunities for the efficient use of resources, waste reduction, re-use and recycling.

The audits will also investigate the operational factors and management policies that contribute to the generation of waste and identify appropriate corrective actions, where necessary.

Performance targets will be developed, e.g. an 85% overall recycling target, successes and failures will be recorded and Action Plans will be developed to address any issue which arise.

Inspections of the waste storage areas will be undertaken on a weekly basis, issues relating to housekeeping, inappropriate storage and / or segregation will be actioned at the earliest practicable opportunity.

The Resource and Construction Waste Manager will record the findings of the audits, including waste types identified, quantities of waste arising, final treatments and cost, in a report to be available to the Local Authority as required during the course of the works.

Details of the inputs of materials to the construction site and the outputs of wastage arising from the project will be investigated and recorded in the Final Waste Audit, which will identify the amount, nature and composition of the waste generated on the site.

The Final Waste Audit will examine the manner in which the waste is produced and will provide a commentary highlighting how management policies and practices may inherently contribute to the production of construction and demolition waste.

The measure waste quantities will be used to qualify the costs of management and disposal in a Waste Audit Report, which will also record lessons learned from these experiences, which can be applied to future projects.

11.0 WASTE EXPORT PERMITS/LICENCES

It is the responsibility of the Resource and Construction Waste Manager that a written record of all quantities and natures of all wastes reused / recycled and exported off-site during the project are maintained in a Waste File at the Project office.

Once construction and groundworks contractors have been appointed, a full list of Waste Collection Permit NWCPO Numbers shall be sent to the Waste Management Section of Fingal County Council.

Once construction and groundworks contractors have been appointed, a full list of the Authorised Facilities that all wastes shall be sent to the Waste Management Section of Fingal County Council.

Once construction and groundworks contractors have been appointed, signed letters from the waste acceptance facility detailing the volumes of material to be accepted shall be sent to the Waste Management Section of Fingal County Council.

The appointed construction, demolition and groundworks contractor's vehicles exporting material off-site will operate under a valid Waste Collection Permit.

The appointed construction demolition and groundworks contractors vehicles shall transport waste materials from the site to appropriately permitted / licenced facilities.

All vehicles leaving the site containing waste shall be inspected by the gate man to ensure that they display on the side of the vehicle a Waste Collection Permit#. Where a Waste Collection Permit# is not displayed the Resource and Construction Waste Manager shall be notified and the vehicle shall be instructed to return the waste load to the specific area on the site.

Copies of all relevant Waste Collection Permits and Waste Facility Permits / Waste Licences shall be maintained by the Resource and Construction Waste Manager and issued to The Waste Management Section of Fingal County Council prior to the commencement of site works.

All monthly waste logs shall include the gate receipt from the facility accepting the waste load. These receipts shall be traceable to each waste load removed from site

APPENDIX I

Example of Waste Log Record

Waste Source	Waste Type	LoW Code	Haulier	Acceptance Facility Permit #	Tonnage	Date	Vehicle Reg NWCPO#
Coosan Athlone	Inert Soil & Stone	17 05 04	Premier Engineering	Bord na Mona W0131-02	20	10.10.21	07TS8297 NWCPO-14-11444-02

Appendix 17.2 Outline Operational Waste Management Plan

Byrne Environmental
CONSULTING LTD

ENVIRONMENTAL MONITORING, ASSESSMENT & MANAGEMENT
Acoustics, Air Quality, Environmental Impact Assessment
& Waste Management Specialists

Red Bog, Skyrne Road, Dunshaughlin, Co. Meath
Tel/Fax: 01-8024001 Mobile: 086-8152252
Email: ian@byrneenvironmental.ie
Web: www.byrneenvironmental.ie

OUTLINE OPERATIONAL WASTE MANAGEMENT PLAN

FOR A PROPOSED

STRATEGIC HOUSING DEVELOPMENT

AT

HOLLYSTOWN-KILMARTIN
DUBLIN 15

10th December 2021

Ian Byrne MSc, MIOA, Dip Environmental & Planning Law

Table of Contents **Page**

1.0 INTRODUCTION

This document presents the Operational Waste Management Plan (OWMP) for the control, management and monitoring of waste associated with a proposed Strategic Housing Development at Hollystown – Kilmartin, Dublin 15.

The proposed development relates to at a site of c. 25.3 ha at the townlands of Hollystown, Kilmartin, Hollywoodrath, Cruiserath, Yellow Walls, Powerstown, and Tyrrelstown, Dublin 15, which includes lands in the former Hollystown Golf Course and lands identified under the Kilmartin Local Area Plan 2013 (as extended). The lands are bound by the R121 and Hollywoodrath residential development to the east, the under construction Bellingsmore residential development to the south and north, the former Hollystown Golf Course to the north, Tyrrellstown Educate Together National School, St.Luke's National School and Tyrellstown Community Centre to the west and south and the existing Tyrrellstown Local Centre to the south.

The proposed development will consist of the development of 548 no. residential units, consisting of 147 apartments/duplexes and 401 houses, ranging in height from 2 to 5 storeys and including retail/café unit, 2 no. crèches, 1 no. Montessori, 1 no. community hub, car and bicycle parking, open space, public realm and site infrastructure over a site area of c. 25.3 ha. On lands to the north of the application site (referred to as Hollystown Sites 2 & 3) the proposed development includes for 428 units consisting of 401 no. 2 and 3 storey houses and 27 no. apartments set out in 9 no. 3-storey blocks. On lands to the south of the application site and north of the Tyrellstown Local Centre (referred to as Kilmartin Local Centre) the proposed development includes 120 no. apartment/duplex units in 4 no. blocks ranging in height from 3 to 5 storeys. The local centre includes 2 no. crèches (including 1 standalone 2 storey crèche), 1 no. Montessori, a retail/café unit, and 1 no. community hub.

The **Objective of this Waste Management Plan** for the operation of the development is to maximise the quantity of waste recycled by providing sufficient waste recycling infrastructure, and to provide waste reduction initiatives and waste collection and waste management information to the residents of the development.

The **Goal of this Waste Management Plan** is to achieve a residential recycling rate of 50% of managed municipal waste by 2020 in accordance with *The Eastern-Midlands Region Waste Management Plan 2015-2021.*

The Operational Waste Management Plan shall be integrated into the design and operation of the development to ensure the following:

- That sufficient waste management infrastructure is included in the design of the development to assist residents minimise the generation of mixed waste streams.

- That the principle of waste segregation at source is the integrated into the development by the provision of separate bin systems, signage and notifications.

- That the development's facility management company shall record the volumes and types of waste generated by the development to assess on an annual basis if the 50% recycling rate is being achieved.

- That all waste materials generated by site activities are removed from site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed / permitted facilities in compliance with the Waste Management Act 1996 and all associated Waste Management Regulations.

- That the Facilities Management Company will manage wastes storage areas and provide annual bulky waste collection services to facilitate residents.

2.0 WASTE MANAGEMENT PLAN – OPERATIONAL PHASE

The Operational Waste Management Plan has been prepared in accordance with *The Eastern-Midlands Region Waste Management Plan 2015-2021* which defines the following Waste Targets:

- *1% reduction per annum in the quantity of household waste generated per capita over the period of the plan.*

- *Achieve a recycling rate of 50% of managed municipal waste by 2021.*

- *Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill.*

The Operational Phase of the Waste Management Plan has been prepared in accordance with the relevant waste management objectives of the *Fingal County Council Development Plan 2017 – 2023.*

OBJ DMS146 Ensure all new largescale residential and mixed-use developments include appropriate facilities for source segregation and collection of waste.

OBJ DMS147 Ensure all new developments include well designed facilities to accommodate the three bin collection system.

Key Aspects to achieve Waste Targets

- All residential units shall be provided with information on the segregation of waste at source and how to reduce the generation of waste by the Facilities Management Company.

- All residential houses shall have sufficient space for the storage of a 3-bin waste system within the curtilage of the house either to the front or the rear.

- All waste handling and storage activities shall occur in the dedicated communal apartment waste storage areas.

- The development's Facility Management Company shall appoint a dedicated Waste Services Manager to ensure that waste is correctly and efficiently managed throughout the development.

- The Operational Phase of the Waste Management Plan is defined by the following stages of waste management for both the residential and commercial aspects of the development:

  Stage 1 Occupier Source Segregation
  Stage 2 Occupier Deposit and Storage
  Stage 3 Bulk Storage and On-Site Management
  Stage 4 On-site treatment and Off-Site Removal
  Stage 5 End Destination of wastes

The operational phase of the WMP has been prepared with regard to *British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice* which provides guidance on methods of storage, collection, segregation for recycling and recovery for residential building and with consideration of DLRCC's domestic waste reduction and segregation at source requirements.

The houses and apartments which will include a 3-bin waste segregation at source systems, together with the communal waste storage areas, have been designed with regard to *Section's 4.8 and 4.9 Refuse Storage* of *The Department of Housing, Planning and Local Government – Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities. 2018.*

3.0 RESIDENTIAL DOMESTIC WASTE MANAGEMENT

The Facilities Management Company shall be responsible for the implementation of all aspects of the Domestic Waste Management Plan which are detailed as follows.

The Facilities Management Company shall employ an appropriately qualified and experienced staff member who will be responsible for all aspects of waste management at the development.

All accommodation units shall be provided with a Waste Management Information document, prepared by the Facilities Management Company, which shall clearly state the methods of source waste segregation, storage, and recycling initiatives that shall apply to the Management of the development. This Information document shall be issued to all residential units on an annual basis.

3.1 Waste Segregation in Houses

The design of residential houses shall provide sufficient internal kitchen space for the storage of up to 10kg of general domestic waste, green recyclable waste and organic waste.

Domestic waste generated by residents of the housing aspect of the development shall be stored in dedicated communal bulk waste bin stores located adjacent to the houses.

3.2 Waste Segregation in Apartments

The design of residential apartment units shall provide sufficient internal kitchen space for the storage of up to 10kg of general domestic waste, green recyclable waste and organic waste. Each apartment / unit shall include waste storage bins which will be of such a size that will allow their easy manual handling to be brought to the communal waste storage areas.

Domestic kitchen 3 bin systems to segregate waste at source

4.0 APARTMENTS & HOUSES COMMUNAL WASTE STORAGE AREAS

The development shall be served by communal waste storage areas for apartments and separately for houses and shall include clearly visible guidelines on the appropriate segregation of different waste types.

Signage shall be installed to inform residents indicating the location of the local can and glass recycling banks and clothing banks. This will encourage to bring these items for recycling themselves.

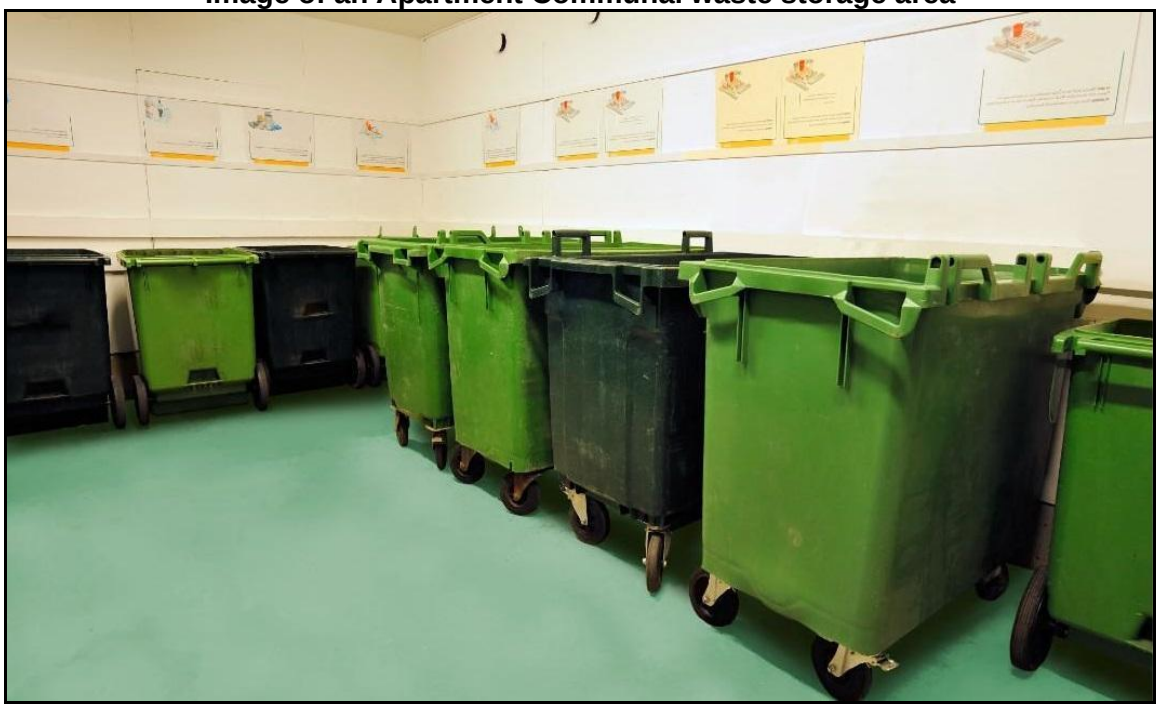
Signage to inform residents of their obligations to reduce waste, segregate waste within the home and dispose of waste in the correct bin will be clearly posted within the waste storage area.

All waste storage bins shall be clearly labelled with exactly what type of waste materials may be deposited within them.

The communal waste storage area shall be designed to include the following aspects:

- A defined pedestrian route shall be marked from the apartment buildings to the waste storage area.
- A non-slip surface shall be provided within the waste storage area.
- The waste storage area shall be of a block construction with a roof.
- The waste storage areas shall be passively / mechanically ventilated.
- The waste storage area shall be fitted with sensor lighting.
- The waste storage area shall be fitted with CCTV cameras and associated signage.
- The waste storage area shall be designed to provide safe access from the apartment units by mobility impaired persons.
- A dedicated and clearly labelled area shall be provided in which mobility impaired persons may place wastes into receptacles at a lower level which will be subsequently transferred to the bulk storage bins on a weekly basis by the Facilities Management Company.
- The waste storage area shall include ground drainage to allow for its regular cleaning and disinfection.
- The Facilities Management Company shall engage a mobile bin cleaning service provider to clean waste bins as required.
- Each communal waste storage area shall contain brown organic waste bulk bins. Appropriate signage shall be placed on all brown bins informing residents of the exact nature of organic waste that can be placed in the bin. Signage will also state that all organic waste must be placed within biodegradable bags before placing in the bulk bin.
- Each communal waste storage area shall contain a biodegradable waste bag dispenser which will facilitate and encourage residents of apartments and duplexes to separately segregate food and organic waste within their apartments in a dedicated bin.

Image of an Apartment Communal waste storage area



A battery box and a WEEE Bin shall also be provided in the communal waste storage areas, an example of which is shown in the following image. This shall be managed by a specialist waste contractor who will be responsible for its routine collection.

5.0 WASTE MANAGEMENT DUTIES OF THE FACILITY MANAGEMENT COMPANY

The Facilities Management Company shall conduct regular and routine inspections of the waste storage areas and shall sign a check list which shall be displayed within the area.

The Facilities Management Company shall ensure that an adequate supply of biodegradable organic waste bags are in place at all times.

It shall be the responsibility of the Facilities Management Company to maintain and ensure the cleanliness of all waste storage areas to prevent odours and the attraction of vermin.

The Facilities Management Company shall engage a specialist cleaning contractor to clean and sterilise all communal waste storage areas as required.

Waste Collection Contractor

The Facilities Management Company shall appoint a Waste Collection contractor capable of collecting Grey (mixed waste bins), Green (dry recyclable bins) and Brown (organic waste bins) from the waste storage areas at a minimum of a weekly basis. The name of the waste collection contractor once appointed shall be forwarded to the Environment Department of Fingal County Council.

Waste Management & Record Keeping

The Facilities Management Company shall maintain a weekly register detailing the quantities and breakdown of general mixed domestic waste, recyclable waste and organic waste wastes removed from the apartment aspect of the development. Supporting documentation shall be provided by the Waste Collection Contractor on a monthly basis. This will allow for waste recycling targets to be tracked to achieve the 50% recycling target.

The Facilities Management Company shall prepare an annual information report for all apartment units detailing the quantities and waste types generated by the development for the previous year. The report shall include reminder information on the correct segregation at source procedures and the correct placement of wastes in the waste storage area. Other aspects of ongoing waste management continuous improvement shall also be stated. This annual report shall also be submitted to the Environment Department of Fingal County Council.

Annual Bulky Waste Collections

The Facilities Management Company shall provide a bulky waste collection to the closest recycling centres on an annual basis which will allow residents to have bulky items such as appliances and furniture removed from their houses and apartments and

transported to a licenced facility. This initiative will also reduce the potential for illegal waste collections and fly-tipping in the local area.

6.0 WASTE MANAGEMENT IN RESIDENT AMENITY AREAS

The Facility Management Company shall be responsible for ensuring that external amenity areas and the internal residential amenity spaces (community hub) are maintained and litter free. Recyclable and non-recyclable waste bins shall be installed in these areas and shall be maintained by the Facility Management Company.

The internal and external residential amenity spaces within the development will include 3-bin waste segregation systems.

Colour coded and clearly labelled waste bins for plastics, paper & cardboard, organic materials and non-recyclable general waste shall be installed in communal areas/rooms for easy and clear segregation by residents, an example of which is shown below.

Image of internal and external communal space waste segregation bin system

7.0 CRECHE AND MONTESSORI WASTE MANAGEMENT

Waste generated by the Creche and the Montessori shall be managed by the operators of these commercial operations who shall engage a commercial waste contractor to collected waste generated.

Each unit shall have 1100 litre waste bins waste bins within the curtilage of the premises to allow the segregation of wastes into grey (mixed waste), green (dry recyclable), and brown (organic waste).

8.0 RETAIL UNIT WASTE MANAGEMENT

Waste generated by the retail unit shall be managed by the operators of the unit who shall engage a commercial waste contractor to collected waste generated.

Wastes from the retail and café units shall be stored within a dedicated, separate and lockable commercial waste area within the basement bin store and shall be segregated into grey (mixed waste), green (dry recyclable), brown (organic) and cardboard packaging waste.

9.0 GENERATED WASTE TYPES & QUANTITIES

The most recent EPA Waste statistics (2018) on household waste generation states 315kg is produced per person per year.

A value of 0.863Kg of waste generated per person per day has been therefore assumed for the purposes of this report to estimate the volume of domestic waste.

9.1 Sites 2 & 3 Domestic Waste Generation

Sites 2 & 3 will generate c. 82m^3 or c. 12,076 Kg of domestic waste per week, the breakdown of which is detailed in Table 1.

Table 1 Sites 2 & 3 Residential Waste per day/week

Waste Type	% Waste	Kg/week	Kg/day
Organic waste	30.6	3695	528
Paper	12.5	1509	216
Cardboard	3.6	435	62
Composites	1	121	17
Textiles	15.5	1872	267
Plastics	13.6	1642	235
Glass	3.4	411	59
Metals	3.1	374	53
Wood	1.2	145	21
Hazardous municipal waste	0.9	109	16
Unclassified combustables	1.4	169	24
Unclassified incombustables	1.2	145	21
Fines	11.7	1413	202
Bulky Waste & WEEE	0.3	36	5
Totals	*100*	12076	*1726*

9.2 Local Centre Domestic Waste Generation

Local Centre will generate c. 15m^3 or c. 2634 Kg of domestic waste per week, the breakdown of which is detailed in Table 2.

Table 2 Local Centre Residential Waste per day/week

Waste Type	% Waste	Kg/week	Kg/day
Organic waste	30.6	806	115
Paper	12.5	329	47
Cardboard	3.6	95	14
Composites	1	26	4
Textiles	15.5	408	58
Plastics	13.6	358	51
Glass	3.4	90	13
Metals	3.1	82	12
Wood	1.2	32	5
Hazardous municipal waste	0.9	24	3
Unclassified combustables	1.4	37	5
Unclassified incombustables	1.2	32	5
Fines	11.7	308	44
Bulky Waste & WEEE	0.3	8	1
Totals	*100*	2635	*377*

10.0 COMMUNAL WASTE STORAGE AREA DESIGN

The development shall include communal bin storage areas for all units.

The dimensions of standard 1100 litre bin are:

Width (mm)	1.4
Depth (mm)	1.2
Height (mm)	1.5
Floor Area per bin (m^2)	1.7

To allow free access to the bins and provide sufficient space for their movement, the required bin store area = bin floor area x 1.5.

Table 3 Communal Residential Waste Bin Store Area Minimum Requirements

Residential Block Ref.	Minimum Bin Storage Area (m^2)
Site 2&3 Apartment Block	14
Local Centre Block A	14
Local Centre Block B	18
Local Centre Block C	22
Local Centre Block D	14

Table 4 Non-domestic Waste Bin Store Area Minimum Requirements

Non-Domestic Waste Unit	Minimum Bin Storage Area (m^2)
Cafe	8
Creche	10
Montessori	10
Residents Amenity Spaces	8

11.0 WASTE COLLECTION STRATEGY

All communal waste bins associated with the apartment Blocks shall be brought from the communal bin storage areas to a designated demarcated bin collection area within the development at road-level by the Facilities Management staff or by the Waste Collection Contractor. Emptied bins shall be immediately returned to the bin storage areas following collection. Waste bins shall be transported to and from the collection point by a caddie vehicle to which the waste bins will be attached as described in the image below.

Houses shall be served by kirb-side waste collections by privately engaged Waste Collection Contractors.

Image of bulk bin transport from bin stores to collection point

12.0 CONCLUSIONS

The proposed Hollystown-Kilmartin SHD shall be designed and managed to provide residents with the required waste management infrastructure to minimise the generation of un-segregated domestic waste and to maximise the potential for segregating and recycling domestic waste fractions.

The **Objective** of this Waste Management Plan is to maximise the quantity of waste recycled by residents by providing sufficient waste recycling infrastructure, waste reduction initiatives and waste collection and waste management information services to the residents of the development.

The **Goal** of this Waste Management Plan is to achieve a residential recycling rate of 50% of managed municipal waste by 2021 (and future targets in subsequent Regional Waste Management Plans).

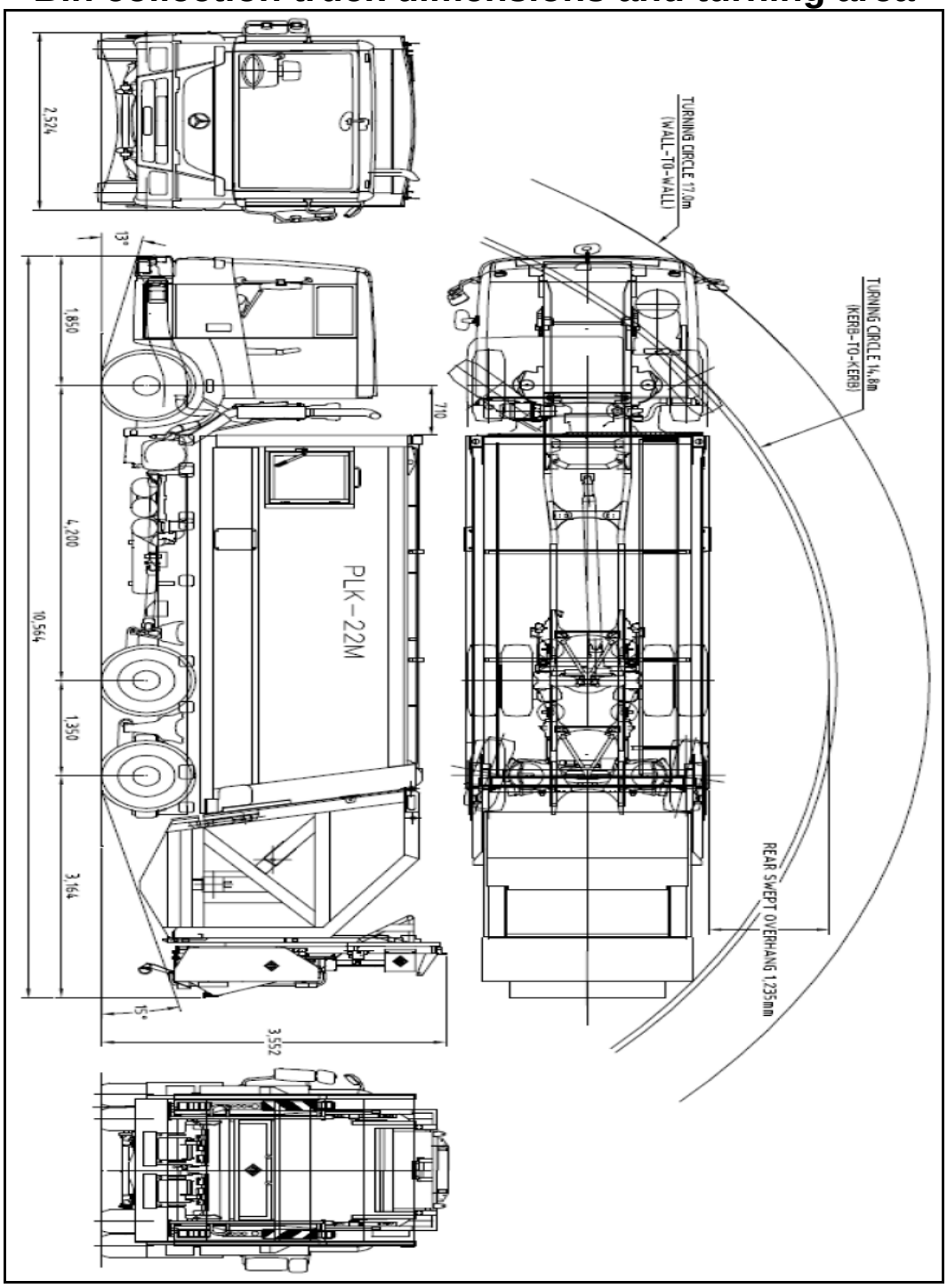
Residents will be provided with waste recycling and waste disposal information by the development's Facility Management Company who will be responsible for providing clean, safe and mobility impaired accessible communal waste storage areas.

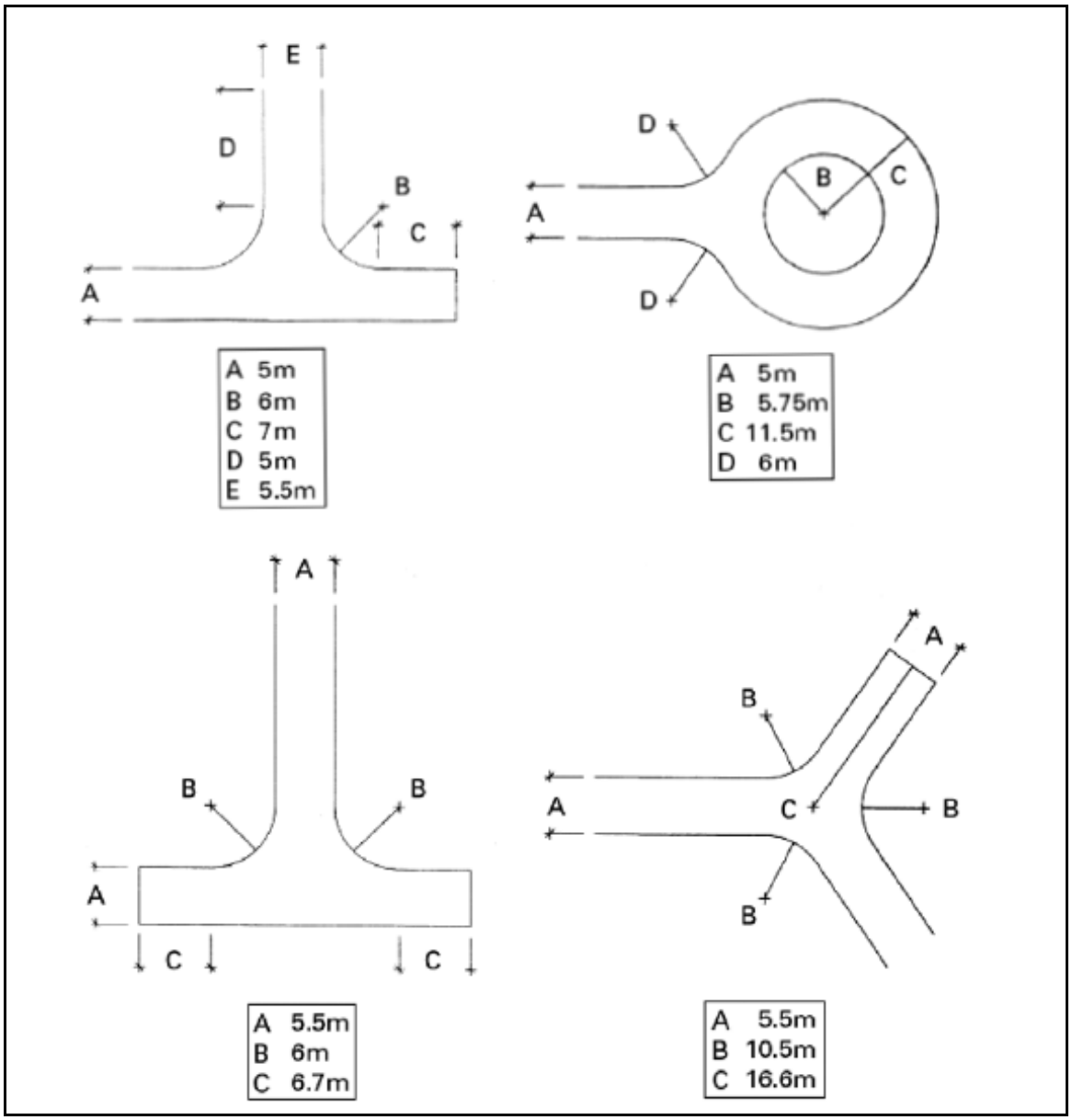
The development shall be designed to provide adequate domestic waste storage and segregation spage for each residential unit as a 3-bin kitchen system. This will promote the appropriate segregation at source of domestic generated waste from all residential units at the development.

The Facility Management Company shall prepare an annual report for the Local Authority and apartment residents of the development on the quantities of waste generated to demonstrate how waste reduction and recycling targets are being achieved with regard to the targets defined in *The Eastern-Midlands Region Waste Management Plan 2015-2021.*

Appendix I

Bin collection truck dimensions and turning area




E
D
B
C
A
A 5m
B 6m
C 7m
D 5m
E 5.5m
D
B
C
A
D
A 5m
B 5.75m
C 11.5m
D 6m
A
B
B
A
C
C
A 5.5m
B 6m
C 6.7m
A
B
A
C
B
B
A 5.5m
B 10.5m
C 16.6m

Appendix 18.1 Existing Utilities Maps

Important Safety Notice:
Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe.
Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1850 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health & Safety Authority publication, Code of Practice For Avoiding Danger From Underground Services which is available from the Health and Safety Authority (1890 289 389) or can be downloaded at www.hsa.ie.

Legal Notice:
Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the Information). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

- Aurora Telecom Fibre Optic Cable
- Aurora Telecom Duct
- Aurora Telecom Sub-duct
- Aurora Telecom Inserted Gas Pipe

Contact Aurora Telecom on 1850-427-399 or (01)203-0120.

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted Pipe (Medium Pressure)
- Inserted Pipe (Low Pressure)
- Distribution Pipe (Abandoned)

- .C=? Cover (depth in meters)
- CP Test Point
- End Cap
- Hot Tap
- Installation
- Valve
- Mains Verification **
- Pressure Monitor
- Protection (Sleeve)
- Protection (Slabbing)
- Reducer
- Service Terminator
- Tee
- Transition

** Please contact GNI on 1850-427747 for specific information.

Design Department - DUBLIN

Gas Networks Ireland

GAS NETWORK INFORMATION

Issue: DBFL	
Location: Tyrrelstown-Kilmartin D15	
Plot Date: 13/09/2018	Contact: F Szeliga
Plotted by: KOC	Scale: 1:2500

Important Safety Notice:
Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe.
Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1850 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health & Safety Authority publication, Code of Practice For Avoiding Danger From Underground Services which is available from the Health and Safety Authority (1890 289 389) or can be downloaded at www.hsa.ie.

Legal Notice:
Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the Information). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

- Aurora Telecom Fibre Optic Cable
- Aurora Telecom Duct
- Aurora Telecom Sub-duct
- Aurora Telecom Inserted Gas Pipe

Contact Aurora Telecom on 1850-427-399 or (01)203-0120.

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted Pipe (Medium Pressure)
- Inserted Pipe (Low Pressure)
- Distribution Pipe (Abandoned)

- .C=? Cover (depth in meters)
- CP Test Point
- End Cap
- Hot Tap
- Installation
- Valve
- Mains Verification **
- Pressure Monitor
- Protection (Sleeve)
- Protection (Slabbing)
- Reducer
- Service Terminator
- Tee
- Transition

** Please contact GNI on 1850-427747 for specific information.

KILMARTIN
YELLOW WALLS
HOLLYSTOWN
NORTH.
1.83m FF
UND
CR
CS

Design Department - DUBLIN

Gas Networks Ireland

GAS NETWORK INFORMATION

Issue: DBFL	
Location: Tyrrelstown-Kilmartin D15	
Plot Date: 13/09/2018	Contact: F Szeliga
Plotted by: KOC	Scale: 1:2500

ESB Networks

TITLE:

20180913-020_A0

COLOUR CODE:

- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 13-Sep-2018

** SCALE: 1:2500

** SCALE WHEN PRINTED ON AN A0 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A0 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.

X,Y: 305082, 243703

X,Y: 307983, 243703

X,Y: 307983, 241779

PLEASE NOTE THAT THERE ARE: HIGH VOLTAGE (38KV AND HIGHER VOLTAGES) OVERHEAD LINES AND UNDERGROUND CABLES ON THIS MAP. IF YOU INTEND WORKING, OR UNDERTAKING DEVELOPMENT WITHIN A CORRIDOR EXTENDING 40 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE OVERHEAD LINES OR WITHIN A CORRIDOR EXTENDING 5 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE UNDERGROUND CABLES YOU MUST CONTACT THE DESIGNATED PARTIES IN ADVANCE OF THE WORKS:

FOR HIGH VOLTAGE OVERHEAD LINES: (38KV AND HIGHER VOLTAGES)
CONTACT: ALAN BROWN, ESB TRANSMISSION, JAMESTOWN ROAD,
INCHICORE, DUBLIN 8. PHONE: 087 9273970 EMAIL: ALAN.BROWN@ESB.IE

FOR HIGH VOLTAGE UNDERGROUND CABLES: (38KV AND HIGHER VOLTAGES)
CONTACT: GARETH PAISLEY, ESB TRANSMISSION,
JAMESTOWN ROAD, INCHICORE, DUBLIN 8.
PHONE: 087 9374867 EMAIL: GARETH.PAISLEY@ESB.IE

A3

BELLGREE AVENUE

Bellgree Avenue

Bellgree Drive

Bellgree Close

CLOSE

Tyrreistown Educate Together National School

Area under construction

220 kV

PLANT REQUESTED FROM eircom emaps CBYD SERVICE

https://cbyd.emaps.eircom.ie/

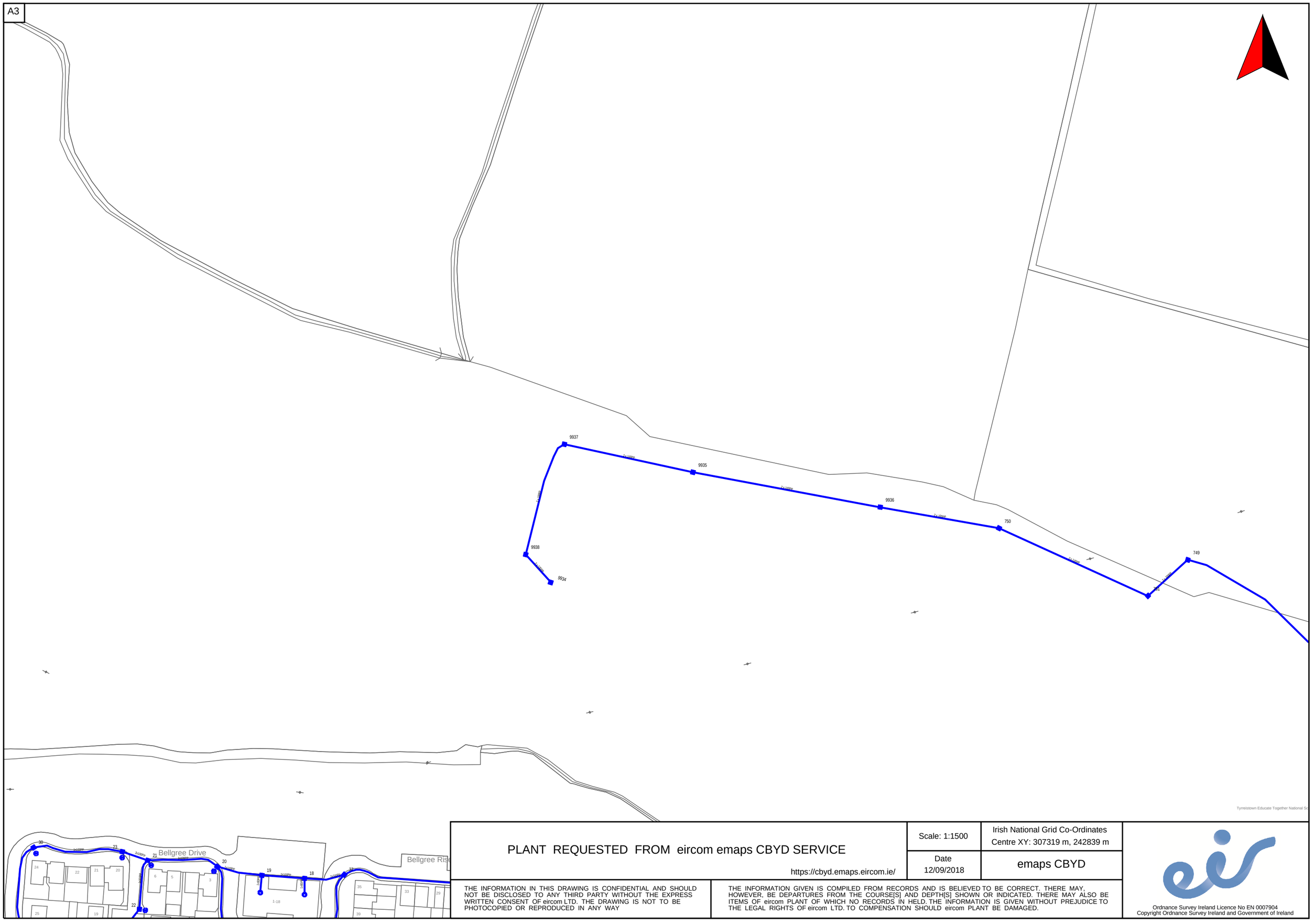
Scale: 1:1500

Irish National Grid Co-Ordinates
Centre XY: 307634 m, 242652 m

Date
12/09/2018

emaps CBYD

A3



PLANT REQUESTED FROM eircom emaps CBYD SERVICE

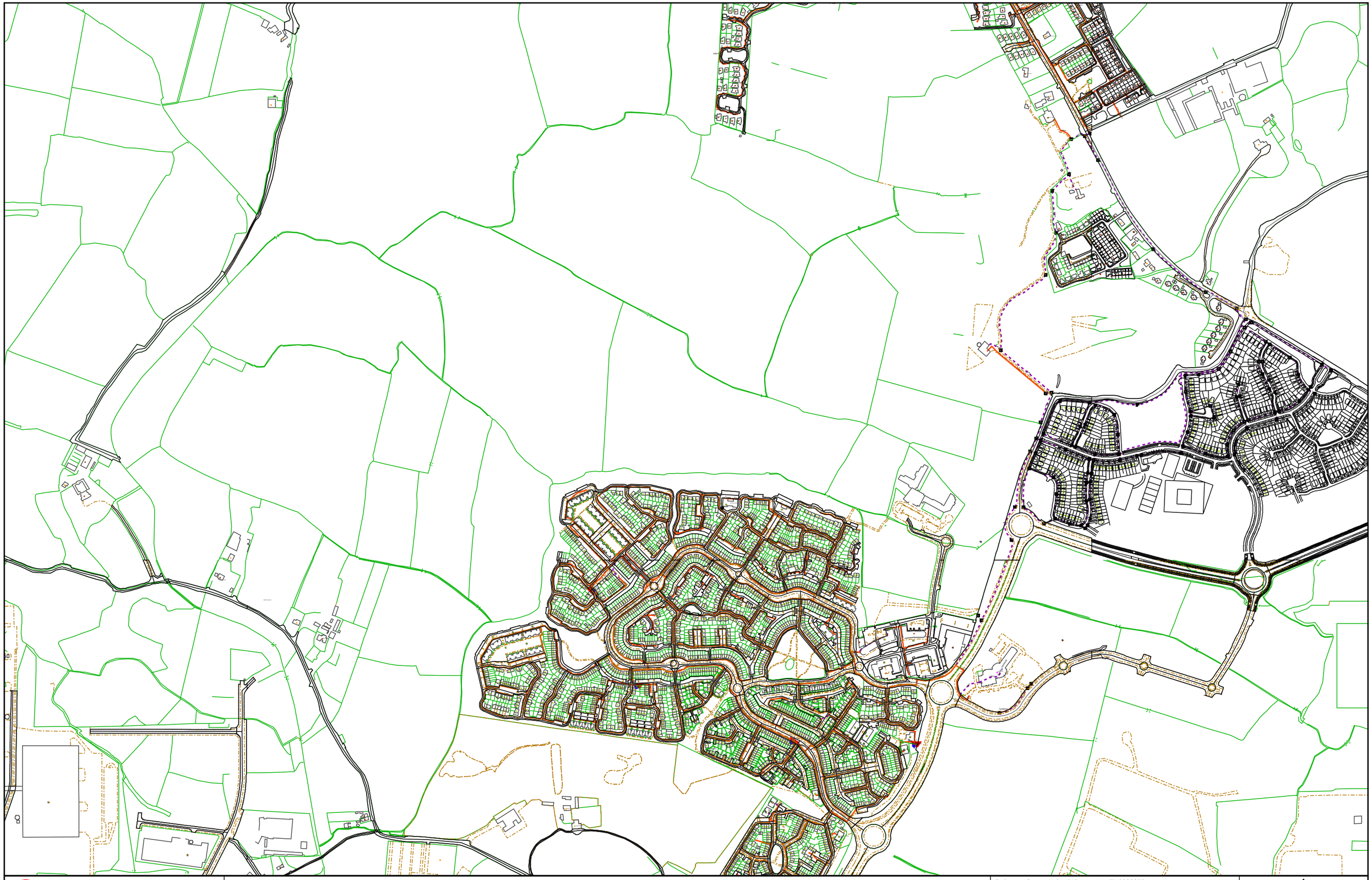
https://cbyd.emaps.eircom.ie/

Scale: 1:1500

Date 12/09/2018

Irish National Grid Co-Ordinates
Centre XY: 307319 m, 242839 m

emaps CBYD



Virgin Media
Unit 6 & 7
Broomhill Business Park
Tallaght 24

PROJECT NAME

DESIGNED BY:

Produced on: 13/09/2018

@ A3

Brady Shipman Martin

DUBLIN
Mountpleasant Business Centre
Mountpleasant Avenue Upper
Ranelagh
Dublin 6
+353 1 208 1900

CORK
Penrose Wharf Business Centre
Penrose Wharf
Cork
+353 21 242 5620

mail@bradyshipmanmartin.com
www.bradyshipmanmartin.com