

Eve O'Sullivan

Subject: Barnageeragh Landfill - Regulation 7 Notice H0167-01
Attachments: MGE0755LT0002 Response to EPA Queries F01.pdf

From: James Walls <James.Walls@fingal.ie>
Sent: 23 November 2020 15:58
To: Ewa Babiarczyk <E.Babiarczyk@epa.ie>; Licensing Staff <licensing@epa.ie>
Cc: Nathan Anderson <Nathan.Anderson@fingal.ie>; 'Gareth McElhinney' (Gareth.McElhinney@rpsgroup.com) <Gareth.McElhinney@rpsgroup.com>
Subject: Barnageeragh Landfill - Regulation 7 Notice H0167-01

Dear Ewa

In reference to your Regulation Notice of 2nd November 2020 please find attached a response prepared by our Consultant as the Authorised person. It contains a letter of clarification and an updated non-technical summary with updated drawings. I hope you will find everything in order.

Regards

James Walls, BEng MSc CEng MIEI
Senior Executive Engineer

Water Pollution and Waste Management | Tel: 01 890 5904 | James.Walls@fingal.ie | www.fingal.ie



Comhairle Contae
Fhine Gall
Fingal County
Council



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Our ref: MGE0755LT0002

Lyrr 2, IDA Business &
Technology Park, Mervue
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Date: 23 November 2020

Mr. James Walls,
Environment Department,
Fingal County Council,
County Hall,
Main Street,
Swords,
Co. Dublin

RE: H0167-01 - Barnageeragh Landfill – Notice in accordance with Regulation 7(4) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations, 2008

Dear James,

Further to the EPA letter dated 2nd November 2020, we have outlined below our clarifications on the issues raised.

Item 1

The attached updated drawing MGE0755-RPS-00-XX-DR-C-DG0001-01 is the correct drawing alongside drawing and MGE0755-RPS-00-XX-DR-C-DG0001-02. These drawings have been updated to incorporate a site survey completed by the developer in October 2020. The drawings show the site boundary, interpreted waste boundary and the line of the LL/DPE capping. Section 1.2 of the non-technical summary has been updated to reflect this.

Item 2

- (a) The total quantity the material imported to and filled in Area 2 is unknown. The historical context of the area must be considered. It was formerly used as agricultural land with sand and gravel extraction and as such it is highly likely that Area 2 was subject to some ground disturbance and deposition over the years of operation prior to infilling of waste in Area 1. We note that eleven of the trail pits in this area showed no evidence of infilling. Area 2 was also disturbed during the construction works for the neighbouring housing estates. It is therefore considered that Area 2 could be described as disturbed ground/ infill that is not waste. For these reasons it is considered that Area 2 is not an area of concern.
- (b) The material deposited in Area 2 is not considered a waste or a by-product. It is likely to have arisen from on-site activities from the 1950s through the 1970s.
- (c) Area 2 is predominantly disturbed ground from on-site activities and not a body of waste material. The C&D waste encountered at both TP39 and TP43 was superficial only as summarised in the logs attached to this correspondence but also available in Appendix 6 of the Winsac DQRA. At TP39 some wood fragments were encountered in the top 0.7m. In TP43 some concrete and timber was

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encountered in the top 0.5m. This material was as a result of construction activities on the site which was active at the time the trial pits were undertaken. It should be noted that this area of the site was used to store construction materials as is illustrated in Figure 7 of the Winsac DQRA. The area has been subsequently cleared of construction materials and landscaped with clean soil won from on-site activities. Therefore this area is considered to pose no risk of environmental pollution.

(d) The site boundary on the drawings have been updated to include TP43.

Item 3

The containment of landfill gases is an added benefit of installing the engineered landfill cap but it is not the primary purpose, which is the reduction of infiltration of rainwater through the waste body and the subsequent leaching of contaminants into the groundwater. It should be noted that a landfill gas collection layer will be installed under the LLDPE liner in accordance with the EPA landfill site design manual.

The landfill gas risk assessment presented in Section 6.1.5 of the Tier 2 & Tier 3 Environmental Risk Assessment summarises the calculated Characteristic Situation (CS) for each borehole based on the peak levels of landfill gases recorded at each location. This determined that the landfill gas risk predominantly falls within Characteristic Situation 1 (CS1).

Of the 21 monitoring locations, 20 had an automatic classification of CS1 with only BH4 automatically calculated at CS2. In line with a conservative approach, 14 of the 20 were reclassified as CS2 designations due to the peak levels of methane and carbon dioxide being recorded at >1% and >5% respectively. It should be noted that this is based on peak values and is a conservative approach.

Table 8.5 in CIRIA C665 *Assessing risks posed by hazardous ground gases to buildings*, reproduced below, provides a summary of CS and typical sources of gas generation. As noted in the column to the right in the table, the levels of gases detected in many of the boreholes are typical of made ground.

Table 8.5 Modified Wilson and Card classification

Characteristic situation (CIRIA R149)	Comparable classification in DEIR et al (1999)	Risk classification	Gas screening value (GSV) (CH ₄ or CO ₂) (l/hr) ¹ Threshold	Additional factors	Typical source of generation
1	A	Very low risk	<0.07	Typically methane £1 % and/or carbon dioxide £5 %. Otherwise consider increase to Situation 2	Natural soils with low organic content "Typical" made ground
2	B	Low risk	<0.7	Borehole air flow rate not to exceed 70l/hr. Otherwise consider increase to characteristic Situation 3	Natural soil, high peat/organic content. "Typical" made ground
3	C	Moderate risk	<3.5		Old landfill, inert waste, mineworking flooded
4	D	Moderate to high risk	<15	Quantitative risk assessment required to evaluate scope of protective measures.	Mineworking – susceptible to flooding, completed landfill (WMP 26B criteria)
5	E	High risk	<70		Mineworking unflooded inactive with shallow workings near surface
6	F	Very high risk	>70		Recent landfill site

Based on the full landfill gas risk assessment, and the information detailed in the Winsac DQRA, it is deemed not necessary to provide an engineered landfill cap to prevent landfill gas migration. However, a

Our ref: MGE0755LT0002

non-hazardous landfill capping system will be constructed over the main part of the waste body in accordance with the EPA landfill site design manual to prevent infiltration of rainwater into the waste and to contain landfill gases. The landfill gas collection layer provides an added factor of safety in the design. The existing landfill gas vents with cowls will be connected via sub-surface gas collection pipes under the landfill gas capping system to a single landfill gas vent with cowl to be located at the top of Area 1.

It should also be noted that the edge of the landfill capping system proposed for the main waste body is contiguous with the hardstanding areas of the nearest properties and as such there will be an impermeable boundary over much of the waste boundary.

An updated non-technical summary has been included with this letter.

Yours sincerely,
for RPS Consulting Engineers Limited

Gareth McElhinney
Technical Director - Environment & Marine
gareth.mcelhinney@rpsgroup.com
+353 91 400 212

cc: John Daly, Fingal County Council
Nathan Anderson, Fingal County Council

Attached. Trial pit logs for TP39 and TP43

Updated non-technical summary with updated drawings:

- MGE0755-RPS-00-XX-DR-C-DG0001-01
- MGE0755-RPS-00-XX-DR-C-DG0001-02

TRIALPIT CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	TRIALPIT NUMBER: TP39		PAGE 1 OF 1	
	NUMBER	TYPE					EXCAVATION DATE: 11/08/17	METHOD: TRACKED HYMAC		
							CONTRACTOR: Winsac Ltd	TRIALPIT DIMENSION: 1m x 3m		
							LOGGED BY: PMcC & PR	GRID REF.: E323290.12 N260840.9223		
							CHECKED BY: PM	ELEVATION: approx. 15.74 m AOD		
							DESCRIPTION	COMMENTS		
				0			brown loose sandy gravelly SILT/CLAY	No evidence of VOC/Hydrocarbon contamination	0	
				0.5			some timber from 0 - 0.7m		0.5	
				1.0			dark brown sandy gravelly SILT/CLAY some round and sub-rounded cobbles pockets of black clay identified	No evidence of VOC/Hydrocarbon contamination	1.0	
				1.5			some red /brown, dark brown, very gravelly SAND (medium to coarse sand) frequent round and sub-round COBBLES	No evidence of VOC/Hydrocarbon contamination	1.5	
				2.0			dark brown very sandy GRAVELS and COBBLES (round and sub-round)	No evidence of VOC/Hydrocarbon contamination	2.0	
				2.1			Terminated at 2.1m - Sufficient to determine the depth to indigenous ground		2.5	
				3.0					3.0	
				3.5					3.5	
				4.0					4.0	
				4.5					4.5	
				5.0					5.0	

LOCATION / NOTES:

Groundwater ingress observed at 2.1m
No domestic waste evident in trialpit

LEGEND








- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- ▼ Groundwater Table
- ▽ Perched Water Table

TRIALPIT LOG

JOB TITLE **Skerries, Phase II Site Investigation**
 LOCATION **Barnageeragh Cove, Skerries**
 CLIENT **Winsac Ltd.**



TRIALPIT CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	TRIALPIT NUMBER: TP43		PAGE 1 OF 1	
	NUMBER	TYPE					EXCAVATION DATE: 11/08/17		METHOD: TRACKED HYMAC	
							CONTRACTOR: Winsac Ltd		TRIALPIT DIMENSION: 1m x 3m	
							LOGGED BY: PMcC & PR		GRID REF.: E323234.948 N260915.1179	
							CHECKED BY: PM		ELEVATION: Approx. 15.24 m AOD	
							DESCRIPTION	COMMENTS		
					0		brown sandy gravelly SILT (MADE GROUND) some construction and demolition waste (concrete and timber)	No evidence of VOC/Hydrocarbon contamination	0	
					0.5		brown gravelly fine SAND	No evidence of VOC/Hydrocarbon contamination	0.5	
					1.0		orangy brown gravelly SAND	No evidence of VOC/Hydrocarbon contamination	1.0	
					1.5		brown gravelly fine SAND	No evidence of VOC/Hydrocarbon contamination	1.5	
					2.0		soft dark brown gravelly CLAY/SILT	No evidence of VOC/Hydrocarbon contamination	2.0	
					2.5		firm dark brown gravelly CLAY	No evidence of VOC/Hydrocarbon contamination	2.5	
					3.0		Terminated at 2.6m - Sufficient to determine the depth to indigenous ground		3.0	
					3.5				3.5	
					4.0				4.0	
					4.5				4.5	
					5.0				5.0	

<p><u>LOCATION / NOTES:</u></p> <p>Groundwater seepage at base of trialpit after trialpit was left open for approx. 45 minutes</p>	<p><u>LEGEND</u></p> <ul style="list-style-type: none">  Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table 	TRIALPIT LOG	
		JOB TITLE	Skerries, Phase II Site Investigation
LOCATION	Barnageeragh Cove, Skerries		
CLIENT	Winsac Ltd.		
			

ATTACHMENT A1

Non-technical Summary

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MGE0755RP0003
Barnageeragh Landfill CoA
Attachments
F02
23 November 2020

ATTACHMENT A1: NON-TECHNICAL SUMMARY

1.1 Introduction

RPS was commissioned by Fingal County Council (FCC) to undertake an Environmental Risk Assessment (ERA) for an unregulated waste disposal site in Barnageeragh to the north of the town of Skerries, Co. Dublin. The Barnageeragh Landfill is registered with the EPA under Section 22 of the Waste Management Act 1996, as amended, EPA registration number S22-02655. The EPA's historic landfill register number is H0167-01.

Under the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008, S.I. No. 524 of 2008, an application to the Environmental Protection Agency (EPA) for a Certificate of Authorisation must be submitted to regularise the site.

The application for a certificate can only be made by the relevant local authority (in this case FCC) and must be supported by an environmental risk assessment carried out in accordance with the "Code of Practice: Environmental Risk Assessment for Unregulated Waste Disposal Sites", (EPA, 2007), hereafter the CoP. The ERA consists of the following reports:

- Tier 1 Environmental Risk Assessment (report ref: MDR1552RP0001, August 2019);
- Tier 2 and Tier 3 Environmental Risk Assessment (report ref: MGE0755RP0001, July 2020);
- Screening for Appropriate Assessment (report ref: MGE0755RP0002, July 2020); and
- Winsac Ltd. Residential Development, Barnageeragh Cove, Skerries, Phase II Site Investigation/ DQRA & Landfill Gas Survey, Final Report, (February 2019).

1.2 Site Location and Overview

Barnageeragh Landfill is situated on a privately-owned site that has been partially developed. It is bounded to the north by Barnageeragh Road, to the east by Barnageeragh waste water treatment plan (WWTP), to the south by the Dublin-Belfast rail line and to the west by the Hamilton Hill housing estate. This subject site is approximately 1.4 hectares in area with a waste deposition area of approx. 0.8 hectares. The Irish Sea is approximately 400m north of the site. Refer to Attachment C1 for location maps.

The depth of waste varies across the site with the maximum depth of made/ground/ waste estimated to be approximately 10.5m below ground level (bgl) near the centre of the waste body. The type of waste present on-site is a mix of municipal and C&D waste.

The boundary of the site, the extent of the waste body and the proposed area of LLDPE landfill capping are shown on drawings MGE0755-RPS-00-XX-DR-C-DG0001-01 and MGE0755-RPS-00-XX-DR-C-DG0001-02.

1.3 A Brief History of the Site

An historic 6-inch colour map (1837 – 1842) shows that the site was originally agricultural land. The Dublin to Drogheda railway was under construction at this time. An historic 25-inch map (1888 – 1913) shows the completed railway line. There is limited information available on the uses of the land, particularly between 1913 and 1995. However, a 1988 survey, undertaken by Dublin County Council, recorded that tipping of household and commercial waste (which included material tipped by the Council) began at this site sometime around the mid-1950s and ended in 1983.

Aerial maps show that an access road running east to west was constructed by the year 1995 to give access to the subject site. The maps also show the expansion of residential housing estates associated with Skerries toward the subject site. Aerial maps dated between 2005 and 2012 show that the WWTP had been constructed to the east of the subject site. They also show signs of further residential housing development to the north and north-east. Current maps show near completion of the residential housing estates to the north of the subject site with construction commencing on the Hamilton Hill estate, directly adjacent to the subject site.

The site was used as a compound during construction of new houses with storage facilities and vehicle movements evident from tracks. Building materials and excavated material have been deposited in the south

east of the site. These were all subsequently removed. The total volume of waste estimated to be deposited at the site is 29,677m³ (44,516 tonnes using a factor of 1.5 t/m³) which includes both the made ground near the surface and the waste body buried on the site.

1.4 Hydrogeology and Ecology of the Site

1.4.1 Hydrogeology

The aquifer beneath the site and surrounding area is classified as a poor aquifer in bedrock which is generally unproductive, except for local zones and covering an area of 15km². The subsoil which has been described by GSI as glaciofluvial sands and gravels has a high permeability overlain by well-drained soil. The vulnerability level of this aquifer is classified as high. A zone of alluvium subsoil has low permeability and a moderate level of vulnerability.

Close to the site between approximately 0.8km and 1km to the WNW and SSW respectively there is a locally important aquifer classified as a karstified aquifer, which has zones of erosion, often in limestone rock, that has produced fissures, sinkholes and underground streams allowing for flow of groundwater.

According to the EPA, the status of the groundwater within the Dublin GWB located beneath the site and the surrounding area is classified as "Good Status" (EPA Catchments 2019).

There are no groundwater wells on the site (other than those from previous site investigations). According to GSI there are multiple wells/springs within the vicinity of the site. There are no Public Supply Source Protection Areas within the site, however the nearest is located approximately 2km south west of the site, called 'Bog of the Ring' covering an area of approx. 19.5km.

1.4.2 Ecology

Although there are no identifiable areas of protection on site, there are various locations nearby to be noted that are designated under national and European law (e.g. SACs and SPAs under the Habitats Directive). Figure 3.5 in Section 3 of the Tier 1 Environmental Risk Assessment report outlines all protected sites within a 15km radius according to the NPWS website (NPWS, June 2019).

The screening for AA report completed for the application for a certificate of authorisation (refer to Attachment E1) concludes that the Barnageeragh Landfill, either alone or in-combination with other plans and/or projects, will not have significant negative effects on the integrity of European Sites in light of their conservation objectives.

1.5 Risk Category

Based on the EPA Code of Practice (CoP), the eleven Source-Pathway-Receptor (SPR) linkages were considered within the conceptual model and assessed as part of the Tier 1 Risk Assessment (refer to Attachment D1). Eight of the SPR linkages were scored as having Low Risk – Class C with SPR 10 and SPR 11 (respectively, lateral and vertical migration of landfill gas to human presence) scored as Moderate Risk – Class B.

Further assessment of the SPR linkages was undertaken as presented in the Tier 2 and Tier 3 ERA (refer to Attachment D2). From this analysis, both SPR 10 and SPR 11 could be reduced to Low - Class C due to the very low flow rate of landfill gas.

The Tier 2 and Tier 3 ERA (refer to Attachment D2) rated SPR 8 as Moderate – Class B due to a connectivity from leachate to groundwater to surface water. However, Following further assessment, this SPR was reduced to Low – Class C as explained in correspondence issued to the EPA dated 23rd October 2020. This correspondence included updates to Table 7.14 and Table 7.15 of the Tier 2 and Tier 3 ERA.

Through the environmental risk assessment process, all SPR linkages have been confirmed to be Low - Class C.

1.6 Actual and Potential Environmental Impacts

1.6.1 Leachate

Contamination of groundwater under the main waste mass in the southern portion of the site has been identified through the site investigation, albeit at Low – Class C risk. The groundwater quality is characterised by elevated concentrations of key inorganic parameters (ammonia, nitrite, chloride, sulphate, potassium, sodium, calcium and magnesium), the presence of metals at elevated concentrations including mercury and selenium, and the general absence of organic compounds. The area to the north of the waste mass is generally characterised by the presence of the same suite of site-specific contaminants of concern, albeit at substantially lower concentrations.

To reduce the potential for leaching of contaminants from the waste body under the southern portion of the waste body, it is deemed appropriate to construct an impermeable barrier over the waste mound to prevent rainwater infiltration and to break the pathway.

1.6.2 Landfill Gas

The landfill gas risk assessment presented in Section 6.1.5 of the Tier 2 & Tier 3 Environmental Risk Assessment summarises the calculated Characteristic Situation (CS) for each borehole based on the peak levels of landfill gases recorded at each location. This determined that the landfill gas risk predominantly falls within Characteristic Situation (CS) 1. Of the 21 monitoring locations 20 had an automatic classification of CS1 with only BH4 automatically calculated at CS2. In line with a conservative approach, 14 of the 20 CS1 classifications were reclassified as CS2 due to the peak levels of methane and carbon dioxide being recorded at >1% and >5% respectively. However, it should be noted that this is based on peak values and is overly conservative. Additionally, the flow rate of landfill gas detected in the boreholes is negligible and would indicate a very low risk of migration, hence the predominant CS1 classification.

The risks from landfill gas are considered very low as there is little to no pressure within the waste body to push the landfill gas out. However, as it is proposed to construct an engineered landfill capping system over a large portion of Area 1 to stop the infiltration of rainwater, this will bring an added benefit in containing landfill gases. In addition a passive vent with cow will be installed connecting the existing vents to a single discharge point to be located at a high point in Area 1. Monitoring for landfill gases will continue following completion of the landfill capping works.

1.7 Recommended Remediation Option

The remediation measure deemed most suitable for Barnageeragh Landfill is the construction of an engineered landfill cap over the waste body to the south of the site over much of Area 1 to prevent the ingress of rainwater and the generation of leachate. This engineered cap will be for a non-hazardous landfill as recommended in Chapter 10 of the EPA Landfill Site Design manual, 2000. This will stop the infiltration of rainwater through the waste mass and the leaching of contaminants into the groundwater. The landfill capping system is described in Section 8 of the Tier 2 and Tier 3 ERA (Attachment D2) and shall comprise the following:

- Regrading of the waste body;
- Landfill gas drainage geocomposite;
- Linear Low Density Polyethylene (LLDPE) liner;
- Surface water drainage geocomposite;
- A minimum of one metre thick soil layer comprising 850mm of clean subsoil overlain by 150mm clean topsoil; and
- The existing passive gas vents with cowls are to be connected to a single gas collection pipe and conveyed to a single passive gas vent with cowl to be located near the high point of the area.

In the other areas of the site, there is very low risk of environmental pollution as demonstrated by the environmental risk assessment. Certain areas have been effectively capped with road and pavements, with other landscaped areas having a clean cover of soil.

Similarly, the area of the site to the north of the main waste body will be fully landscaped with clean soil. The planning permission also includes for the construction of a multi-use games area (MUGA) which will provide additional hardstanding.

It is therefore not considered necessary to construct an engineered landfill cap over the areas outside of that area shown on drawing MGE0755-RPS-00-XX-DR-C-DG0001-02.

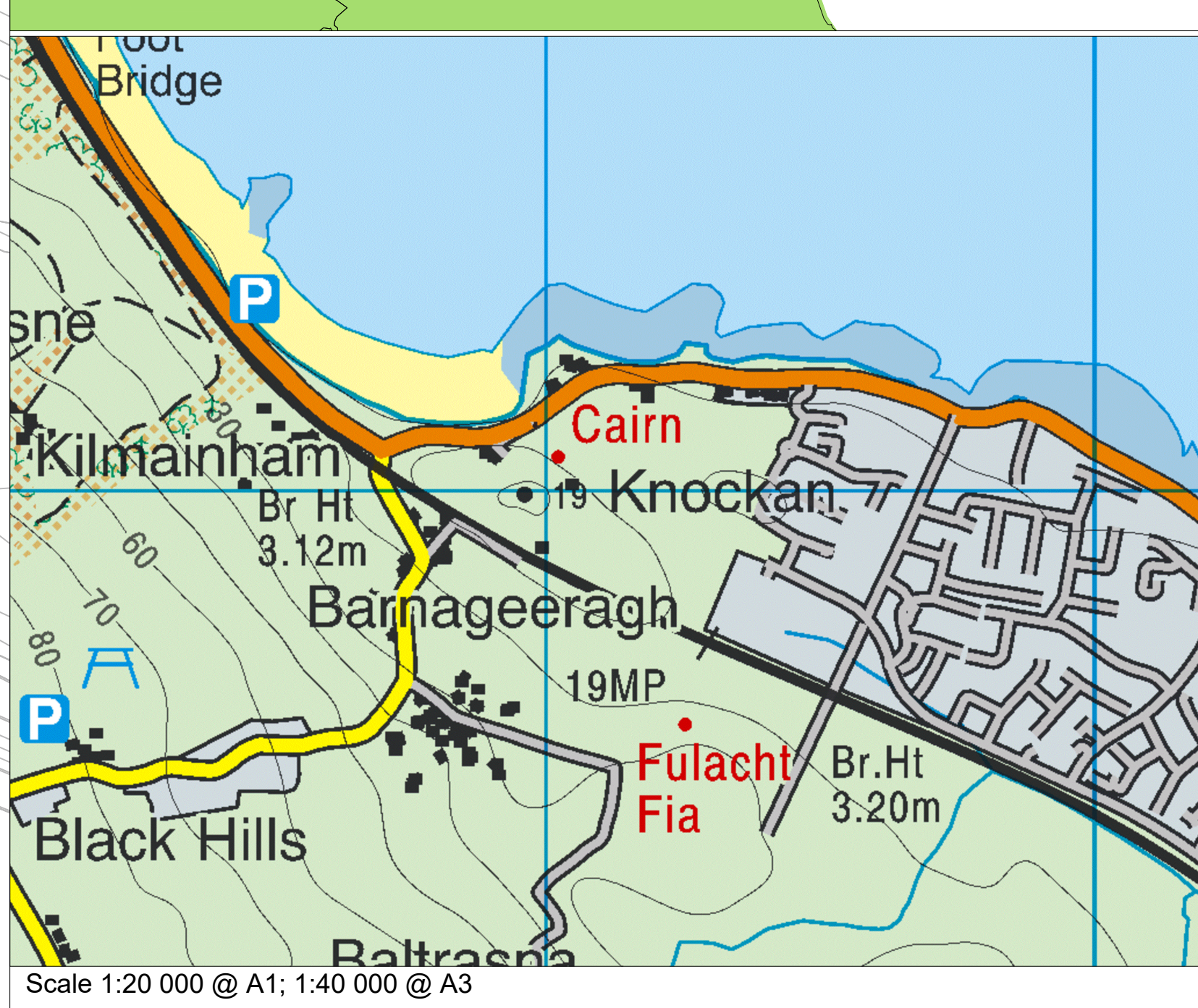
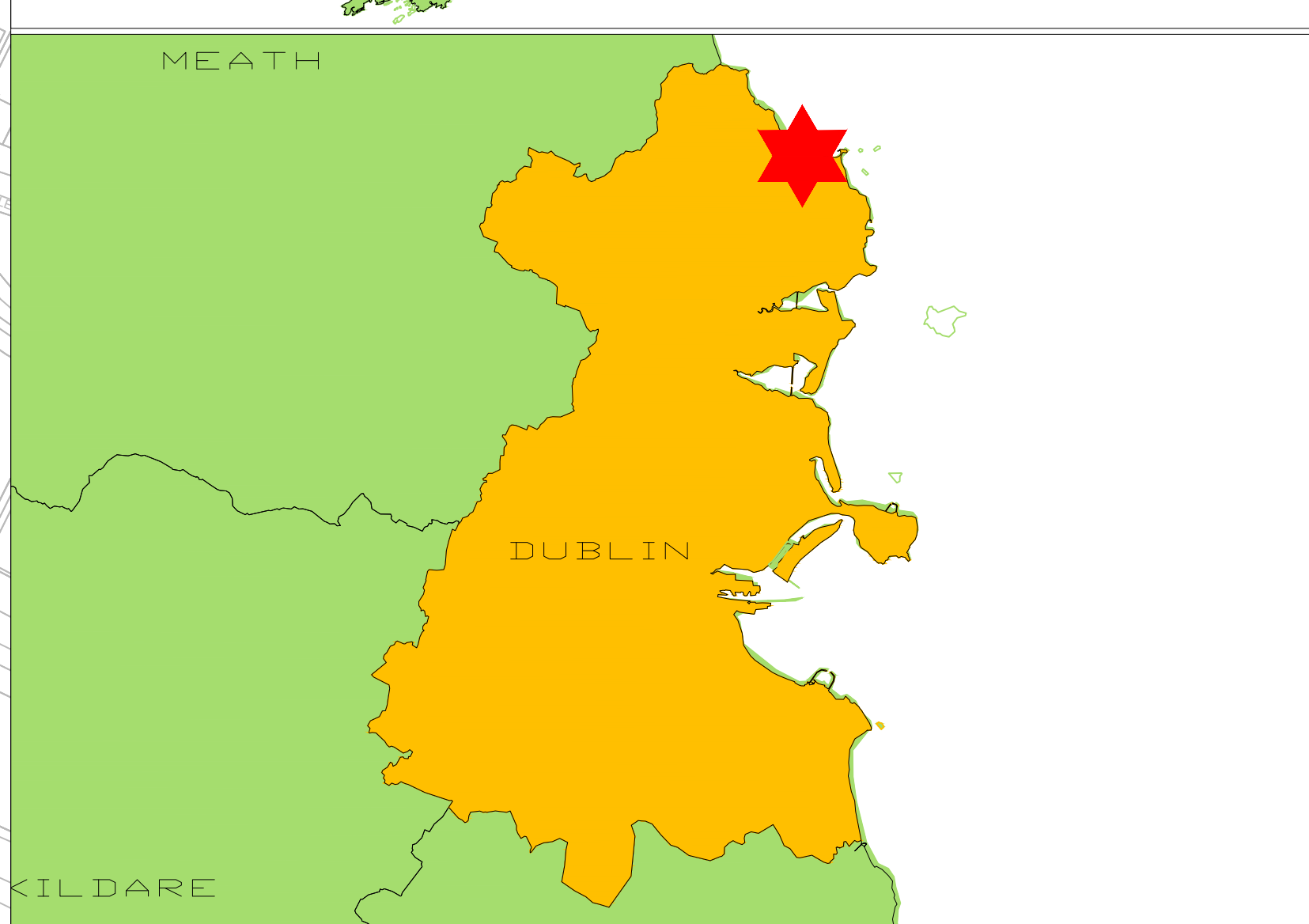
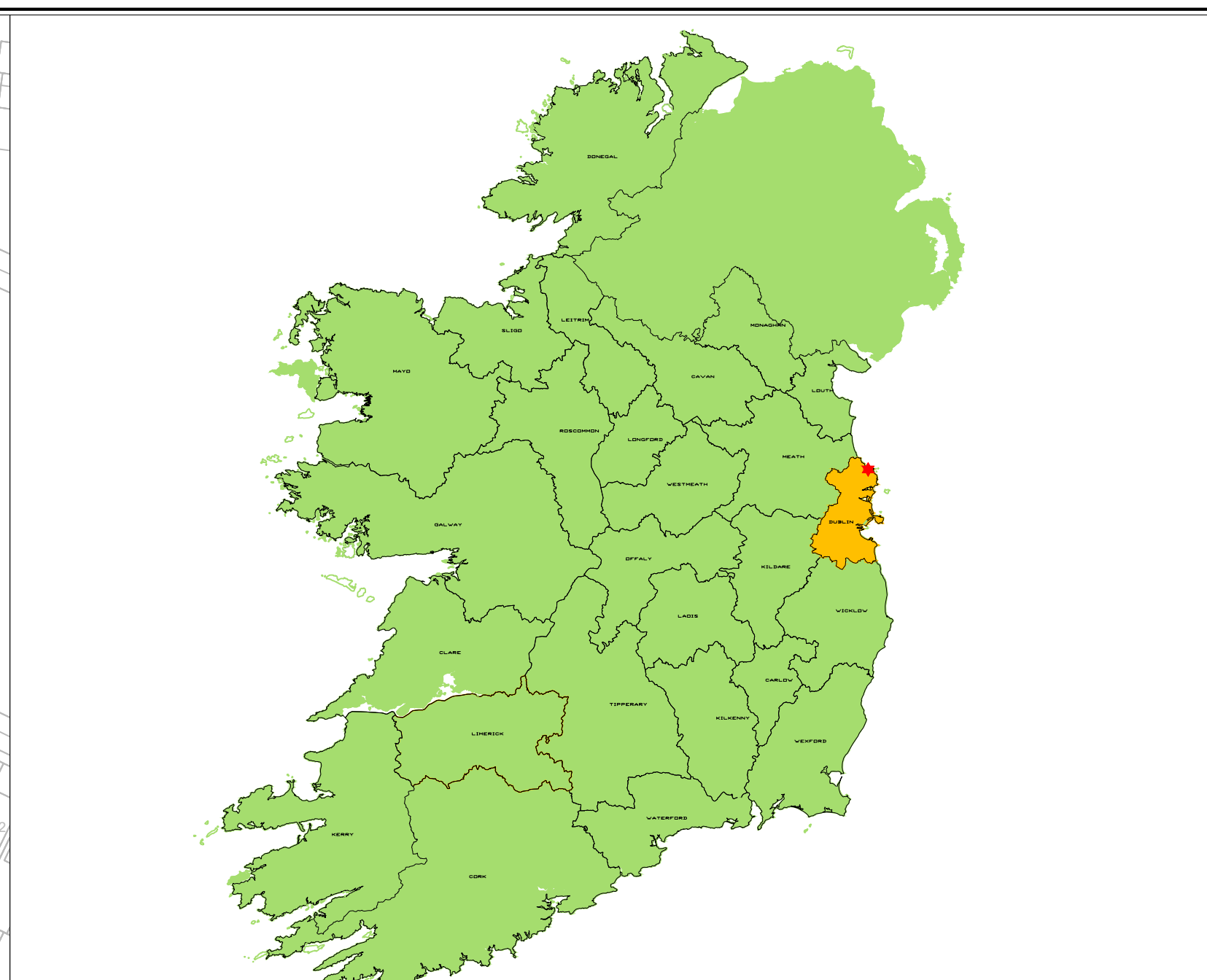
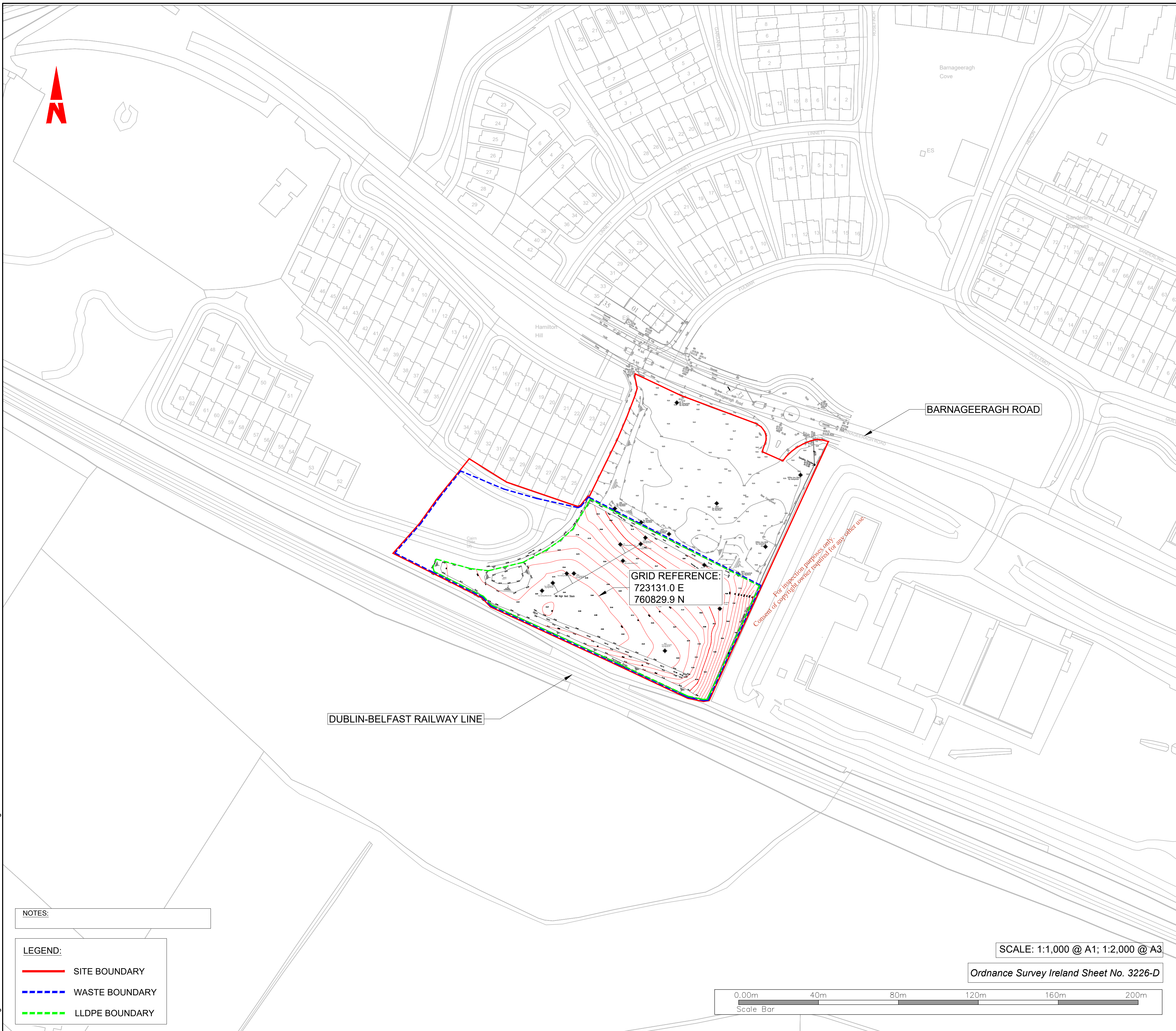
1.8 Timescale for Remediation

The developer, Winsac, commenced regrading works on-site in Q3 2020. This work has provided the surface over which the landfill capping system will be constructed.

It is expected that the engineered landfill capping works will be completed within 16 weeks.

Post-restoration monitoring has been recommended in Table 8.1 of the Tier 2 and Tier 3 Environmental Risk Assessment (Attachment D2). The frequency of monitoring should be reviewed after two years following an evaluation of the monitoring results.

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NOTES:

LEGEND:

- SITE BOUNDARY
- WASTE BOUNDARY
- LLDPE BOUNDARY

SCALE: 1:1,000 @ A1; 1:2,000 @ A3

Ordnance Survey Ireland Sheet No. 3226-D

0.00m 40m 80m 120m 160m 200m

Scale Bar

Client

Comhairle Contae Fhine Gall
Fingal County Council

General Notes

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(ii) DO NOT SCALE, use figured dimensions only.

(iii) This drawing is the property of RPS, it is a project confidential classified document. It must not be copied used or its contents divulged without prior written consent. The needs and expectations of client and RPS must be considered when working with this drawing.

(iv) Information including topographical survey, geotechnical investigation and utility detail used in the design have been provided by others.

(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Drawn By	Amendment / Issue	App
F01	13/11/20	PH	Survey Update	GM/EE
D01	20.11.19	DM	Issue for Approval	GM/EE

Model File Identifier
MGE0755-RPS-00-XX-DR-C-DG0001

Scale	AS SHOWN @ A1 AS SHOWN @ A3
Created on	21/10/2019
Sheets	01 of 02

Project	BARNAGEERAGH HISTORIC LANDFILL TIER 2 AND TIER 3
Title	BARNAGEERAGH HISTORICAL LANDFILL SITE LOCATION MAP
File Identifier	MGE0755-RPS-00-XX-DR-C-DG0001-01
Status	S0
Rev	F01

R:\MGE0755 Barnageeragh\6.0 Drawings\06\MGE0755-RPS-00-XX-DR-C-DG0001- Site Location.dwg

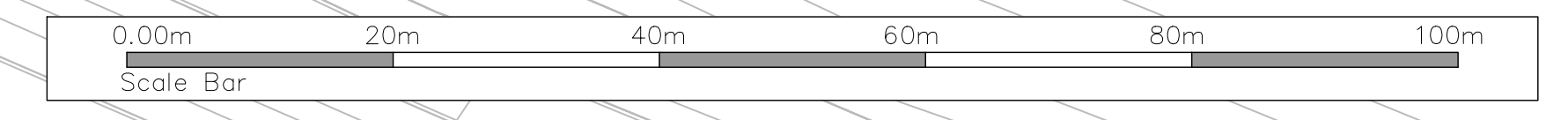


NOTES:

LEGEND:

	SITE BOUNDARY
	WASTE BOUNDARY
	LLDPE BOUNDARY

SCALE: 1:500 @ A1; 1:1,000 @ A3
Ordnance Survey Ireland Sheet No. 3226-D



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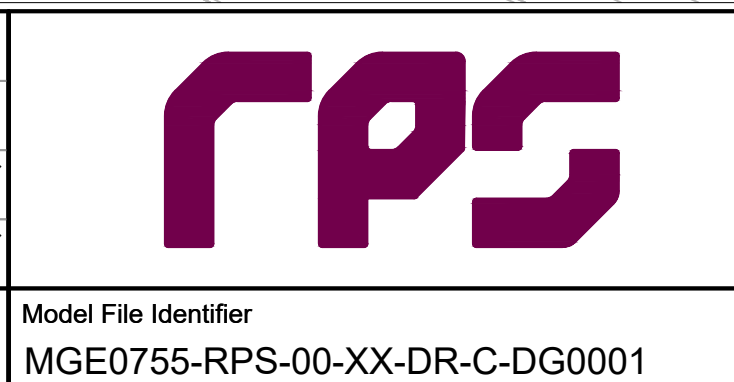
(ii) DO NOT SCALE, use figured dimensions only.

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(iv) Information including topographical survey, geotechnical investigation and utility detail used in the design have been provided by others.

(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	By	App	Amendment / Issue
F01	13/11/20	PH		Updated Survey
D01	20.11.19	DK		Issue for Approval



Scale	AS SHOWN @ A1 AS SHOWN @ A3	Project	BARNAGEERAGH HISTORIC LANDFILL TIER 2 AND TIER 3
Created on	21/10/2019	Title	BARNAGEERAGH HISTORICAL LANDFILL SITE LOCATION MAP CONTOUR MAP
Sheets	01 of 02	File Identifier	MGE0755-RPS-00-XX-DR-C-DG0001-02
Model File Identifier	MGE0755-RPS-00-XX-DR-C-DG0001	Status	S0
App		Rev	F01

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