



Environmental  
Efficiency

Bray (Ireland) 01 276 1428

Cork (Ireland) 021 453 6155

Lisburn (N. Ireland) 028 9262 6733

# Environmental Impact Assessment Report (EIAR) Volume 3: Appendices

For

**Sancom Ltd**

Pertaining to

## **The Development and Operation of a Material Recovery Facility at Graney West, Castledermot, Co. Kildare.**

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Email: [info@enviro-consult.com](mailto:info@enviro-consult.com) [www.enviro-consult.com](http://www.enviro-consult.com)

Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow A98 XV04. Registered Number 243 412

Directors: Robert B. Sutcliffe, Ronan T. Sutcliffe

**Environmental Services for Industry** Including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling
- ▶ Energy & Water use reduction
- ▶ IPC/IED/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Workplace Dust & Noise

**Affiliations & Accreditations**

- ▶ ISO9001:2015 Registration No. 2015/2170
- ▶ ISO14001:2015 Registration No. 2012/1427
- ▶ MCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents



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**Appendix 1 - Certificates of Analysis for Surface Water and Groundwater Monitoring**

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## Surface Water Certificates of Analysis



Bray (Ireland) 01 276 1428  
Cork (Ireland) 021 453 6155  
Lisburn (N. Ireland) 028 9262 6733  
Birmingham (GB) 0121 673 1804

### Certificate of Analysis – 2181 SW1 Dec 2018

#### Monitoring point data

Client: Sancom  
Site: Graney West  
Monitoring point: SW1  
Licence No: None  
Project Manager: RD  
Analysed by: Concept Life Sciences

#### Sampling data

Date sample collected 11/12/2018  
Time sample collected 09:28  
Sample type Groundwater  
Date first/last analysis 11/12/2018 – 07/01/2019

#### Results

Parameter	Result	Units	Accred.	Technique
pH	7.2	pH Units	None	Probe
Temperature	8.1	Deg C	None	Probe
BOD	0	mg/l	None	Respirometric
COD	9	mg/l	UKAS	Colorimetry
Conductivity	750	µs/cm	UKAS	Probe
Suspended Solids	<10	mg/l	UKAS	Grav
Nitrate	21	mg/l	UKAS	Discrete Analyser
Orthophosphate	<0.5	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	<0.01	mg/l	UKAS	GC/FID (LV)
Ammonia	0.33	mg/l	UKAS	Discrete Analyser
Chloride	23	mg/l	UKAS	Discrete Analyser

Signed (Lab Manager) *R. Sutcliffe*

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**Certificate of Analysis – 2181 SW2 Dec 2018**

**Monitoring point data**

Client: Sancom  
Site: Graney West  
Monitoring point: SW2  
Licence No: None  
Project Manager: RD  
Analysed by: Concept Life Sciences

**Sampling data**

Date sample collected 11/12/2018  
Time sample collected 9:45  
Sample type Groundwater  
Date first/last analysis 11/12/2018 – 07/01/2019

**Results**

Parameter	Result	Units	Accred.	Technique
pH	8.0	pH Units	None	Probe
Temperature	8.1	Deg C	None	Probe
BOD	0	mg/l	None	Respirometric
COD	16	mg/l	UKAS	Colorimetry
Conductivity	600	µs/cm	UKAS	Probe
Suspended Solids	<10	mg/l	UKAS	Grav
Nitrate	7.7	mg/l	UKAS	Discrete Analyser
Orthophosphate	<0.5	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	0.04	mg/l	UKAS	GC/FID (LV)
Ammonia	0.22	mg/l	UKAS	Discrete Analyser
Chloride	25	mg/l	UKAS	Discrete Analyser

Signed (Lab Manager) *R. Sutcliffe*

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- ▶ Air & Noise Modelling
- ▶ Energy & Water use reduction
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**Certificate of Analysis – 2181 SW3 Dec 2018**

**Monitoring point data**

Client: Sancom  
Site: Graney West  
Monitoring point: SW3  
Licence No: None  
Project Manager: RD  
Analysed by: Concept Life Sciences

**Sampling data**

Date sample collected 11/12/2018  
Time sample collected 10:05  
Sample type Groundwater  
Date first/last analysis 11/12/2018 – 07/01/2019

**Results**

Parameter	Result	Units	Accred.	Technique
pH	7.3	pH Units	None	Probe
Temperature	10.1	Deg C	None	Probe
BOD	0	mg/l	None	Respirometric
COD	20	mg/l	UKAS	Colorimetry
Conductivity	750	µs/cm	UKAS	Probe
Suspended Solids	<10	mg/l	UKAS	Grav
Nitrate	42	mg/l	UKAS	Discrete Analyser
Orthophosphate	<0.5	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	<0.01	mg/l	UKAS	GC/FID (LV)
Ammonia	0.09	mg/l	UKAS	Discrete Analyser
Chloride	25	mg/l	UKAS	Discrete Analyser

Signed (Lab Manager) *R. Sutcliffe*

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**Certificate of Analysis – 2181 SW4 Dec 2018**

**Monitoring point data**

Client: Sancom  
Site: Graney West  
Monitoring point: SW4  
Licence No: None  
Project Manager: RD  
Analysed by: Concept Life Sciences

**Sampling data**

Date sample collected 11/12/2018  
Time sample collected 10:15  
Sample type Groundwater  
Date first/last analysis 11/12/2018 – 07/01/2019

**Results**

Parameter	Result	Units	Accred.	Technique
pH	7.3	pH Units	None	Probe
Temperature	9.2	Deg C	None	Probe
BOD	0	mg/l	None	Respirometric
COD	21	mg/l	UKAS	Colorimetry
Conductivity	720	µs/cm	UKAS	Probe
Suspended Solids	<10	mg/l	UKAS	Grav
Nitrate	41	mg/l	UKAS	Discrete Analyser
Orthophosphate	<0.5	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	<0.01	mg/l	UKAS	GC/FID (LV)
Ammonia	0.08	mg/l	UKAS	Discrete Analyser
Chloride	25	mg/l	UKAS	Discrete Analyser

Signed (Lab Manager) *R. Sutcliffe*

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- ▶ ISO9001:2015 Registration No. 2015/2170
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## Appendix 1 Groundwater Certificates of Analysis

  
**CONCEPT LIFE SCIENCES**  
DELIVERING SCIENCE  
Concept Life Sciences is a trading name of  
Concept Life Sciences Analytical & Development  
Services Limited registered in England and  
Wales (No 2514788)

## Concept Life Sciences Certificate of Analysis

Hadfield House  
Hadfield Street  
Combrook  
Manchester  
M16 9FE  
Tel : 0161 874 2400  
Fax : 0161 874 2468

**Report Number:** 831182-1

**Date of Report:** 12-Jul-2019

**Customer:** Environmental Efficiency  
Parnell House  
19 Quinsboro Road  
Bray  
CO. WICKLOW  
VAT NUMBER: 243412

**Customer Contact:** Reports

**Customer Job Reference:**  
**Customer Purchase Order:** 2181-02  
**Date Job Received at Concept:** 28-Jun-2019  
**Date Analysis Started:** 04-Jul-2019  
**Date Analysis Completed:** 11-Jul-2019

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Customers are responsible for information provided where, if incorrect, it could affect the validity of the results.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with QMSection 15 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked  
and authorised by :  
Jack Nagy  
Customer Service Advisor

Issued by :  
Ms Jeanette Abbott  
Customer Services Manager





Concept Reference: 831182								
Customer Reference:								
Water Analysed as Water								
Miscellaneous								
Concept Reference				831182 001	831182 002	831182 003	831182 004	
Customer Sample Reference				2181/X	2181/Y	2181/Z	2344.TE-1-APR 19	
Date Sampled				29-JUN-2019	29-JUN-2019	29-JUN-2019	Deviating	
Sample Received (ml)				3040	3040	3040	2000	
Determinand	Method	Test Sample	LOD	Units				
pH	T7	AR			7.42	7.31	7.41	-
Fe (Total)	T303	Total	0.01	mg/l	0.06	0.01	0.02	-
Chemical Oxygen Demand	T4	AR	5	mg/l	-	-	-	240
Suspended Solids (Total)	T2	AR	10	mg/l	-	-	-	<10
Surfactant(Anionic)	T4	AR	0.2	mg/l	-	-	-	<0.2
Nitrogen(Kjeldahl)	T116	AR	10	mg/l	-	-	-	<10
Phosphorous	T6	F	1	mg/l	-	-	-	<1
Calcium	T6	F	0.1	mg/l	140	140	140	-
Magnesium	T6	F	0.1	mg/l	12	12	12	-
Manganese	T6	F	0.01	mg/l	<0.01	<0.01	<0.01	-
Hardness expressed as CaCO3	T6	F	10	mg/l	400	400	410	-
Sodium	T6	F	0.1	mg/l	12	12	12	-
Aluminium	T6	F	0.02	mg/l	0.04	0.04	0.04	-
Chloride	T686	F	1	mg/l	23	24	26	20
Fluoride	T686	F	0.05	mg/l	0.08	0.08	0.13	-
Nitrite	T686	F	0.1	mg/l	<0.1	<0.1	<0.1	-
Nitrate	T686	F	0.5	mg/l	56	45	45	-
Phosphate	T686	F	0.5	mg/l	<0.5	<0.5	<0.5	-
Sulphate	T686	F	0.5	mg/l	21	21	21	35
Cl2 (Total)	T4	AR	0.05	mg/l	-	-	-	<0.05
Potassium	T6	F	0.1	mg/l	1.6	1.6	1.6	-
Ammoniacal nitrogen	T686	F	0.05	mg/l	0.38	0.10	1.0	-

Concept Reference: 831182								
Customer Reference:								
Water Analysed as Water								
PAH US EPA 16 (B and K split)								
Concept Reference				831182 001	831182 002	831182 003		
Customer Sample Reference				2181/X	2181/Y	2181/Z		
Date Sampled				29-JUN-2019	29-JUN-2019	29-JUN-2019		
Sample Received (ml)				3040	3040	3040		
Determinand	Method	Test Sample	LOD	Units				
Naphthalene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Acenaphthylene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Acenaphthene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Fluorene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Phenanthrene	T149	AR	0.01	µg/l	0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Anthracene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Fluoranthene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Pyrene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Benzo(a)Anthracene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Chrysene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Benzo(b)fluoranthene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Benzo(k)fluoranthene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Benzo(a)Pyrene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Indeno(123-cd)Pyrene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Dibenzo(ah)Anthracene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
Benzo(ghi)Perylene	T149	AR	0.01	µg/l	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
PAH(total)	T149	AR	0.01	µg/l	0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>

Concept Reference: 831182					
Customer Reference:					
Water			Analysed as Water		
Oil and Grease (Unsaponifiable and Saponifiable)					
Concept Reference					831182 004
Customer Sample Reference					2344-TE-1-APR 19
Date Sampled					Deviating
Sample Received (ml)					2000
Determinand	Method	Test Sample	LOD	Units	
Oil and Grease	T2	AR	10	mg/l	<10
Saponifiable Oils and Grease	T2	AR	10	mg/l	<10
Unsaponifiable Oils and Grease	T2	AR	10	mg/l	<10



Concept Reference: 831182							
Customer Reference:							
Water Analysed as Water							
Volatile Organic Compounds (USEPA 624)							
Concept Reference		831182 001	831182 002	831182 003			
Customer Sample Reference		2181/X	2181/Y	2181/Z			
Date Sampled		29-JUN-2019	29-JUN-2019	29-JUN-2019			
Sample Received (ml)		3040	3040	3040			
Determinand	Method	Test Sample	LOD	Units			
Dichlorodifluoromethane	T54	AR	1	µg/l	<1	<1	<1
Chloromethane	T54	AR	1	µg/l	<1	<1	<1
Vinyl chloride	T54	AR	1	µg/l	<1	<1	<1
Bromomethane	T54	AR	1	µg/l	<1	<1	<1
Chloroethane	T54	AR	1	µg/l	<1	<1	<1
Trichlorofluoromethane	T54	AR	1	µg/l	<1	<1	<1
1,1-Dichloroethylene	T54	AR	1	µg/l	<1	<1	<1
Dichloromethane	T54	AR	50	µg/l	<50	<50	<50
Trans-1,2-Dichloroethene	T54	AR	1	µg/l	<1	<1	<1
1,1-Dichloroethane	T54	AR	1	µg/l	<1	<1	<1
Cis-1,2-Dichloroethylene	T54	AR	1	µg/l	<1	<1	<1
2,2-Dichloropropane	T54	AR	1	µg/l	<1	<1	<1
Chloroform	T54	AR	1	µg/l	<1	<1	<1
Bromochloromethane	T54	AR	1	µg/l	<1	<1	<1
1,1,1-Trichloroethane	T54	AR	1	µg/l	<1	<1	<1
1,1-Dichloropropene	T54	AR	1	µg/l	<1	<1	<1
Carbon tetrachloride	T54	AR	1	µg/l	<1	<1	<1
1,2-Dichloroethane	T54	AR	1	µg/l	<1	<1	<1
Benzene	T54	AR	1	µg/l	<1(13)	<1(13)	<1(13)
1,2-Dichloropropane	T54	AR	1	µg/l	<1	<1	<1
1,1,2-Trichloroethylene	T54	AR	1	µg/l	<1	<1	<1
Bromodichloromethane	T54	AR	1	µg/l	<1	<1	<1
Dibromomethane	T54	AR	1	µg/l	<1	<1	<1
Cis-1,3-Dichloropropene	T54	AR	1	µg/l	<1	<1	<1
Toluene	T54	AR	1	µg/l	<1	<1	<1
Trans-1,3-Dichloropropene	T54	AR	1	µg/l	<1	<1	<1
1,1,2-Trichloroethane	T54	AR	1	µg/l	<1	<1	<1
1,3-Dichloropropane	T54	AR	1	µg/l	<1	<1	<1
Tetrachloroethene	T54	AR	1	µg/l	<1	<1	<1
Chlorodibromomethane	T54	AR	1	µg/l	<1	<1	<1
1,2-dibromoethane	T54	AR	1	µg/l	<1	<1	<1
Chlorobenzene	T54	AR	1	µg/l	<1	<1	<1
1,1,1,2-Tetrachloroethane	T54	AR	1	µg/l	<1	<1	<1
EthylBenzene	T54	AR	1	µg/l	<1	<1	<1
M/P Xylene	T54	AR	1	µg/l	<1	<1	<1
O Xylene	T54	AR	1	µg/l	<1	<1	<1
Styrene	T54	AR	1	µg/l	<1	<1	<1
Bromoform	T54	AR	1	µg/l	<1	<1	<1
Isopropyl benzene	T54	AR	1	µg/l	<1	<1	<1
1,1,2,2-Tetrachloroethane	T54	AR	1	µg/l	<1	<1	<1
1,2,3-Trichloropropane	T54	AR	1	µg/l	<1	<1	<1
n-Propylbenzene	T54	AR	1	µg/l	<1	<1	<1
Bromobenzene	T54	AR	1	µg/l	<1	<1	<1
1,3,5-Trimethylbenzene	T54	AR	1	µg/l	<1	<1	<1
T-Butylbenzene	T54	AR	1	µg/l	<1	<1	<1
1,2,4-Trimethylbenzene	T54	AR	1	µg/l	<1	<1	<1
S-Butylbenzene	T54	AR	1	µg/l	<1	<1	<1
p-Isopropyltoluene	T54	AR	1	µg/l	<1	<1	<1
2-Chlorotoluene	T54	AR	1	µg/l	<1	<1	<1
4-Chlorotoluene	T54	AR	1	µg/l	<1	<1	<1
1,3-Dichlorobenzene	T54	AR	1	µg/l	<1	<1	<1
1,4-Dichlorobenzene	T54	AR	1	µg/l	<1	<1	<1
1,2-Dichlorobenzene	T54	AR	1	µg/l	<1	<1	<1

Concept Reference: 831182							
Customer Reference:							
Water Analysed as Water							
Heavy Metals(9)							
Concept Reference		831182 001	831182 002	831182 003			
Customer Sample Reference		2181/X	2181/Y	2181/Z			
Date Sampled		29-JUN-2019	29-JUN-2019	29-JUN-2019			
Sample Received (ml)		3040	3040	3040			
Determinand	Method	Test Sample	LOD	Units			
As (Dissolved)	T281	F	0.2	µg/l	0.4	0.3	0.3
As (Total)	T301	Total	0.2	µg/l	0.5	0.4	0.4
Cd (Dissolved)	T281	F	0.02	µg/l	<0.02	<0.02	<0.02
Cd (Total)	T301	Total	0.02	µg/l	<0.02	<0.02	<0.02
Cr (Dissolved)	T281	F	1	µg/l	<1	<1	<1
Cr (Total)	T301	Total	1	µg/l	<1	<1	<1
Cu (Dissolved)	T281	F	0.5	µg/l	13	21	14
Cu (Total)	T301	Total	0.5	µg/l	13	21	15
Pb (Dissolved)	T281	F	0.3	µg/l	<0.3	<0.3	<0.3
Pb (Total)	T301	Total	0.3	µg/l	0.3	<0.3	<0.3
Hg (Dissolved)	T281	F	0.05	µg/l	<0.05	<0.05	<0.05
Hg (Total)	T301	Total	0.05	µg/l	<0.05	<0.05	<0.05
Ni (Dissolved)	T281	F	1	µg/l	<1	<1	<1
Ni (Total)	T301	Total	1	µg/l	<1	1	<1
Se (Dissolved)	T281	F	0.5	µg/l	<0.5	<0.5	<0.5
Se (Total)	T301	Total	0.5	µg/l	0.5	<0.5	0.5
Zn (Dissolved)	T281	F	2	µg/l	17	25	17
Zn (Total)	T301	Total	2	µg/l	22	26	19

Concept Reference: 831182							
Customer Reference:							
Water Analysed as Water							
BTEX							
Concept Reference		831182 001	831182 002	831182 003			
Customer Sample Reference		2181/X	2181/Y	2181/Z			
Date Sampled		29-JUN-2019	29-JUN-2019	29-JUN-2019			
Sample Received (ml)		3040	3040	3040			
Determinand	Method	Test Sample	LOD	Units			
Benzene	T54	AR	1	µg/l	<1 <sup>(13)</sup>	<1 <sup>(13)</sup>	<1 <sup>(13)</sup>
Toluene	T54	AR	1	µg/l	<1	<1	<1
EthylBenzene	T54	AR	1	µg/l	<1	<1	<1
M/P Xylene	T54	AR	1	µg/l	<1	<1	<1
O Xylene	T54	AR	1	µg/l	<1	<1	<1

Concept Reference: 831182							
Customer Reference:							
Water Analysed as Water							
Suite C							
Concept Reference		831182 001	831182 002	831182 003			
Customer Sample Reference		2181/X	2181/Y	2181/Z			
Date Sampled		29-JUN-2019	29-JUN-2019	29-JUN-2019			
Sample Received (ml)		3040	3040	3040			
Determinand	Method	Test Sample	LOD	Units			
TPH (C6-C10)	T215	AR	0.010	mg/l	<0.010	<0.010	<0.010
TPH (C10-C35)	T81	AR	0.01	mg/l	<0.01 <sup>(13)</sup>	0.02 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
TPH (C35-C40)	T81	AR	0.01	mg/l	<0.01 <sup>(13)</sup>	0.01 <sup>(13)</sup>	<0.01 <sup>(13)</sup>
TPH C6-C40 (Sum)	T85	AR	0.01	mg/l	<0.01 <sup>(13)</sup>	0.03 <sup>(13)</sup>	<0.01 <sup>(13)</sup>

### Index to symbols used in 831182-1

Value	Description
F	Filtered
Total	Total
AR	As Received
13	Results have been blank corrected.
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

### Notes

Sample 004 - The date of sampling has not been provided and therefore the time from sampling to analysis is unknown. It is possible therefore that the results provided may be compromised.
Samples 001 - 003 have been extracted exceeding recommended holding times for TPH. It is possible therefore that the results provided may be compromised.

### Method Index

Value	Description
T2	Grav
T4	Colorimetry
T81	GC/FID (LV)
T116	Titration (Kjeldahl-Dist)
T686	Discrete Analyser
T303	ICP-OES (Total)
T281	ICP/MS (Filtered)
T7	Probe
T85	Calc
T149	GC/MS (SIR)
T215	GC/MS (Headspace)(LV)
T301	ICP/MS (Total)
T6	ICP/OES
T54	GC/MS (Headspace)

### Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
TPH (C6-C10)	T215	AR	0.010	mg/l	N	001-003
TPH (C10-C35)	T81	AR	0.01	mg/l	U	001-003
TPH (C35-C40)	T81	AR	0.01	mg/l	N	001-003
TPH C6-C40 (Sum)	T85	AR	0.01	mg/l	N	001-003
Benzene	T54	AR	1	µg/l	U	001-003
M/P Xylene	T54	AR	1	µg/l	U	001-003
O Xylene	T54	AR	1	µg/l	U	001-003
As (Dissolved)	T281	F	0.2	µg/l	U	001-003
As (Total)	T301	Total	0.2	µg/l	U	001-003
Cd (Dissolved)	T281	F	0.02	µg/l	U	001-003
Cd (Total)	T301	Total	0.02	µg/l	U	001-003
Cr (Dissolved)	T281	F	1	µg/l	U	001-003
Cr (Total)	T301	Total	1	µg/l	U	001-003
Cu (Dissolved)	T281	F	0.5	µg/l	U	001-003
Cu (Total)	T301	Total	0.5	µg/l	U	001-003
Pb (Dissolved)	T281	F	0.3	µg/l	U	001-003
Pb (Total)	T301	Total	0.3	µg/l	U	001-003
Hg (Dissolved)	T281	F	0.05	µg/l	U	001-003
Hg (Total)	T301	Total	0.05	µg/l	U	001-003
Ni (Dissolved)	T281	F	1	µg/l	U	001-003
Ni (Total)	T301	Total	1	µg/l	U	001-003
Se (Dissolved)	T281	F	0.5	µg/l	U	001-003
Se (Total)	T301	Total	0.5	µg/l	U	001-003
Zn (Dissolved)	T281	F	2	µg/l	U	001-003
Zn (Total)	T301	Total	2	µg/l	U	001-003
Naphthalene	T149	AR	0.01	µg/l	U	001-003
Acenaphthylene	T149	AR	0.01	µg/l	U	001-003
Acenaphthene	T149	AR	0.01	µg/l	U	001-003
Fluorene	T149	AR	0.01	µg/l	U	001-003
Phenanthrene	T149	AR	0.01	µg/l	U	001-003
Anthracene	T149	AR	0.01	µg/l	U	001-003
Fluoranthene	T149	AR	0.01	µg/l	U	001-003
Pyrene	T149	AR	0.01	µg/l	U	001-003
Benzo(a)Anthracene	T149	AR	0.01	µg/l	U	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Chrysene	T149	AR	0.01	µg/l	U	001-003
Benzo(b)fluoranthene	T149	AR	0.01	µg/l	U	001-003
Benzo(k)fluoranthene	T149	AR	0.01	µg/l	U	001-003
Benzo(a)Pyrene	T149	AR	0.01	µg/l	U	001-003
Indeno(123-cd)Pyrene	T149	AR	0.01	µg/l	U	001-003
Dibenzo(ah)Anthracene	T149	AR	0.01	µg/l	U	001-003
Benzo(ghi)Perylene	T149	AR	0.01	µg/l	U	001-003
PAH(total)	T149	AR	0.01	µg/l	U	001-003
Dichlorodifluoromethane	T54	AR	1	µg/l	U	001-003
Chloromethane	T54	AR	1	µg/l	U	001-003
Vinyl chloride	T54	AR	1	µg/l	U	001-003
Bromomethane	T54	AR	1	µg/l	U	001-003
Chloroethane	T54	AR	1	µg/l	U	001-003
Trichlorofluoromethane	T54	AR	1	µg/l	U	001-003
1,1-Dichloroethylene	T54	AR	1	µg/l	U	001-003
Dichloromethane	T54	AR	50	µg/l	N	001-003
Trans-1,2-Dichloroethene	T54	AR	1	µg/l	U	001-003
1,1-Dichloroethane	T54	AR	1	µg/l	U	001-003
Cis-1,2-Dichloroethylene	T54	AR	1	µg/l	U	001-003
2,2-Dichloropropane	T54	AR	1	µg/l	U	001-003
Chloroform	T54	AR	1	µg/l	U	001-003
Bromochloromethane	T54	AR	1	µg/l	U	001-003
1,1,1-Trichloroethane	T54	AR	1	µg/l	U	001-003
1,1-Dichloropropene	T54	AR	1	µg/l	U	001-003
Carbon tetrachloride	T54	AR	1	µg/l	U	001-003
1,2-Dichloroethane	T54	AR	1	µg/l	U	001-003
1,2-Dichloropropane	T54	AR	1	µg/l	U	001-003
1,1,2-Trichloroethylene	T54	AR	1	µg/l	U	001-003
Bromodichloromethane	T54	AR	1	µg/l	U	001-003
Dibromomethane	T54	AR	1	µg/l	U	001-003
Cis-1,3-Dichloropropene	T54	AR	1	µg/l	U	001-003
Toluene	T54	AR	1	µg/l	U	001-003
Trans-1,3-Dichloropropene	T54	AR	1	µg/l	U	001-003
1,1,2-Trichloroethane	T54	AR	1	µg/l	U	001-003
1,3-Dichloropropane	T54	AR	1	µg/l	U	001-003
Tetrachloroethene	T54	AR	1	µg/l	U	001-003
Chlorodibromomethane	T54	AR	1	µg/l	U	001-003
1,2-dibromoethane	T54	AR	1	µg/l	U	001-003
Chlorobenzene	T54	AR	1	µg/l	U	001-003
1,1,1,2-Tetrachloroethane	T54	AR	1	µg/l	U	001-003
Ethylbenzene	T54	AR	1	µg/l	U	001-003
Styrene	T54	AR	1	µg/l	U	001-003
Bromoform	T54	AR	1	µg/l	U	001-003
Isopropyl benzene	T54	AR	1	µg/l	U	001-003
1,1,2,2-Tetrachloroethane	T54	AR	1	µg/l	U	001-003
1,2,3-Trichloropropane	T54	AR	1	µg/l	U	001-003
n-Propylbenzene	T54	AR	1	µg/l	U	001-003
Bromobenzene	T54	AR	1	µg/l	U	001-003
1,3,5-Trimethylbenzene	T54	AR	1	µg/l	U	001-003
T-Butylbenzene	T54	AR	1	µg/l	U	001-003
1,2,4-Trimethylbenzene	T54	AR	1	µg/l	U	001-003
S-Butylbenzene	T54	AR	1	µg/l	U	001-003
p-Isopropyltoluene	T54	AR	1	µg/l	U	001-003
2-Chlorotoluene	T54	AR	1	µg/l	U	001-003
4-Chlorotoluene	T54	AR	1	µg/l	U	001-003
1,3-Dichlorobenzene	T54	AR	1	µg/l	U	001-003
1,4-Dichlorobenzene	T54	AR	1	µg/l	U	001-003
1,2-Dichlorobenzene	T54	AR	1	µg/l	U	001-003
pH	T7	AR			U	001-003
Fe (Total)	T303	Total	0.01	mg/l	N	001-003
Chemical Oxygen Demand	T4	AR	5	mg/l	N	004
Suspended Solids (Total)	T2	AR	10	mg/l	N	004
Surfactant(Anionic)	T4	AR	0.2	mg/l	N	004
Nitrogen(Kjeldahl)	T116	AR	10	mg/l	N	004
Phosphorous	T6	F	1	mg/l	N	004
Calcium	T6	F	0.1	mg/l	N	001-003
Magnesium	T6	F	0.1	mg/l	U	001-003
Manganese	T6	F	0.01	mg/l	U	001-003
Hardness expressed as CaCO3	T6	F	10	mg/l	N	001-003
Sodium	T6	F	0.1	mg/l	N	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Aluminium	T6	F	0.02	mg/l	N	001-003
Chloride	T686	F	1	mg/l	U	001-004
Fluoride	T686	F	0.05	mg/l	U	001-003
Nitrite	T686	F	0.1	mg/l	U	001-003
Nitrate	T686	F	0.5	mg/l	U	001-003
Phosphate	T686	F	0.5	mg/l	U	001-003
Sulphate	T686	F	0.5	mg/l	U	001-004
Cl2 (Total)	T4	AR	0.05	mg/l	N	004
Potassium	T6	F	0.1	mg/l	N	001-003
Ammoniacal nitrogen	T686	F	0.05	mg/l	U	001-003
Oil and Grease	T2	AR	10	mg/l	N	004
Saponifiable Oils and Grease	T2	AR	10	mg/l	N	004
Unsaponifiable Oils and Grease	T2	AR	10	mg/l	N	004



**Appendix 2 - Raw Noise Data for Noise Prediction Modelling**

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NSL	Source	Sound Pressure Level measured at source (LA) (dB)	Distance measured at from original source (m)	Effect of Propagation over Soft Ground <sup>1</sup>			Effect of equipment on time <sup>2</sup>		Effect of barriers <sup>3</sup>				specific noise level attenuated for distance, on-time and barriers	
				sound pressure level source	distance source to NSL (m)	distance source to NSL (m) - measured at dist	Reduction due to distance (soft) (dB)	Equipment on time percentage of 11-hour day.	Reduction due to equipment on time	source to barrier (m)	barrier height (m)	path difference (m)		Reduction due to barrier attenuation
1	Volvo 180 E wheel loader	80	10	Spec sheet	104	104	23.4	25.0	19.0	36.8	2.00	0.09	6.5	31.1
1	Hitachi excavators 360	80	10	Spec sheet	104	104	23.4	25.0	19.0	36.8	2.00	0.09	6.5	31.1
1	Hitachi excavators 360	80	10	Spec sheet	104	104	23.4	25.0	19.0	36.8	2.00	0.09	6.5	31.1
1	Kamatsu D65 E bulldozer (for filling)	81	10	Spec sheet	104	104	23.4	25.0	19.0	36.8	2.00	0.09	6.5	32.1
1	Soil and Stone Powerscreen MK II	74.2	10	In Situ	248	238	32.4	100.0	0.0	10.0	7.00	2.31	13.8	27.9
1	Jaw Crusher Pegasus 600 x 12	82	10	BS5228	291	281	34.2	100.0	0.0	10.0	7.00	2.29	13.8	34.0
1	Green Waste Shredder	80	1	BS5228	105	104	23.4	5.0	17.0	32.5	2.00	0.09	6.4	33.2
1	Total													40.3
2	Volvo 180 E wheel loader	80	10.00	Spec sheet	257.0	247.0	32.8	25.0	19.0	18.6	2.0	0.1	7.0	25.7
2	Hitachi excavators 360	80	10.00	Spec sheet	257.0	247.0	32.8	25.0	19.0	18.6	2.0	0.1	7.0	25.7
2	Hitachi excavators 360	80	10.00	Spec sheet	257.0	247.0	32.8	25.0	19.0	18.6	2.0	0.1	7.0	25.7
2	Kamatsu D65 E bulldozer (for filling)	81	10.00	Spec sheet	257.0	247.0	32.8	25.0	19.0	18.6	2.0	0.1	7.0	26.7
2	Soil and Stone Powerscreen MK II	74.2	10.00	In Situ	336.0	326.0	35.8	100.0	0.0	95.3	2.0	0.0	3.9	34.5
2	Jaw Crusher Pegasus 600 x 12	82	10.00	BS5228	307.0	297.0	34.8	100.0	0.0	61.9	2.0	0.0	4.6	42.6
2	Green Waste Shredder	80	1.00	BS5228	471.0	470.0	39.8	5.0	17.0	235.1	2.0	0.0	2.6	20.5
2	Total													43.5
3	Volvo 180 E wheel loader	80	10.00	Spec sheet	726.0	716.0	44.4	25.0	19.0	187.4	2.0	0.0	2.3	23.4
3	Hitachi excavators 360	80	10.00	Spec sheet	726.0	716.0	44.4	25.0	19.0	187.4	2.0	0.0	2.3	23.4
3	Hitachi excavators 360	80	10.00	Spec sheet	726.0	716.0	44.4	25.0	19.0	187.4	2.0	0.0	2.3	23.4
3	Kamatsu D65 E bulldozer (for filling)	81	10.00	Spec sheet	726.0	716.0	44.4	25.0	19.0	187.4	2.0	0.0	2.3	24.4
3	Soil and Stone Powerscreen MK II	74.2	10.00	In Situ	889.0	879.0	46.6	100.0	0.0	347.3	2.0	0.0	1.3	26.3
3	Jaw Crusher Pegasus 600 x 12	82	10.00	BS5228	844.0	834.0	46.0	100.0	0.0	299.9	2.0	0.0	1.5	34.5
3	Green Waste Shredder	80	1.00	BS5228	1020.0	1019.0	48.2	5.0	17.0	495.7	2.0	0.0	0.9	13.9
3	Total													36.2

<sup>1</sup> BS 5228 +A! 2014: F.2.2.2.1 section b.

<sup>2</sup> BS 5228 +A! 2014: F.2.7.1.2 section e.

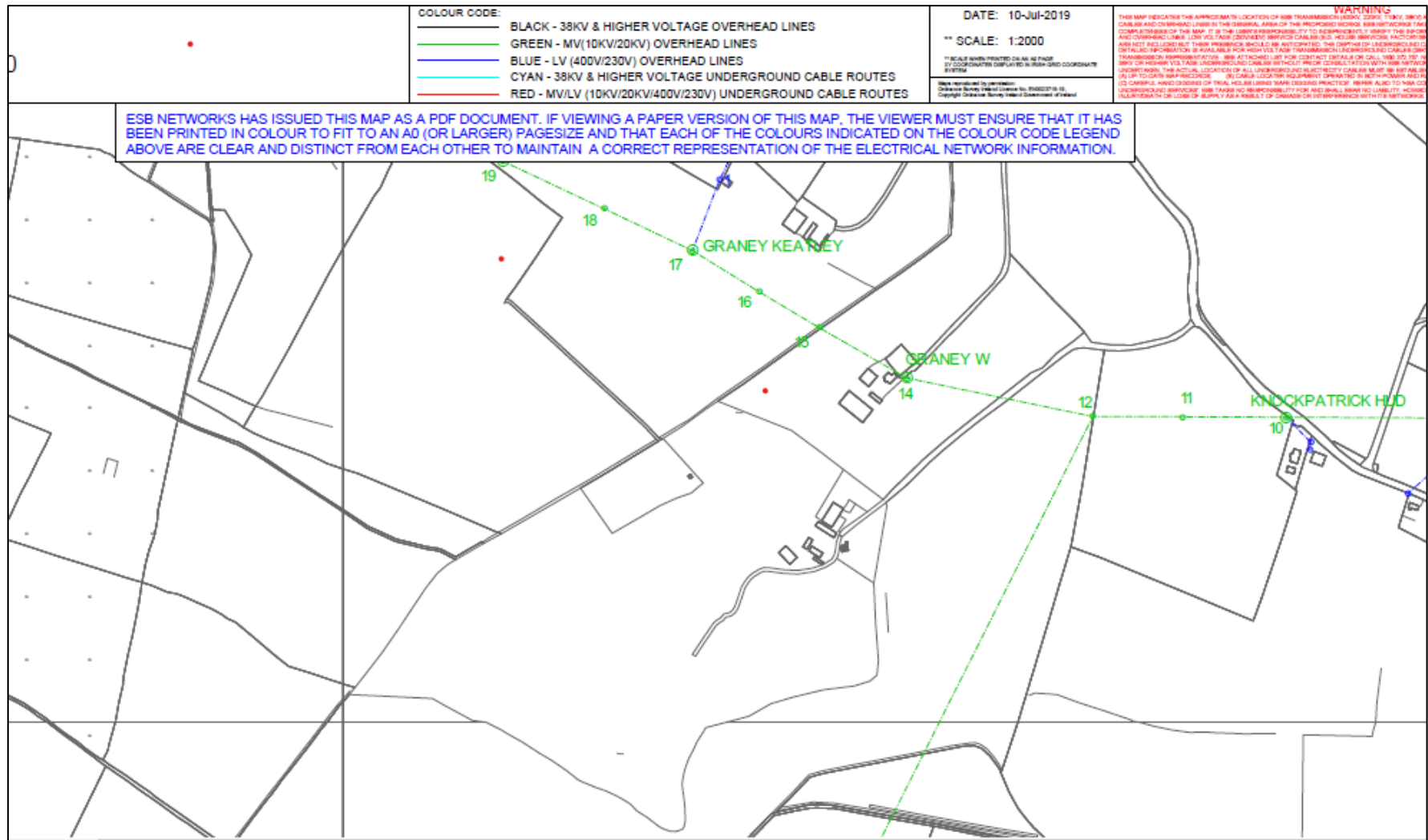
<sup>3</sup> BS 5228 +A! 2014: F.2.2.2.1 section c.



**Appendix 3 - ESB Local Area Electricity Network Map**

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Snapshot from A0 ESB Local Area Electricity Network Map showing local area network.



**Appendix 4 - Legislation Protecting the Archaeological Resource**

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# 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 Culture, Heritage and the Gaeltacht) 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.

### **The Kildare County Council development Plan 2017-2023**

It is the Policy of the Council to:

**AH 1** Manage development in a manner that protects and conserves the archaeological heritage of the county, avoids adverse impacts on sites, monuments, features or objects of significant historical or archaeological interest and secures the preservation in-situ or by record of all sites and features of historical and archaeological interest. The Council will favour preservation in – situ in accordance with the recommendation of the Framework and Principles for the Protection of Archaeological Heritage (1999) or any superseding national policy.

**AH 2** Have regard to the Record of Monuments and Places (RMP), the Urban Archaeological Survey and archaeological sites identified subsequent to the publication of the RMP when assessing planning applications for development. No development shall be permitted in the vicinity of a recorded feature, where it detracts from the setting of the feature or which is injurious to its cultural or educational value.

**AH 3** Secure the preservation (in-situ or by record) of all sites, monuments and features of significant historical or archaeological interest, included in the Record of Monuments and Places and their settings, in accordance with the recommendations of the Framework and Principles for the Protection of Archaeological Heritage, DAHG (1999), or any superseding national policy document.

**AH 4** Ensure that development in the vicinity of a site of archaeological interest is not detrimental to the character of the archaeological site or its setting by reason of its location, scale, bulk or detailing and to ensure that such proposed developments are subject to an archaeological assessment. Such an assessment will seek to ensure that the development can be sited and designed in such a way as to avoid impacting on archaeological heritage that is of significant interest including previously unknown sites, features and objects.

**AH 5** Contribute towards the protection and preservation of the archaeological value of underwater or archaeological sites associated with rivers and associated features.

**AH 6** Contribute towards the protection of historic burial grounds within the county and encourage their maintenance in accordance with conservation principles in co-operation with the Historic Monuments Advisory Committee and National Monuments Section of Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA).

**AH 7** Promote and support in partnership with the National Monuments Section of the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA), the concept of Archaeological Landscapes where areas contain several Recorded Monuments.

**AH 8** Encourage, where practicable, the provision of public access to sites identified in the Record of Monuments and Places under the direct ownership, guardianship or control of the Council and/or the State.

**AH 9** Encourage the provision of signage to publicly accessible recorded monuments.



**Appendix 5 - RMP Sites within the Surrounding Area**

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## RMP Sites within the Surrounding Area

<b>SMR No.</b>	KD040-012
<b>RMP Status</b>	Yes
<b>Townland</b>	Coltstown
<b>Parish</b>	Graney
<b>Barony</b>	Kilkea and Moone
<b>I.T.M.</b>	680847/683820
<b>Classification</b>	Ringfort - rath
<b>Dist. from development</b>	c. 10m east
<b>Description</b>	Approximately oval mound or platform (dims 34m N-S; 22m E-W; H c. 2m) scarped on all sides, with traces of bank and fosse visible at base at N and W. Situated on floor of river valley.
<b>Reference</b>	<a href="http://www.archaeology.ie/">www.archaeology.ie/</a> SMR file

<b>SMR No.</b>	KD040-011
<b>RMP Status</b>	Yes
<b>Townland</b>	Graney West
<b>Parish</b>	Graney
<b>Barony</b>	Kilkea and Moone
<b>I.T.M.</b>	680823/684398
<b>Classification</b>	Burial
<b>Dist. from development</b>	c. 80m east
<b>Description</b>	Cemetery of three graves excavated in 1953. (1) A cremation in a cist with two bone pendants, (2) a crouched inhumation of an adult in pit with a food vessel sherd, (3) the crouched inhumations of two adult males in a cist with two bowl food vessels (Waddell 1970, 119).
<b>Reference</b>	<a href="http://www.archaeology.ie/">www.archaeology.ie/</a> SMR file

<b>SMR No.</b>	KD040-038
<b>RMP Status</b>	Yes
<b>Townland</b>	Knockpatrick
<b>Parish</b>	Graney
<b>Barony</b>	Kilkea and Moone
<b>I.T.M.</b>	681290/684566
<b>Classification</b>	Architectural fragment
<b>Dist. from development</b>	c. 340m east
<b>Description</b>	1. Quoin (?) showing winged figure, probably angel. Of medieval appearance, most likely from nunnery at Graney (KD040--015----). 2. Rectangular holy water stoup, with rectangular basin, tapering towards base. Of granite. Found at Dairy lane, St. John's, Castledermot.
<b>Reference</b>	<a href="http://www.archaeology.ie/">www.archaeology.ie/</a> SMR file

<b>SMR No.</b>	KD040-007
<b>RMP Status</b>	Yes
<b>Townland</b>	Davidstown (Pilworth)
<b>Parish</b>	Graney
<b>Barony</b>	Kilkea and Moone
<b>I.T.M.</b>	680613/684806
<b>Classification</b>	Enclosure

<b>Dist. from development</b>	c. 370m north
<b>Description</b>	Shown as a circular enclosure of Taylor's map of County Kildare (1783). No visible surface traces.
<b>Reference</b>	<a href="http://www.archaeology.ie/">www.archaeology.ie/</a> SMR file

<b>SMR No.</b>	KD040-042
<b>RMP Status</b>	Yes
<b>Townland</b>	Graney West
<b>Parish</b>	Graney
<b>Barony</b>	Kilkea and Moone
<b>I.T.M.</b>	681252/684119
<b>Classification</b>	Castle - unclassified
<b>Dist. from development</b>	c. 500m east
<b>Description</b>	Located downstream from the nunnery founded by Walter de Riddlesford c. 1200 (KD040-015----). It was levelled prior to 1783, but until recently the ruins were used as a source of building material (FitzGerald 1914, 380-1). If it was not situated on the N side of the river (Graney West townland), it may have been on the S side, which would place it in Coltstown townland. The nearby mill (KD040-043----) contains three pieces of mouldings from either the nunnery or the castle.
<b>Reference</b>	<a href="http://www.archaeology.ie/">www.archaeology.ie/</a> SMR file

**Appendix 6 - Table of Visual Receptors**

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Visual Receptor (VR)	Type of VR and aspect	Distance From site	Elements of proposed development visible to VR	Visual impact during Construction stage 12 months	Mitigation for Construction measures included	Visual impact during Operational stage 10-25 year	Mitigation For Operational phase	Residual Visual impact at Restoration
Residential R1	Two storey residential property with south facing views towards with site. Slightly elevated on ground level.	Closest building is 720 m from proposed working area.	Part visibility Part screened by ever green hedge	Receptor Sensitivity- High  Magnitude of Impact-Low  Visual Impact-Slight Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact-Low  Visual Impact-Slight Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
Residential R2	Two storey residential property with south facing views towards with site. Slightly elevated on ground level.	Closest building is 470 m from proposed working area.	Full visibility	Receptor Sensitivity- High  Magnitude of Impact-Medium  Visual Impact-Moderate Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact-Medium  Visual Impact-Moderate Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
Residential R3	Two storey residential property with south facing views towards with site. Slightly elevated on ground level.	Closest building is 620 m from proposed working area.	Full visibility	Receptor Sensitivity- High  Magnitude of Impact-Medium  Visual Impact-Moderate Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact-Medium  Visual Impact-Moderate Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views

Residential R4	Two x Two storey residential property with west facing views towards with site. Elevated on ground level.	Closest building is 620 m from proposed working area.	Full visibility Part screened by ever green hedge	Receptor Sensitivity- High  Magnitude of Impact-Medium  Visual Impact-Moderate Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact-Medium  Visual Impact-Moderate Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
Residential R5	Two x Two storey residential property with west facing views towards with site. Elevated on ground level.	Closest building is 800-900 m from proposed working area.	Full visibility Part screened by ever green hedge	Receptor Sensitivity- High  Magnitude of Impact-Medium  Visual Impact-Moderate Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact-Medium  Visual Impact-Moderate Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
Residential R6	One storey residential property with west facing views towards with site. On low ground level.	Closest building is 1100 m from proposed working area	No visibility	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Imperceptible
Residential R7	One storey residential property with west facing views towards with site. On low ground level.	Closest building is 1100 m from proposed working area	No visibility	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Imperceptible

Residential R8	Two storey residential property with south facing views towards with site. Slightly elevated on ground level.	Closest building is 520 m from proposed working area.	Part screened by existing vegetation	Receptor Sensitivity- High  Magnitude of Impact-Low  Visual Impact-Slight Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact-Low  Visual Impact-Slight Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
Residential R9	One storey residential property with south facing views towards with site.	Closest building is 82 m from proposed working area.	Glimpse view through boundary edge	Receptor Sensitivity- High  Magnitude of Impact-Low  Visual Impact-Slight Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact-Low  Visual Impact-Slight Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
Residential R10	Two storey residential property with south facing views towards with site.	Closest building is 560 m from proposed working area.	Glimpse view through boundary edge	Receptor Sensitivity- High  Magnitude of Impact-Low  Visual Impact-Slight Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact-Low  Visual Impact-Slight Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
Residential R11	Two x one storey residential property with south facing views towards with site.	Closest building is 665 m from proposed working area.	No visibility	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Imperceptible

Residential R12	One storey residential property with south facing views towards with site.	Closest building is 880 m from proposed working area.	No visibility	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Imperceptible
Residential R13	Two storey residential property with south facing views towards with site.	Closest building is 680 m from proposed working area.	Full visibility	Receptor Sensitivity- High  Magnitude of Impact- Low  Visual Impact- Slight Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact- Low  Visual Impact- Slight Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
Residential R14	Seven x one storey residential property with south facing views towards with site.	Closest building is 900 m from proposed working area.	No visibility	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Imperceptible
Residential R15	Five x one storey residential property with south facing views towards with site.	Closest building is 1120 m from proposed working area.	No visibility	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Imperceptible



Residential R16	Two storey residential property with north facing views towards with site. On low ground level.	Closest building is 1100 m from proposed working area.	No visibility	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Imperceptible
Residential R17	Two storey residential property with north facing views towards with site. On low ground level.	Closest building is 1100 m from proposed working area.	Private access. Not access possible	Receptor Sensitivity- High  Magnitude of Impact-Medium  Visual Impact- Moderate Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact-Medium  Visual Impact- Moderate Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
Residential R18	Two x Two storey residential property with north facing views towards with site. On low ground level.	Closest building is 720 m from proposed working area.	No visibility	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Imperceptible
Residential R19	Two storey residential property with north facing views towards with site. On low ground level.	Closest building is 700 m from proposed working area.	No visibility	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Imperceptible

Residential R20	One storey residential property with north facing views towards with site. On low ground level.	Closest building is 520 m from proposed working area.	No visibility	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Imperceptible
Residential R21	One storey residential property with north facing views towards with site. On low ground level.	Closest building is 660 m from proposed working area.	No visibility	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Imperceptible
Residential R22	One storey residential property with north facing views towards with site. On low ground level.	Closest building is 830 m from proposed working area.	No visibility	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Imperceptible
Residential R23	Two storey residential property with north facing views towards with site. Elevated on ground level.	Closest building is 1100 m from proposed working area.	No visibility	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Receptor Sensitivity-Medium  Magnitude of Impact-Negligible  Visual Impact-Imperceptible	Not required for this location	Imperceptible

Residential R24	One storey residential property with south facing views towards with site. On low ground level.	Closest building is 1100 m from proposed working area.	No visibility	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Imperceptible
Residential R25	One storey residential property with south facing views towards with site. On low ground level.	Closest building is 700 m from proposed working area.	No visibility	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Receptor Sensitivity- Medium  Magnitude of Impact- Negligible  Visual Impact- Imperceptible	Not required for this location	Imperceptible
B1	Farm/industrial building	Closest building is 120 m from proposed working area.	Glimpse view through boundary edge	Receptor Sensitivity- Low  Magnitude of Impact- Medium  Visual Impact- Slight Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- Low  Magnitude of Impact- Medium  Visual Impact- Slight Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
B2	Business south of proposed development	Closest building is 200 m from proposed working area.	Clear view north across flat landscape	Receptor Sensitivity- Low  Magnitude of Impact- Very High  Visual Impact- Moderate Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- High  Magnitude of Impact- Medium  Visual Impact- Moderate Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views

T1	Elevated road east of site	200m	Clear view west across flat landscape	Receptor Sensitivity- Low  Magnitude of Impact-High  Visual Impact-Slight Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- Low  Magnitude of Impact-High  Visual Impact-Slight Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
T2	Road north of site	200m	Clear view north across flat landscape	Receptor Sensitivity- Low  Magnitude of Impact-High  Visual Impact-Slight Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- Low  Magnitude of Impact-High  Visual Impact-Slight Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views
T3	Road south of site	200m	Clear view north across flat landscape	Receptor Sensitivity- Low  Magnitude of Impact-High  Visual Impact-Slight Adverse	Phase 1 Screening planting on earth embankment along northern and eastern boundary to mitigate construction phase visual impacts	Receptor Sensitivity- Low  Magnitude of Impact-High  Visual Impact-Slight Adverse	Phased approach to backfilling and C&D with restoration occurring at the completion of each cell	Slight adverse, the proposed ground height at restoration will cause minor obstruction of long distance views