

ATTACHMENT I4 – ASSESSMENT OF GROUND / GROUNDWATER IMPACT

The bedrock formations underlying the application site and the wider Huntstown Quarry complex are generally considered to be Locally Important (LI) karstified aquifers. Maps published by the EPA indicate that the site is located in an area with high to extreme groundwater vulnerability status. This reflects the potential for rapid groundwater movement through thin (or non-existent) soil cover into the underlying (poor) bedrock aquifer.

Previous sampling and testing of groundwater from monitoring wells across the Huntstown Quarry complex indicates that groundwater quality at the application site is generally good and that the established operations have no significant impact on local groundwater quality.

Potential impacts of increasing the rate of backfilling and restoring the North Quarry and West Quarry using inert materials have been assessed and it is considered that in the absence of mitigation measures, the proposed development could have the potential to negatively impact groundwater quality, specifically by increasing the risk of

- contaminated soils being placed at the site
- fuel or chemical spillages occurring or

The existing office and canteen facilities at Huntstown Quarry are available for the use of current (and any additional / future) staff assigned to the waste recovery facility. Sewage from these facilities is treated at a septic tank and percolation area located in the centre of the quarry complex.

It is envisaged that, as part of the proposed development, a wide range of established surface water management and best practice mitigation measures, together with a number of additional measures, will be implemented during the ongoing restoration, backfilling and recovery activities in order to protect surface water quality. These measures include

- implementation of site management protocols in respect of plant refuelling and maintenance activity to prevent possible accidental discharge of fuel or chemicals
- implementation of detailed soil waste acceptance and handling procedure to prevent intake of contaminated soils;
- continued monitoring of surface water and discharge quality to monitor compliance / detect potential adverse impacts;

Backfilling of the quarry voids at Huntstown is unlikely to have any adverse long term impact on the local groundwater flow regime; it will not create any barrier to groundwater flow, nor will it reduce groundwater recharge nor lead to a reduction in groundwater levels at off-site supply wells.

Established groundwater monitoring regimes will remain in place for the duration of the waste recovery activities at the existing facility and until such time as quarry backfilling and restoration works are ultimately complete.

Details of the existing (baseline) groundwater environment and the impact of the proposed waste recovery facility and associated emissions thereon are provided in Chapter 6 of the Environmental Impact Statement which accompanies this waste licence application.

ATTACHMENT I4 : GROUNDWATER QUALITY DATA

The results of historical groundwater sample testing at monitoring wells at Huntstown Quarry are presented in Table I4-1 below.

**Table I4-1
Groundwater Quality (August 2010)**

	GW01	GW02	GW03	GW04	GW05	GW06	IGV*
pH	7.34	6.84	7.46	7.32	6.86	7.12	6.5 -9.5
Conductivity	114	229	376	512	681	354	1000
Sodium	24.52	17.89	28.62	25.42	16.89	18.45	150
Potassium	3.54	2.99	4.01	3.12	1.58	2.57	5
Calcium	80.7	75.45	92.52	85.42	68.57	78.45	200
Magnesium	17.54	15.42	20.27	19.85	14.56	20.12	50
Chloride	19.23	24.68	43.11	27.49	19.51	34.16	30
Sulphate	48.96	12.09	17.24	36.11	24.66	18.71	200
Total Alkalinity	301	292	351	332	247	313	NAC
Total Hardness	340	352	440	494	220	252	200
Nitrate	18.66	12.45	24.77	16.62	9.32	6.44	25
Nitrite	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Ammoniacal Nitrogen	0.02	0.01	0.04	0.02	0.01	<0.01	0.15
Iron	0.006	<0.001	0.052	<0.001	<0.001	0.067	0.2
Manganese	0.001	<0.001	0.013	<0.001	<0.001	0.021	0.05
Orthophosphate	0.1	0.09	0.06	0.02	<0.01	0.01	0.08
Total Organic Carbon	4.1	4.4	1.5	0.5	3.2	9.9	NAC

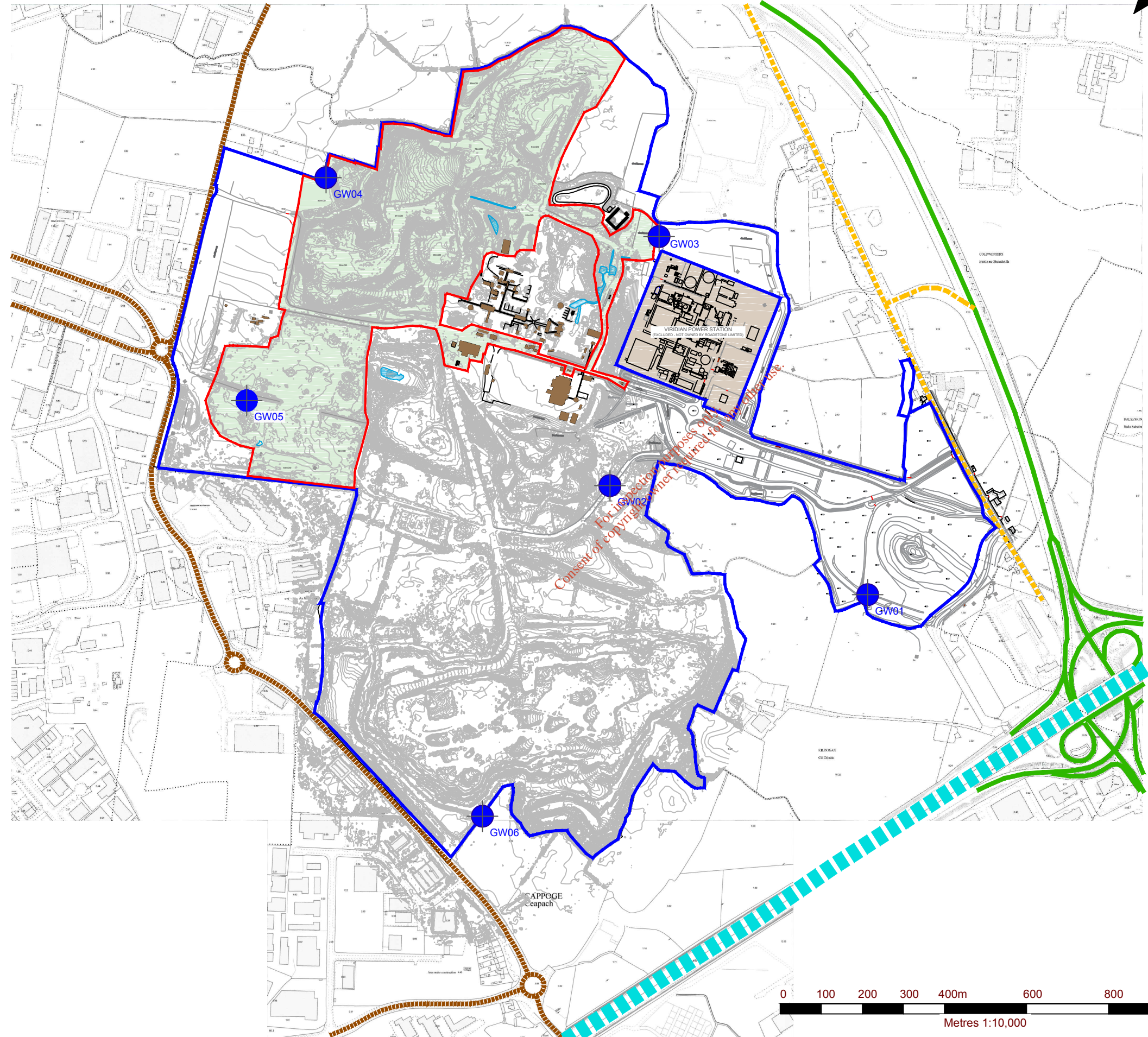
Shaded
IGV

Maximum admissible concentration exceeded
Interim Guideline Value for groundwater, as set out in the EPA Publication 'Towards setting Guideline values for the Protection of Groundwater in Ireland'.

Table I4-2
Summary GW Quality Data (2015-2016 for three samples)








Parameter	Unit	Limit (IGV)	GW01			GW02			GW03			GW04			GW05		
			Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.
Ammoniacal Nitrogen	mg/l	0.15	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.34	0	0.23	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Conductivity	uS/cm @ 20°C	1000	1043	883	728	1316	938	651	933	844	704	844	822	778	516	498	481
Diesel Range Organics	mg/l	---	0.059	0.043	0.026	0.025	0.015	0.010	0.023	0.014	0.010	0.028	0.016	0.010	0.032	0.022	0.010
Nitrate	mg/l	25	1	0.7	0.5	1	0.8	0.5	1	0.7	0.5	4	3.3	3	<0.5	<0.5	<0.5
Nitrite	mg/l	0.1	<0.20	<0.2	<0.20	<0.20	<0.2	<0.20	<0.20	<0.2	<0.20	<0.20	<0.2	<0.20	<0.20	<0.2	<0.20
Orthophosphate as P	mg/l	0.03	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
pH	pH Units	6.5 -9.5	7.3	7.2	7.1	7.3	7.2	7.1	7.4	7.3	7.1	7.4	7.2	7	7.6	7.6	7.6
PRO	mg/l	----	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH	mg/l	0.01	0.067	0.039	0.01	0.052	0.024	0.01	0.045	0.022	0.01	0.067	0.029	0.01	0.068	0.034	0.01
Faecal Coliforms	cfu/100ml	0	6	3	0	25	9	0	0	0	0	0	0	0	4	1	0
Total Coliforms	cfu/100ml	0	15	10	8	>100	72	16	4	3	3	8	3	0	6	3	2

0180.00152.0.FIG_14-1.Groundwater Monitoring Locations.dwg



NOTES
 1. EXTRACT FROM 1:2,500 ORDNANCE SURVEY DIGITAL SHEET NO'S. 3062-A, 3062-B, 3062-C, 3062-D, 3063-A, 3063-C, 3130-A & 3130-B.
 2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

-  ROADSTONE LIMITED LAND INTEREST (c. 200.3 ha)
-  APPLICATION AREA (c. 48.65 ha)
-  N2 DUAL CARRIAGEWAY
-  NORTH ROAD (R135)
-  LOCAL ROAD
-  M50 MOTORWAY
-  GROUNDWATER MONITORING WELL LOCATION

LOCATION	EASTING	NORTHING
GW1	711715	740933
GW2	711087	741196
GW3	711207	741803
GW4	710395	741947
GW5	710203	741403
GW6	710777	740391

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HUNTSTOWN WASTE RECOVERY FACILITY
 NORTH ROAD, FINGLAS, DUBLIN 11
GROUNDWATER MONITORING LOCATIONS

DRAWING I4-1

Scale: 1:10,000 @ A3
 Date: SEPTEMBER 2016

