SECTION I – EXISTING ENVIRONMENT & IMPACT OF THE ACTIVITY

Sub-Section	Title	Location of Information
I.1	Assessment of Atmospheric Conditions	WLA p.34 and Attachment I.1 EIS Vol. 1 Section 9.0 & 10.0
I.2	Assessment of Impacts to Surface Water Discharges on the Receiving Waters	WLA p.34 and Attachment I.2 EIS Vol. 1 Section 7.0
I.3	Assessment of Impact on Receiving Water	WLA p.34 &35 and Attachment I.3 EIS Vol. 1 Section 7.0
I.4	Assessment of Impact to Groundwater and Soils	WLA p.35 and Attachment I.4 EIS Vol. 1 Section 6.0 & 7.0
I.5	Ground and/or Groundwater Contamination	WLA p.35 and Attachment I.5 EIS Vol. 1 Section 7.0
I.6	Noise Impact	WLA p.36-37 and Attachment I.6 EIS Vol. 1 Section 10.0
I.7	Assessment of Ecological Impacts & Mitigation Measures	WLA p.37 and Attachment I.7 EIS Vol. 1 Section 5.0

Figure No.	Title	Scale	Size
I.1	Dust, Air & Noise Historic Assessment Locations	1:6,000	A3
I.2	Groundwater & Surface Water Historic Soils/Geology Assessment Locations	1:2,500	A3
I.3	Subsoils Geology	1:10,000	A3
I.4	Bedrock Geology	1:10,000	A3
I.5	Bedrock Aquifer Designations	1:10,000	A3
I.6	Groundwater Vulnerability	1:10,000	A3
I.7	Habitat Map	1:2,500	A3

ATTACHMENTS I.1

ASSESSMENT OF ATMOSPHERIC CONDITIONS

I.1 ASSESSMENT OF ATMOSPHERIC EMISSIONS

I.1.1 Introduction

The main emissions that fall under this category for such a facility include noise and dust. As the target waste is inert, problems with odour shall be minimal or none. From time to time some loads may contain residual amounts of undesirable material such as plastic, wood and metals. These will be removed immediately and deposited in hooded skips or bins to prevent litter around the Facility. Noise and particularly dust emissions can pose a problem when not adequately mitigated against. Details off baseline surveys are provided in Section 10.0 of the EIS (Noise) and Section 9.0 of the EIS (Air)

I.1.2 Dust Emissions

Dust emissions can pose a problem to the public, employees, property, flora and fauna if proper steps at the design stage and adequate mitigation measures are not put in place. Dust blow can occur from stockpiles and haul roads during dry periods and when winds become elevated. Dust and air monitoring were carried out as part of the baseline survey. Details of baseline surveys carried out and proposed mitigation measures are dealt with in detail in Section 9.0 of the EIS (Volume 1) See attached Figure I.1 for locations of historic baseline monitoring.

I.1.3 Noise Emissions

Noise and vibration emissions can pose a problem to the public, employees, property, flora and fauna. Noise would be emitted from plant during the operation of the facility. Elevated levels can be avoided if proper steps at the design stage and adequate mitigation measures are not put in place. Details of baseline surveys and proposed mitigation measures and an assessment of the effects of the proposed C,D&E Facility are dealt with in detail in Section 10.0 of the EIS (Volume 1). See attached Figure I.1 for locations of monitoring.

I.1.4 Odour and Litter Emissions

As the waste being received is inert, problems with odour shall be minimal or none at all. From time to time some loads may contain residual amounts of undesirable materials such as plastic, wood and metal. These will be removed immediately and deposited in hooded skips or bins to prevent litter around the Site. These will be sent to an appropriately licenced facility for recycling or disposal.

ATTACHMENTS I.2

ASSESSMENT OF IMPACTS TO SURFACE WATER DISCHARGES ON THE RECEIVING WATERS

I.2 ASSESSMENT OF IMPACTS OF SURFACE WATER DISCHARGES ON THE RECEIVING WATERS

There will be no surface water discharges from the C,D&E Facility. Stormwater run-off will be handled in two ways. Water from the Hardcore Turning Yard will collect in French drains running along the northern and southern boundaries of the yard. These drains will discharge to a silt box which is piped to a soak hole. Once stormwater has passed through the silt trap it shall be clean enough to be passed to the soak hole with posing a pollution risk to surface water or groundwater.

Surface water run-off from the buildings, macadam entrance and parking area will run towards eight gullies located around the area. This water will in turn be directed towards a silt trap and petrol interceptor before discharging into the proposed stormwater pipe. Once water has passed through the silt trap and interceptor it should not pose any risk of pollution.

Surface water run-off from uncapped and capped waste lagoons will be directed to a lined Surface Water Management Pond (SWMP) (see Figure D.1b). French drains with perforated piping will be constructed along the southern boundary to convey water to the SWMP. This pond will be pumped initially but subject to agreement of the Agency it will discharge runoff from the capped/restored areas via an outlet structure into Lough Mahon. Recent surface water monitoring data is enclosed. The locations of the historical baseline surface water monitoring points are indicated in Figure I.2. The impacts of this run-off on Lough Mahon are expected to be insignificant.

Surface Water Quality Data Table

Thornbush Surface Water: Chemical Data						
Parameter	**Units**	**EPA ELV**	**Lagoon 8**			**Lagoon 9**
Date			Jun 2006	Dec 2006	Sep 2007	Jun 2005
pH	**N/A**	**6.0-9.0**	8.63	7.53	8.17	7.44
Conductivity (at 25°C)	**mS/cm2**		6.225	3.434	4.568	6.407
TSS	**mg/l**	**35**	<10	<10	<10	51
COD	**mg/L**	**25**	<15	<15	<15	<15
Ammoniacal Nitrogen as N	**mg/L**		<0.2	<0.2	0.4	0.2
Sulphur	**mg/l**		<0.01	<0.01	<0.01	<0.01
Sulphate	**mg/L**		4360	5210	3428	5944
Lead	**mg/L**	**0.1**	<0.001	<0.001	<0.001	<0.001
Zinc	**mg/L**	**0.5**	<0.001	0.015	0.009	0.023
Arsenic	**mg/L**	**0.1**	0.029	0.007	0.027	0.006
Cobalt	**mg/L**		<0.001	0.002	<0.001	<0.001
Copper	**mg/L**	**0.1**	0.002	<0.001	0.003	0.003
Iron	**mg/L**	**10**	0.041	0.036	0.084	0.038
Manganese	**mg/L**	**10**	0.001	0.4	2	26
Nickel	**mg/L**		0.001	0.024	n/a	0.058
Selenium	**mg/L**		0.004	0.001	<0.001	0.002
BOD	**mg/l**		<2	<2	n/a	n/a

Surface Water Quality Data Table

Thornbush Surface Water: Chemical Data									
Parameter	**Units**	**EPA ELV**	**Lagoon 10**						
Date			Jan 2004	Nov 2004	Jun 2005	Nov 2005	Jun 2006	Dec 2006	Sep 2007
pH	**N/A**	**6.0-9.0**	7.48	7.3	7.4	7.3	8.4	6.56	7.81
Conductivity (at 25°C)	**mS/cm2**		10.67	11.23	10.247	8.71	10.543	5.322	7.23
TSS	**mg/l**	**35**			86	11	<10	11	<10
COD	**mg/L**	**25**			19	20	18	16	18
Ammoniacal Nitrogen as N	**mg/L**		1	1.6	<0.002	<0.2	0.2	<0.2	0.5
Sulphur	**mg/l**		<0.01	0	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	**mg/L**		14964	9319	9205	7414	7157	6356	5929
Lead	**mg/L**	**0.1**	0.009	0.007	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	**mg/L**	**0.5**	<0.005	<0.005	0.023	0.008	0.016	0.022	0.024
Arsenic	**mg/L**	**0.1**	<0.002	0.002	0.004	0.005	0.007	0.003	0.006
Cobalt	**mg/L**		0.001	0.002	0.003	0.003	0.001	<0.001	<0.001
Copper	**mg/L**	**0.1**	<0.005	<0.005	0.023	0.008	0.016	0.022	0.024
Iron	**mg/L**	**10**	0.006	0.004	0.059	0.035	0.032	0.043	0.114
Manganese	**mg/L**	**10**	13.19	112.1	175	77	82	58.1	31.96
Nickel	**mg/L**		0.03	0.041	0.062	0.028	0.057	0.025	n/a
Selenium	**mg/L**		0.002	<0.002	0.003	0.002	0.005	<0.001	<0.001
BOD	**mg/l**			5		5	<2	2	

Surface Water Quality Data Table

Thornbush Surface Water: Chemical Data								
Parameter	Units	EPA ELV	Lagoon 12					
Date			Nov 2004	Jun 2005	Nov 2005	Jun 2006	Dec 2006	Sep 2007
pH	N/A	6.0-9.0	7.9	8.21	8.67	8.44	7.77	8.73
Conductivity (at 25°C)	mS/cm2		10.42	9.171	3.36	7.275	4.819	5.739
TSS	mg/l	35		58	<10	<10	<10	<10
COD	mg/L	25	<15	<15	<15	<15	<15	<15
Ammoniacal Nitrogen as N	mg/L		0.9	<0.002	<0.2	0.3	<0.2	0.3
Sulphur	mg/l		0	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/L		9966	8113	5763	5268	3393	4556
Lead	mg/L	0.1	<0.005	0.236	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.5	0.011	0.225	0.009	0.001	0.018	0.012
Arsenic	mg/L	0.1	0.008	0.01	0.008	0.013	0.019	0.012
Cobalt	mg/L		<0.001	0.002	0.003	0.001	<0.001	<0.001
Copper	mg/L	0.1	<0.005	0.022	0.003	0.005	<0.001	0.003
Iron	mg/L	10	<0.001	0.739	0.041	0.052	0.016	0.089
Manganese	mg/L	10	0.97	314	2	0	0.688	<1
Nickel	mg/L		0.019	0.025	0.027	0.012	0.012	
Selenium	mg/L		<0.002	0.003	<0.001	0.005	<0.001	<0.001
BOD	mg/l		5		3	<2	<2	
Golder Associates								

Surface Water Quality Data Table

Thornbush Surface Water: Chemical Data								
Parameter	Units	EPA ELV	Lagoon 13					
Date			Nov 2004	Jun 2005	Nov 2005	Jun 2006	Dec 2006	Sep 2007
pH	N/A	6.0-9.0	7.04	7.4	7.36	6.6	6	7.57
Conductivity (at 25°C)	mS/cm2		11.89	10.474	8.72	8.678	6.316	7.033
TSS	mg/l	35		90	<10	<10	<10	<10
COD	mg/L	25		19	19	16	17	17
Ammoniacal Nitrogen as N	mg/L		1.5	0.3	<0.2	<0.2	<0.2	0.5
Sulphur	mg/l		0	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/L		8548	9730	7398	7054	7153	5798
Lead	mg/L	0.1	0.008	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.5	0.006	0.022	0.011	0.011	0.021	0.013
Arsenic	mg/L	0.1	<0.002	0.003	0.004	0.003	0.002	<0.001
Cobalt	mg/L		<0.001	0.003	0.002	0.001	0.001	<0.001
Copper	mg/L	0.1	<0.005	0.003	0.006	0.007	0.001	0.004
Iron	mg/L	10	0.045	0.059	0.018	0.032	0.053	0.13
Manganese	mg/L	10	138.4	179	79	9.25	86.41	39.98
Nickel	mg/L		0.033	0.055	0.031	0.044	0.038	
Selenium	mg/L		<0.002	0.002	<0.001	0.004	0.002	<0.001
BOD	mg/l		5		5	<2	<2	

Surface Water Quality Data Table

Thornbush Surface Water: Chemical Data								
Parameter	Units	EPA ELV	Lagoon 14					
Date			Nov 2004	Jun 2005	Nov 2005	Jun 2006	Dec 2006	Sep 2007
pH	N/A	6.0-9.0	7.1	7.87	6.7	6.64	6.21	7.3
Conductivity (at 25°C)	mS/cm2		12.05	10.811	9.12	8.615	6.375	7.124
TSS	mg/l	35		97	13	11	19	<10
COD	mg/L	25		<15	21	<15	21	<15
Ammoniacal Nitrogen as N	mg/L		1.5	0.2	<0.2	0.2	<0.2	0.2
Sulphur	mg/l		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/L		10679	9724	7704	6837	6965	5760
Lead	mg/L	0.1	0.007	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.5	<0.005	0.022	0.009	0.01	0.021	0.007
Arsenic	mg/L	0.1	<0.002	0.001	0.003	0.004	0.002	0.002
Cobalt	mg/L		<0.001	0.002	0.001	0.001	0.001	<0.001
Copper	mg/L	0.1	<0.005	0.003	0.004	0.009	<0.001	0.003
Iron	mg/L	10	0.023	0.062	0.01	0.028	0.018	0.06
Manganese	mg/L	10	152.9	216	117	102	71.66	47.51
Nickel	mg/L		0.029	0.036	0.028	0.043	0.052	
Selenium	mg/L		<0.002	0.002	0.002	0.006	0.001	0.003
BOD	mg/l		5		5	<2	3	

Surface Water Quality Data Table

Thornbush Surface Water: Chemical Data								
Parameter	Units	EPA ELV	Lagoon 15					
Date			Nov 2004	Jun 2005	Nov 2005	Jun 2006	Dec 2006	Sep 2007
pH	N/A	6.0-9.0	7.06	7.75	6.71	7.78	6	6.81
Conductivity (at 25°C)	mS/cm2		8.66	8.029	8.17	7.821	5.86	7.04
TSS	mg/l	35		65	<10	<10	16	<10
COD	mg/L	25		<15	17	<15	22	<15
Ammoniacal Nitrogen as N	mg/L		1.9	0.3	<0.2	0.3	<0.2	<0.2
Sulphur	mg/l		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/L		5963	7095	6664	5594	5875	5766
Lead	mg/L	0.1	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.5	0.007	0.027	0.006	0.009	0.023	0.015
Arsenic	mg/L	0.1	<0.002	0.003	0.003	0.005	0.004	0.003
Cobalt	mg/L		<0.001	<0.001	<0.001	0.001	0.001	<0.001
Copper	mg/L	0.1	<0.005	0.003	0.004	0.006	<0.001	0.004
Iron	mg/L	10	0.308	0.003	0.02	0.186	0.05	0.188
Manganese	mg/L	10	63.1	71	79	76	43.36	46.2
Nickel	mg/L		0.031	0.046	0.025	0.035	0.05	
Selenium	mg/L		<0.002	0.003	0.001	0.007	<0.001	<0.001
BOD	mg/l		5		4	<2	3	

Surface Water Quality Data Table

Thornbush Surface Water: Chemical Data								
Parameter	**Units**	**EPA ELV**	**Stream**					
Date			Nov 2004	Jun 2005	Nov 2005	Jun 2006	Dec 2006	Sep 2007
pH	**N/A**	**6.0-9.0**	6.98	6.9	7.14	7.16	6.84	7.35
Conductivity (at 25°C)	**mS/cm2**		2.97	4.066	7.04	37.22	2.01	3.12
TSS	**mg/l**	**35**		29	<10	<10	<10	<10
COD	**mg/L**	**25**	<15	<15	19	<15	<15	<15
Ammoniacal Nitrogen as N	**mg/L**		0.4	0.9	0.7	0.3	0.3	<0.2
Sulphur	**mg/l**		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	**mg/L**		1012	1719	1511	1047	1056	1216
Lead	**mg/L**	**0.1**		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	**mg/L**	**0.5**	0.016	0.066	0.008	0.175	0.035	0.014
Arsenic	**mg/L**	**0.1**	<0.002	0.004	0.001	0.001	0.001	0.003
Cobalt	**mg/L**		0.002	<0.001	0.003	0.002	0.001	<0.001
Copper	**mg/L**	**0.1**	<0.005	0.002	0.001	0.002	<0.001	<0.001
Iron	**mg/L**	**10**		0.039	0.029	0.11	0.034	0.049
Manganese	**mg/L**	**10**	19.26	25	32	12	7.616	3.1
Nickel	**mg/L**		0.011	0.01	0.01	0.007	0.06	
Selenium	**mg/L**		<0.002	0.009	0.002	0.026	0.003	0.003
BOD	**mg/l**		3		6	<2	3	

ATTACHMENTS I.3

ASSESSMENT OF IMPACT ON RECEIVING SEWER

I.3 ASSESSMENT OF IMPACT ON RECEIVING SEWER

I.3.1 Foul Water

There will be approximately ten to fifteen staff employed during the construction of the facility. During the construction period, temporary accommodation and facilities will be installed for staff use which shall comprise offices, canteen and toilet block. Portable toilets leased from a licenced contractor will be installed on-site during the construction phase.

Once the Facility is operating four to six full-time staff will be involved in the day to day running of the plant. A foul water holding tank will be used for collecting wastewater from the office buildings and canteen. This will be collected by a licensed contractor for treatment off-site at a licensed County Council WWTP.

I.3.2 IDA Sewer

Trade effluent from hardstanding areas holding quarantined wastes and fuel bunds, will be directed to the IDA foul sewer. Run-off from these areas will be minimal and will only coincide with heavy rainfall periods. A full retention oil interceptor (Full Retention Seperator) will be installed at the bunded fuel storage and loadout area. It is not expected that the volume or concentration of this run-off shall constitute a perceptible demand to the foul sewer and treatment plant.

It is proposed to pump liquid ponded on the waste lagoons into the three unfilled ponds located along the southern boundary (Cells 13 to 15) or directly into the IDA Sewer. These ponds will be pumped out and discharged into the IDA sewer. The current IPPC Licence No. P0389-01 allows a discharge of 1,000m^3/day with a maximum hourly discharge rate of 100m^3/hour. Recent monitoring data for the liquid in the lagoons and ponds is shown in the attached tables. The applicant is seeking a revision of the current ELVs to allow discharge of the liquid into the IDA sewer at the same daily rate.

I.3.3 Stormwater Sewer

Surface water run-off from the macadam hardstand area and buildings will be directed to trapped gullies placed around the facility. The total paved area will be ca. 1600 m^2 and eight trapped gullies will be installed for collecting surface water. Collected run-off will pass through a silt trap and oil interceptor (a Class 1 Bypass Separator) before entering the proposed stormwater system linking to the public stormwater sewer. The volume entering the system will be weather dependent and is not expected to constitute an overload on the current system.

ATTACHMENTS I.4

ASSESSMENT OF IMPACT TO GROUNDWATER AND SOILS

I.4 ASSESSMENT OF IMPACT TO GROUNDWATER AND SOILS

Soils, geological and hydrological information relating to the Site and its environs is presented in the EIS Volume 1 Section 6.0 (Soils and Geology) and Section 7.0 (Water). Figures I.3 and I.4 present the subsoil geology and bedrock geology respectively in the Little Island area. Figures I.5 and I.6 present the bedrock aquifer designations and groundwater vulnerability respectively in the Little Island area. Detailed geotechnical investigations have been carried out by Golder Associates (UK) Ltd (GAUK) between 2004 and 2005. Reports on these investigations have been submitted to the Agency and should be on the IPPC Register No. P0389-01 file (see GAUK, 2005a, 2005b and 2005c).

Groundwater has been monitored over the years at the site. Logs for monitoring boreholes and recent monitoring data are enclosed. The locations of the historic monitoring boreholes are indicated on Figure I.2. Surface water run-off from the hardcore turning yard will be collected and passed through a silt trap prior to discharge into a soak hole located near the weighbridge station. Owing to the physical treatment of the surface water discharge it is not expected that concentrations of contaminants will be deleterious to the receiving groundwater.

Inert wastes/materials will be placed on a hardcore surface in stockpiles at the C,D&E Facility. These materials will be processed to produce secondary source aggregates that will be stockpiled on a hardcore surface until loaded, hauled and placed on (i) the surface of waste lagoons in combination with a geosynthetic reinforcement layer to form a capping layer, and (ii) in the unfilled ponds (Cells 13 to 15).

As the target materials to be delivered to and accepted at the Facility are inert, no discernable impact will be observed on the groundwater and soils beneath the Application Site as a result of processing, handling and placing inert C,D&E material at the Facility. Previous investigation in relation to groundwater quality beneath, upgradient and downgradient of the waste lagoons have been carried out by O'Callaghan Moran & Associates and reported to the Agency (see OCM, 2003a, OCM 2003b, OCM 2001a and OCM 2001b). O'Callaghan Moran & Associates concluded in their September 2003 report the following:

"The groundwater beneath the site is impacted by a saline intrusion. The monitoring data for MD-9 and MD-9A, which are located closest to the estuary shows the presence of elevated levels of sodium, chloride, sulphate, magnesium and potassium consistent with saline impact. The impact of the intrusion decreases up hydraulic gradient and inland from MD-9 and 9A.

Elevated ammonia was detected in all the wells. The levels may in part be associated with impacts from off-site, upgradient sources of contamination. Ammonia in the newly installed upgradient monitoring well MD-10 is higher than for some of the downgradient monitoring wells indicating the presence of off-site source of ammonia.

Elevated manganese levels have also been reported in the limestone bedrock aquifer in other parts of Little Island. Its presence in groundwater is often naturally occurring. However the levels detected in MD-8 and MD-8A suggests the presence of migration pathways from the lagoons to the groundwater.

Groundwater beneath the site is not currently, and is most unlikely to be, abstracted for process or potable use. Based on the likely low rate of discharge to groundwater from the lagoons through the basal estuarine deposits, the available measured groundwater quality and the potential dilution capacity of the estuary it is unlikely that the groundwater would have any measurable impact on water quality in the estuary.

The permeability testing if the filter cake and the slurry indicates that, following deposition, these materials have a very low permeability. This low permeability minimises the infiltration of rainfall through the material in the lagoon and consequently the volume of leachate potentially generated. This consequently minimises the potential for leaching out of contaminants into the underlying basal estuarine sediments."

References

Golder Associates (UK) Ltd, 2005a (May 2005) Report on Slope Stability Assessment of External Bunds, Mitsui Denman Ireland Ltd, Little Island, Cork.

Golder Associates (UK) Ltd, 2005b (June 2005) Report on Ground Improvement Scheme, Phase 2 Area, Mitsui Denman Ireland Ltd, Little Island, Cork.

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O'Callaghan Moran & Associates 2003b (May 2003), Environmental Assessment of Mitsui Denman (Ireland) Ltd, Wallingstown, Little Island, Cork.

O'Callaghan Moran & Associates 2001a (June 2001), Environmental Liability Risk Assessment for Mitsui Denman (Ireland) Ltd, Little Island, Cork.

O'Callaghan Moran & Associates 2001b (June 2001), Hydrogeological Investigation, Mitsui Denman Ireland Ltd, Little Island, Cork.

Groundwater Quality Data Table

Thornbush Groundwater: Chemical Data												
Parameter	**Units**	**MD-5**							**MD6B**			
Top of Casing	**(MOD)**								**5.57**			
Ground Level	**(MOD)**											
Length of Stick up	**(m)**	**0.83m**							**0.40m**			
Screened Interval	**(m)**	**~7.0m-12.6m**							**5m-9.40m**			
		Bedrock (12.6m)							Screened in overburden and rock (9.40m)			
Date		Jan 2004	Nov 2004	Jun 2005	Nov 2005	Jun 2006	Dec 2006	Sep 2007	Jun 2006	Dec 2006	Sep 2007	12/03/2008
Dip Level	**m**	3.70	3.74	3.83	3.46	3.84	3.18	7.67	3.15	1.34	3	3.37
pH	**N/A**	6.54	6.43	6.80	6.49	6.86	6.68	6.34	7.15	7.08	7.42	
Conductivity (at 25°C)	**µS/cm2**	5802	7660	5638	8269	7713	9419	7902	740	914	580	
COD	**mg/L**	<15	n/a	<15	<15	120	18	<15	<15	<15	<15	
Ammoniacal Nitrogen as N	**mg/L**	2	2.20	2.20	2.10	2.10	2.30	2.5	<0.2	0.3	<0.02	
Chloride	**mg/L**											
Sulphur	**mg/l**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	n/a	
Sulphate	**mg/L**	4881	4995	5769	5293	4462	4881	4555	102	499	133	
Lead	**µg/L**								<1	914	<1	
Zinc	**µg/L**	11	10	33	9	29	83	103	29	42	11	
Cadmium	**µg/L**											
Arsenic	**µg/L**	<2	<2	2	2	3	5	3	<1	<1	<1	
Chromium	**µg/L**											
Cobalt	**µg/L**	12	17	23	23	26	23	n/a	4	<1		
Copper	**µg/L**	<5	<5	6.00	3.00	6.00	5.00	16	3	44	<1	
Iron	**µg/L**	3	1	49	885	46	42	36	265	114	19	
Manganese	**µg/L**	6895	50604	63910	5903	554	51900	58060	32	6	<1	
Nickel	**µg/L**	11	14	14	10	12	12	n/a	274	3		
Mercury	**µg/L**											
Aluminium	**µg/L**											
Selenium	**µg/L**	<2	<2	6	4	9	14	n/a	29	42		

Groundwater Quality Data Table

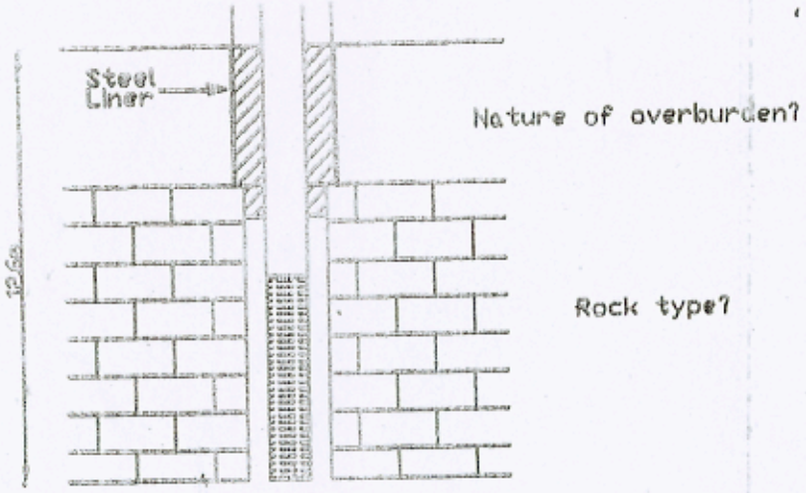
Thornbush Groundwater: Chemical Data															
Parameter	**Units**	**MD7B**			**MD8**			**MD8A**							
Top of Casing	**(MOD)**				**9.5**			**8.94**							
Ground Level	**(MOD)**														
Length of Stick up	**(m)**	**0.40m**			**0.70m**			**0.55m**							
Screened Interval	**(m)**	**10.50m-~14.50m**			**~5.00m-9.00m**			**No Borehole Log available**							
		Bedrock? (15m)			Overburden, water can only enter through base (9.8m)			No Borehole Log available							
Date		Jun 2006	Dec 2006	Sep 2007	Jan 2004	Nov 2004	12/03/08	Jan 2004	Nov 2004	Jun 2005	Nov 2005	Jun 2006	Dec 2006	Sep 2007	12/03/06
Dip Level	**m**	4.92	3.14	4.97	7.6	7.4	2.75	7.1	6.84	6.23	6.08	6.92	5.80	7.11	2.76
pH	**N/A**	6.92	6.66	6.77	6.76	6.88		6.74	6.73	6.96	6.77	7.36	7.03	7.45	
Conductivity (at 25°C)	**µS/cm2**	13358	2449	1254	6374	9980		9969	5540	4927	6979	7385	3782	6660	
COD	**mg/L**	<15	<15	<15	<15	<15		135	<15	<15	<15	<15	<15	<15	
Ammoniacal Nitrogen as N	**mg/L**	<0.2	<0.2	<0.02	1.5	1.7		2.4	0.3	1.4	0.3	0.4	<0.2	2.2	
Chloride	**mg/L**														
Sulphur	**mg/l**	<0.01	<0.01	n/a	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	n/a	
Sulphate	**mg/L**	770	1780	514	7335	8797		13473	6226	5445	5714	4405	1913	5529	
Lead	**µg/L**	<1	<1	<1	<5	<5		<5	<5	<1	<1	<1	<1	<1	
Zinc	**µg/L**	<1	24	1	<5	<5		<5	<5	17	4	4	16	14	
Cadmium	**µg/L**														
Arsenic	**µg/L**	<1	<1	<1	<2	<2		<2	<2	2	1	3	<1	2	
Chromium	**µg/L**														
Cobalt	**µg/L**	<1	1	<1	<1	1		2	<1	2	1	1	1	n/a	
Copper	**µg/L**	<1	<1	n/a	<5	<5		<5	<5	4	4	3	<1	4	
Iron	**µg/L**	36	37	44	5	<1		5	<1	41	12	19	37	95	
Manganese	**µg/L**	758	3020	<1	6929	40215		8905	26035	34470	13600	16800	5134	31760	
Nickel	**µg/L**	8	27	n/a	25	24		28	21	24	17	14	7	n/a	
Mercury	**µg/L**														
Aluminium	**µg/L**														
Selenium	**µg/L**	3	2	n/a	<2	<2		3	<2	3	<1	4	<1	n/a	

Groundwater Quality Data Table

Thornbush Groundwater: Chemical Data													
Parameter	**Units**	**MD9**		**MD9A**							**MD-10B**		
Top of Casing	**(MOD)**												
Ground Level	**(MOD)**												
Length of Stick up	**(m)**	**0.65m**		**0.64m**							**0.34m**		
Screened Interval	**(m)**	**~6.00m-12.4m**		**No Borehole Log available**							**~9.30m-15.00m**		
		Overburden water can only flow in through base (12.4m)		No Borehole Log available							Bedrock? (15m)		
Date		Jan 2004	Nov 2004	Jan 2004	Nov 2004	Jun 2005	Nov 2005	Jun 2006	Dec 2006	Sep 2007	Jun 2006	Dec 2006	Sep 2007
Dip Level	**m**	1.89	1.23	1.96	1.21	2.06	0.82	1.91	1.00	4.40	3.82	2.80	3.85
pH	**N/A**	7.06	6.86	6.83	6.81	6.96	6.88	7.07	6.87	6.81	6.68	6.68	6.2
Conductivity (at 25°C)	**µS/cm2**	14961	18666	11006	14440	11145	14543	1825	9919	10493	5369.00	4742.000	6204
COD	**mg/L**	75	n/a	27	n/a	NDP	<15	27	31	28	<15	<15	<!5
Ammoniacal Nitrogen as N	**mg/L**	3.4	4.3	2.7	3.7	4.5	4.6	4.7	4.3	4.4	0.60	<0.2	<0.02
Chloride	**mg/L**												
Sulphur	**mg/l**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	n/a	<0.01	<0.01	n/a
Sulphate	**mg/L**	4452	4052	5265	4683	4628	4358	3312	3744	2854	2496.00	3099	3574
Lead	**µg/L**	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	207	<1
Zinc	**µg/L**	<5	30	<5	<5	15	8	<1	18	14	28	133	<1
Cadmium	**µg/L**												
Arsenic	**µg/L**	3	5	<2	4	17	15	13	10	10	4	2	<1
Chromium	**µg/L**												
Cobalt	**µg/L**	3	4	4	5	8	8	3	8	n/a	7	14	n/a
Copper	**µg/L**	<5	<5	<5	<5	3	3	1	<1	1	2	<1	10
Iron	**µg/L**	4	2	3	<1	50	2	49	38	76	52	21	10
Manganese	**µg/L**	2891	9457	4191	16314	20010	18860	286	17290	15840	5415	25710	3336
Nickel	**µg/L**	<10	<10	<10	13	12	9	11	11	n/a	36	46	n/a
Mercury	**µg/L**												
Aluminium	**µg/L**												
Selenium	**µg/L**	23	<2	12	<2	43	25	39	21	n/a	15	6	n/a

Adequate for bedrock ground water monitoring.
Steel liner may cause problems.

MD-5



Borehole Log

GEOTECH

Drilled GW Logged Checked SC	Start 05/05/2006 End 08/05/2006	Equipment, Methods and Remarks Dando 3000 Cable percussion 200mm boring from 0.00m to 2.55m. 50mm standpipe installed.	Depth from 0.00m to 9.40m	Diameter 200mm	Casing Depth 9.40m

Ground Level -
Coordinates -
National Grid -

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
1.00-1.45	SPT S	N=11 (3,5/5,2,2,2)	1.00	dry
1.00	ES 1			
1.00	ES 2			
1.00	ES 3			
1.00-1.45	D 4			
1.00	D 5			
2.00-2.45	SPT S	N=3 (1,-/1,-,1,1)	2.00	dry
2.00	D 10			
2.00	ES 6			
2.00	ES 7			
2.00	ES 8			
2.00-2.45	D 9			
2.90	ES 13			
2.90	ES 14			
2.90	ES 15			
2.90	ES 16			
3.00-3.45	SPT S	N=20 (4,5/5,5,5,5)	3.00	2.80
3.00-3.45	D 11		05/05/2006	1800
3.00	D 12		3.50	0.00
4.00-4.45	SPT C	N=32 (4,6/6,8,9,9)	4.00	
4.00	D 17			
4.00	ES 18			
4.00	ES 19			
4.00	ES 20			
5.00-5.45	SPT C	N=24 (10,10/6,6,6,4)		
5.00-5.45	B 23			
6.50-6.95	SPT S	N=11 (2,2/2,3,3,3)	6.50	
6.50-6.95	D 24			
6.50-6.95	B 25			
8.00-8.45	SPT C	N=20 (3,4/4,4,6,6)	8.00	
8.00-8.45	B 27			
9.00-9.19	SPT C	50 (17,8 for 29mm/ 44,6 for 8mm)	9.00	
9.00-9.40	B 29		08/05/2006	1800
			9.40	0.00
9.40-9.46	SPT C	50 (25 for 19mm/50 for 41mm)	9.40	2.80

Strata

Description	Depth, Level (Thickness)
Driller Reports: Sandy gravelly CLAY with cobbles.	(1.60)
Driller Reports: Dark brown sandy CLAY with cobbles.	1.60 (0.55)
Driller Reports: Light brown CLAY.	2.15 (1.00)
Driller Reports: SAND, GRAVEL and COBBLES.	3.15 (2.70)
Driller Reports: CLAY,. COBBLES and GRAVEL.	5.85 (3.15)
Driller Reports: GRAVEL and limestone ROCK.	9.00 (0.40)
EXPLORATORY HOLE ENDS AT 9.40 m — 9.40 m Driller Reports: ROCK.	9.40

Legend: SP

Backfill/ Instruments: 1, 2

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)
1	2.90	Rose to 2.80 m after 20 minutes. Slow inflow	-
2	9.00	Rose to 2.80 m after 20 minutes. Fast inflow	-

Depth Related Remarks *

From (m)	to (m)	
4.00	9.00	Water added to assist drilling. Borehole kept full.

Chiselling

Depths (m)	Time	Tools used
4.80 -5.00	30 mins	
9.30 -9.40	60 mins	

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

(c) EGGL 308 v1.2226/08/2006 11:01:31

Project: Clearwater Little Island
Project No.: KC6052
Carried out for: Arup Consulting Engineers

Borehole

MD 6B

Borehole Log

PRELIMINARY

GEOTECH

Drilled MN Logged Checked	Start 14/06/2006 End 15/06/2006	Equipment, Methods and Remarks Cassagrande C6 Rotary Open Hole 150mm diameter from 0.00 to 15.00m. 50mm standpipe installed.	Depth from 0.00m to 15.00m Diameter 150mm Casing Depth 11.70m	Ground Level - Coordinates - National Grid - Chainage 0.000	

Samples and Tests					Strata			
Depth	Type & No	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
					Driller Reports: SAND and GRAVEL.	(2.70)		
					Driller Reports: Silty CLAY.	2.70 (1.80)		
					Driller Reports: SAND.	4.50 (1.00)		
					Driller Reports: GRAVEL with many boulders.	5.50 (3.90)		
					Driller Reports : Brown CLAY.	9.40 (1.10)		
Depth	Type & No	Records	Date Casing	Time Water	Stratum continues to 10.50 m			

Groundwater Entries				Depth Related Remarks *			Chiselling		
No.	Struck (m)	Post strike behaviour	Depth sealed (m)	From	to (m)		Depths (m)	Time	Tools used
1	5.60	-	-	0.00	15.00	Flush type: Air / mist.			

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project Clearwater Little Island Project No. KC6052 Carried out for Arup Consulting Engineers	Borehole MD 7B

Borehole Log

PRELIMINARY

GEOTECH

Drilled MN Logged Checked	Start 14/06/2006 End 15/06/2006	Equipment, Methods and Remarks Cassagrande C6 Rotary Open Hole 150mm diameter from 0.00 to 15.00m. 50mm standpipe installed.	Depth from 0.00m to 15.00m Diameter 150mm Casing Depth 11.70m	Ground Level - Coordinates - National Grid - Chainage 0.000

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			14/06/2006 11.70	1800 4.10
			15/06/2006 11.70	0900 4.60
			15/06/2006	1800

Strata

Description (Continued from Sheet 1)	Depth, Level (Thickness)	Legend	Backfill/ Instruments
Driller Reports : Brown CLAY.			
Driller Reports : SHALE bedrock.	10.50		
	(4.50)		SP
EXPLORATORY HOLE ENDS AT 15.00 m	15.00		

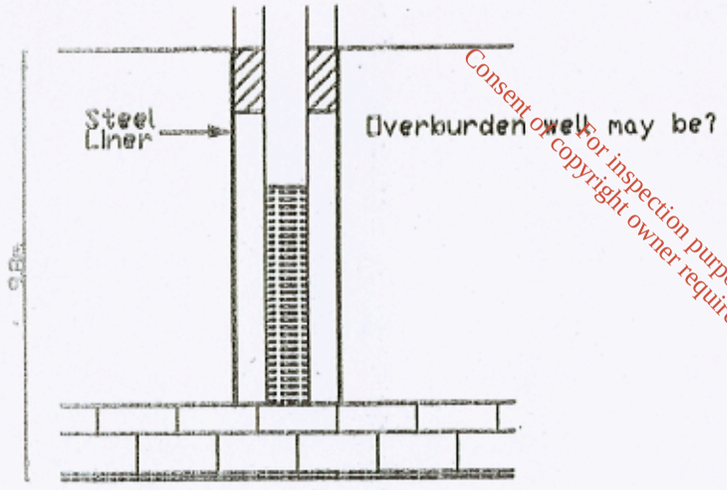
Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries				Depth Related Remarks *		Chiselling		
No.	Struck (m)	Post strike behaviour	Depth sealed (m)	From	to (m)	Depths (m)	Time	Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project Clearwater Little Island Project No. KC6052 Carried out for Arup Consulting Engineers	Borehole MD 7B

This well is not useable.
Steel liner preventing water inflow.
Water can only enter through base.

MD-8



Glover Site Investigations Ltd	Site: MITSU DENMAN LITTLE ISLAND, CORK	MD 8A
Boring Method: Open Hole Rotary / Dates: 25/06/03 - 25/06/03	Client: O'CALLAGHAN MORAN & ASSOCIATES	Sheet: 1/1
Hole Diameters: 150mm Cased to 13.00m / Location: AS PLAN	Engineer	Ground Level (mOD)

Description	Depth m (Thickness)	Legend	Level (mOD)	Samples / Tests Depth (m)	Sample	Test	Water Level	Daily Progress
Firm to stiff grey brown gravelly sandy CLAY with occasional cobbles and boulders	(1.70) 1.70							
Moderately strong grey fine grained CARBONIFEROUS LIMESTONE	(11.30) 13.00							Water strike at 9.00m. 25/06/03
END OF BOREHOLE 13.00m								

SAMPLE / TEST KEY
D Disturbed Sample
B Bulk Sample
U Undisturbed Core Sample
P Piston Sample
V Field Vane Test
W Water Sample
SPT Standard Penetration Test
CPT Cone Penetration Test

Scale 1:100 | Logged By DC
Figure No. 5258.?
Borehole Number MD 8A

Glover Site Investigations Ltd

Site: MITSU DENMAN LITTLE ISLAND, CORK			MD 8A
Dimensions: Internal Diameter of Tube [A] = 50 mm; Diameter of Filter Zone = 150 mm	Client: O'CALLAGHAN MCRAN & ASSOCIATES		Job Number: 5268
Location: AS PLAN	Ground Level (mOD):	Engineer:	Sheet: 1/1

Legend	Inst. [A]	Level (mOD)	Depth (m)	Description
		-0.30	0.30	Concrete
				Topfill
		-4.00	4.00	
				Bentonite Seal
		-6.00	6.00	
				Gravel Filter
		-7.00	7.00	
				Well Screen
		-13.00	13.00	

Groundwater Strikes during Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	10 min	15 min	20 min	Depth Sealed (m)
		9.00							

Groundwater Observations During Drilling

Date	Start of Shift: Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	End of Shift: Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
25/06/03							13.00			

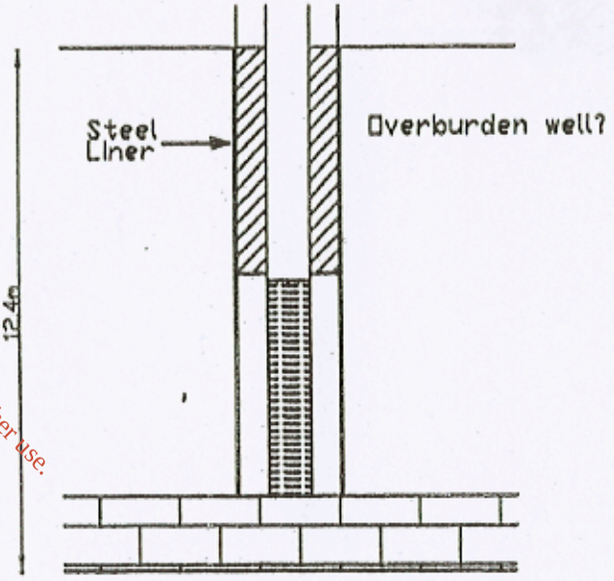
Instrument Groundwater Observations

Inst. [A] Type :

Date	Instrument [A] Time	Depth (m)	Level (mOD)	Remarks

This well is not useable.
Steel liner preventing water inflow.
Water can only enter through base.

MD-9



Glover Site Investigations Ltd

Method: Open Hole Rotary	Dates: 25/06/03 - 25/06/03	Site: METSO CEMMAN LITTLE ISLAND, CORK	MD 9A
Hole Diameters: 150mm Cased to 16.00m	Location: AS PLAN	Client: O'CALLAGHAN MORAN & ASSOCIATES	Sheet: 1/1
		Engineer:	Ground Level (mOD)

Description	Depth m (Thickness)	Legend	Level (mOD)	Samples / Tests: Depth (m)	Samples	Test	Water Level	Daily Progress
Very soft grey organic CLAY	(11.00)							
Stiff brown gravelly sandy CLAY with occasional cobbles and boulders	11.00 (4.70)						Water strike at 11.50m.	
Moderately strong grey fine grained CARBONIFEROUS LIMESTONE	15.70 16.00							25/06/03
END OF BOREHOLE 16.00m								

SAMPLE / TEST KEY
- D Disturbed Sample
- B Bulk Sample
- U Undisturbed Core Sample
- P Piston Sample
- V Field Vane Test
- W Water Sample
- SPT Standard Penetration Test
- CPT Cone Penetration Test

Scale: 1:200 | Logged By: GC

Figure No: 5268.2

Borehole Number:

Glover Site Investigations Ltd

Site: NITSU DENMAN LITTLE ISLAND, CORK		MD 9A
Installation Type: St pipe	Dimensions: Internal Diameter of Tube (A) = 50 mm; Diameter of Filter Zone = 150 mm	Client: O'CALLAGHAN MORAN & ASSOCIATES; Job Number: 5268
	Location: AS PLAN; Ground Level (mOD):	Engineer: Sheet: 1/1

Legend	Inst. (A)	Level (mOD)	Depth (m)	Description
		-0.30	0.30	Concrete
				Topfill
		-9.00	9.00	
				Bentonite Seal
		-11.00	11.00	
				Gravel Filter
		-12.00	12.00	
		-16.00	16.00	

Remarks:

Groundwater Strikes during Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	10 min	15 min	20 min	Depth Sealed (m)
		11.50							

Groundwater Observations During Drilling

Date	Start of Shift: Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	End of Shift: Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
25/06/03							16.00			

Instrument Groundwater Observations

Inst. (A) Type :

Date	Instrument (A): Time	Depth (m)	Level (mOD)	Remarks

PRELIMINARY

Borehole Log

GEOTECH

Drilled JP Logged Checked	Start 02/06/2006 End 05/06/2006	Equipment, Methods and Remarks Rotary Open Hole 150mm diameter from 0.00m - 15.00m. 50mm standpipe installed.	Depth from 0.00m to 15.00m Diameter 150mm Casing Depth	Ground Level - Coordinates - National Grid - Chainage 0.000

Samples and Tests					Strata			
Depth	Type & No	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend	Backfill/ Instruments
					Driller Reports: GRAVEL and CLAY.	(4.20)		
					Driller Reports: Very weathered LIMESTONE.	4.20 (1.50)		
			02/06/2006	1800				
					Driller Reports: Fractured LIMESTONE.	5.70		
Depth	Type & No	Records	Date Casing	Time Water	Stratum continues to 15.00 m			

Groundwater Entries				Depth Related Remarks *		Chiselling		
No.	Struck (m)	Post strike behaviour	Depth sealed (m)	From	to (m)	Depths (m)	Time	Tools used
None observed (see Key Sheet)								

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project Clearwater Little Island Project No. KC6052 Carried out for Arup Consulting Engineers	Borehole MD10B

Borehole Log

PRELIMINARY

GEOTECH

Drilled JP	Start 02/06/2006	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	-
Logged	End 05/06/2006	Rotary Open Hole 150mm diameter from 0.00m - 15.00m. 50mm standpipe installed.	0.00m	15.00m	150mm		Coordinates	-
Checked							National Grid	-
							Chainage 0.000	

Samples and Tests

Depth	Type & No	Records	Date Casing	Time Water
			03/06/2006	1800
			05/06/2006	1800

Strata

Description (Continued from Sheet 1)	Depth, Level (Thickness)	Legend	Backfill / Instruments
Driller Reports: Fractured LIMESTONE.	(9.30)		
EXPLORATORY HOLE ENDS AT 15.00 m	15.00		SP

Depth	Type & No	Records	Date Casing	Time Water

Groundwater Entries

No.	Struck (m)	Post strike behaviour	Depth sealed (m)

None observed (see Key Sheet)

Depth Related Remarks *

From	to (m)

Chiselling

Depths (m)	Time	Tools used

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

Scale 1:50

Project	Clearwater Little Island
Project No.	KC6052
Carried out for	Arup Consulting Engineers

Borehole

MD 10B

ATTACHMENTS I.5

GROUND AND/OR GROUNDWATR CONTAMINATION

I.5 GROUND AND/OR GROUNDWATER CONTAMINATION

Groundwater quality in the vicinity of the Application Site has been compromised from the historical land uses in the area. Regular groundwater monitoring has been carried out at the Site as part of the Annual Environmental Reporting (AER) procedures for the IPPC Licence P0389-01. Groundwater reports note in particular elevated groundwater values for conductivity, manganese and sulphate. Groundwater monitoring data reports also identified that groundwater may be affected by saline intrusion, given the proximity of the Application Site to Lough Mahon. Groundwater monitoring reports have noted that since the cessation of production activities at the Application Site in late 2003 there has been a general improvement in groundwater quality.

Comprehensive groundwater sampling results are attached.

Figure I.2 details the location of all the boreholes on-site.

ATTACHMENTS I.6

NOISE IMPACT

I.6 NOISE IMPACT

I.6.A Ambient Noise Levels

The main sources of noise will originate from the plant associated with the processing of waste at the C,D& E Facility. Some plant will be mobile such as wheel loaders which will transport material around the C,D&E Facility Site. Traffic entering and leaving the Facility will also constitute an increase in noise levels. There will also be mobile plant and vehicles working on the waste surface during placement of the capping materials.

The proposed C,D&E Facility is situated in an area zoned for enterprise/industrial use. Background noise levels in the greater area are therefore influenced by existing industries located at Little Island. Baseline surveys were conducted on two periods in 2005 at five locations on and in the vicinity of the IPPC licensed Site (Figure I.1). Day evening and night time surveys were carried out at these locations with parameters recorded including L_{Aeq}, L_{A10} and $L_{A90.}$ As the Site has been disused since this time, and surrounding landuse has not altered, noise levels measured during this period are still considered to reflect a representative baseline of current noise conditions. Full details of ambient noise levels are outlined in Section 10.0 of the EIS (Volume 1). and in Table I.6(i) gives an average of the baseline parameters over a number of monitoring periods.

I.6.B Noise Impact Assessment

Details of the noise impact assessment with respect to the fixed concentrated noise source on the C,D&E Facility are outlined in Section 10.0 of the EIS (Volume 1). Refer to Figure I.1 for locations.

Table I.6(i) Ambient Noise Assessment

Third Octave analysis for noise emissions should be used to determine tonal noises

	National Grid Reference	Sound Pressure Levels		
	(5N, 5E)	$L(A)_{eq}$	$L(A)_{10}$	$L(A)_{90}$
1. SITE BOUNDARY				
Location: N1	174548 , 71508	59	63	52
Location: N2	174819 , 71557	53	55	51
Location: N3	174533 , 71212	51	53	49
Location: N4	174221 , 71716	57	59	52
2. NOISE SENSITIVE LOCATIONS				
Location 1: N5	174724 , 71995	90	95	77
Location 2:				
Location 3:				
Location 4:				

NOTE: All locations should be identified on accompanying drawings.

APPENDIX I.7

ASSESSMENT OF ECOLOGICAL IMPACTS & MITIGATION MEASURES

I.7 ASSESMENT OF ECOLOGICAL IMPACTS & MITIGATION MEASURES

The proposed development will involve the loss of bare and recolonising ground along with some loss of scrub and trees. Some of the tree line will be lost for construction of the site entrance. The capping and restoration of the Site will have a net beneficial ecological impact, reducing the potential contaminant pathways and exposure routes for the bioaccumulation of materials in the former Mitsui Denman (Ireland) Ltd waste lagoons. The capping of the waste lagoons is designed for beneficial afteruse of the restored brownfield site in support of EU and National development objectives. Refer to Section 8.0 of the EIS (Volume 1) for further information. Refer to Figure I.7 for locations of habitats.

Co-ordinates for Emissions & Monitoring Points

Location	Figure No.	Easting	Northing
SE1	E.1/E.2/F.1	174050	71654
SE2	E.1/E.2/F.1	174206	71689
SE3	E.1/E.2/F.1	174117	71655
GW1	E.1/E.2	174165	71643
MD 5	F.1	174065	71669
MD 6B	F.1	174313	71673
MD 7B	F.1	174465	71689
MD 8A	F.1	174574	71395
MD 9A	F.1	174340	71327
MD 10B	F.1	174767	71731
SW1	E.1	174520	71293
SW 2	F.1	174390	71393
SW 3	F.1	174231	71517
SW 4	F.1	174779	71681
SW 5	F.1	174880	71425
AD1	F.1	174537	71322
AD2	F.1	174186	71461
AD3	F.1	174566	71726
AD4	F.1	174900	71571
AN1	F.1	174537	71322
AN2	F.1	174186	71461
AN3	F.1	174070	71663
AN4	F.1	174455	71679
AN5	F.1	174763	71716
AN6	F.1	174900	71571
D1	I.1	174521	71245
D2	I.1	174819	71537
D3	I.1	174759	71827
D4	I.1	174540	71894
D5	I.1	174242	71722
D6	I.1	174195	71490
N1	I.1	174548	71508
N2	I.1	174819	71557
N3	I.1	174533	71212
N4	I.1	174221	71716
N5	I.1	174724	71995

INCHERA

WALLINGSTOWN

NEAREST RESIDENCES

500m BUFFER ZONE

N

N1
N2
N3
N4
N5
D1
D2
D3
D4
D5
D6
A1
A2
A3

LEGEND

- APPLICATION SITE BOUNDARY
- TOWNLAND BOUNDARY
- 500m OFFSET
- NEAREST RESIDENCES
- HISTORIC BASELINE DUST MONTORING LOCATIONS
- HISTORIC BASELINE AIR MONITORING LOCATIONS
- HISTORIC BASELINE NOISE MONITORING LOCATIONS

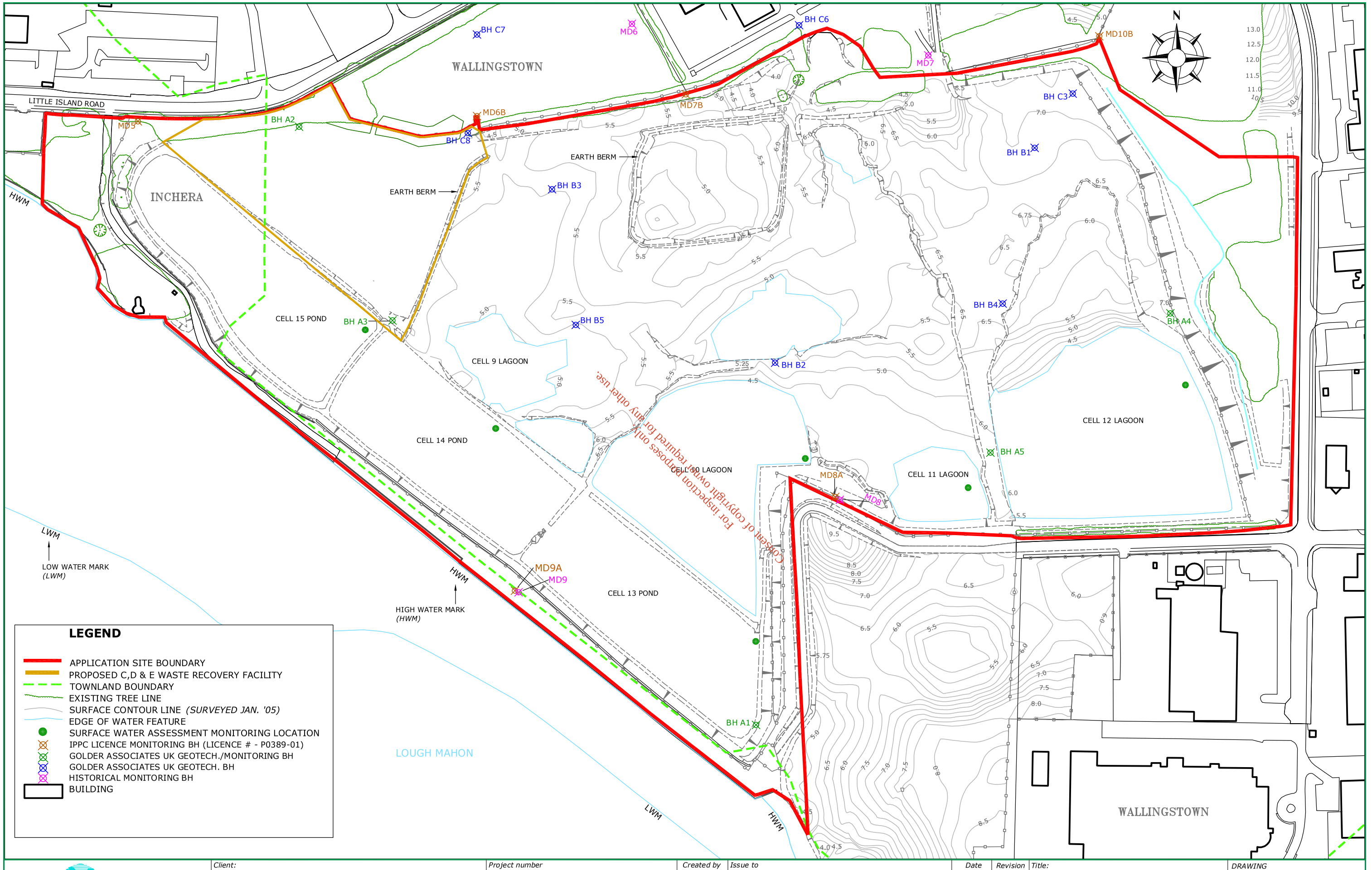
Golder Associates
TOWN CENTRE HOUSE, DUBLIN ROAD, NAAS, CO. KILDARE
TEL.: 045 874411 - FAX:045 874549 - www.golder.com

Client: **THORNBUSH HOLDINGS Ltd.**	*Project number* 07507120021	*Created by* CC	*Issue to* ISSUE TO CLIENT	*Date* May '08	*Revision* A
Location: WALLINGSTOWN, LITTLE ISLAND, CO. CORK	*File Location* GRAPHICS\2.LAND DEVELOPMENT \AUTOCAD\ THORNBUSH\WLA\I.1	*Checked by* DK	ISSUE TO EPA	May '08	B
Project: WASTE LICENCE APPLICATION	ORDNANCE SURVEY IRELAND LICENCE NUMBER **AR0056008**	*Reviewed by* GP			

Title: DUST, AIR & NOISE BASELINE HISTORIC ASSESSMENT LOCATIONS

Scale 1:3,000 A1 1:6,000 A3 1:9,000 A4

Figure No. **I.1**



LEGEND

- APPLICATION SITE BOUNDARY
- PROPOSED C,D & E WASTE RECOVERY FACILITY
- TOWNLAND BOUNDARY
- EXISTING TREE LINE
- SURFACE CONTOUR LINE *(SURVEYED JAN. '05)*
- EDGE OF WATER FEATURE
- SURFACE WATER ASSESSMENT MONITORING LOCATION
- IPPC LICENCE MONITORING BH (LICENCE # - P0389-01)
- GOLDER ASSOCIATES UK GEOTECH./MONITORING BH
- GOLDER ASSOCIATES UK GEOTECH. BH
- HISTORICAL MONITORING BH
- BUILDING

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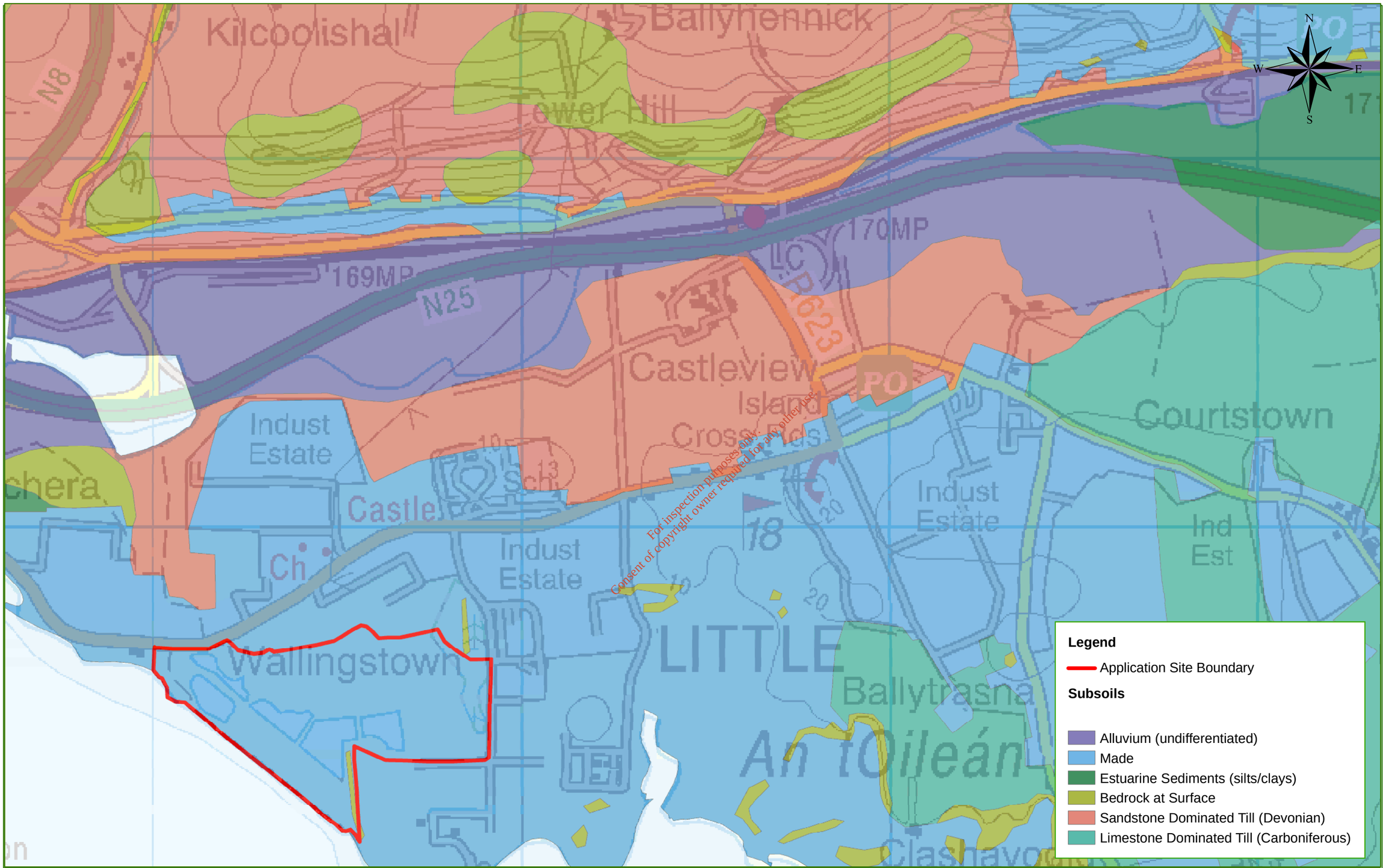
Client: **THORNBUSH HOLDINGS Ltd.**	*Project number* 07507120021	*Created by* ODB	
Location: WALLINGSTOWN, LITTLE ISLAND, Co. CORK	*File Location* GRAPHICS\2.LAND DEVELOPMENT\AUTOCAD\ THORNBUSH\WLA\I.2	*Engineer* DK	
Project: WASTE LICENCE APPLICATION	ORDNANCE SURVEY IRELAND LICENCE NUMBER **AR0056008**	*Reviewed by* GP	

Issue to	*Date*	*Revision*
ISSUE TO CLIENT	*MAY '08*	*A*
ISSUE TO EPA	*MAY '08*	*B*

Title: GROUND WATER & SURFACE WATER HISTORIC BASELINE SOILS/GEOLOGY ASSESSMENT LOCATIONS

Scale 1:1,250 A1 1:2,500 A3 1:3,750 A4

DRAWING **I.2**



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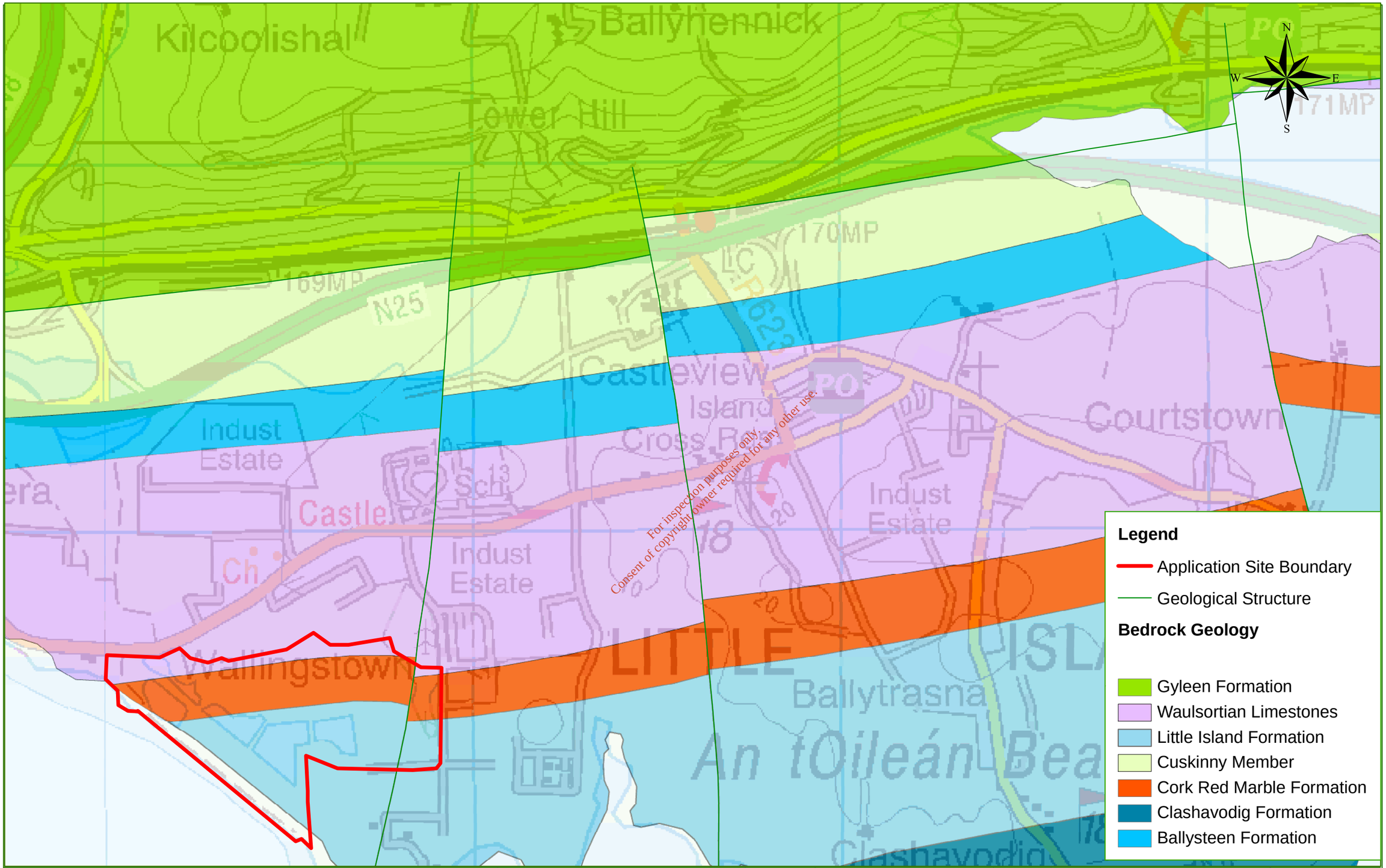
Client: **THORNBUSH HOLDINGS LTD.**	Project number: 07507120021	Created by: JH	Issue to: Environmental Protection Agency	Date: May 2008	Revision: B	Title: Subsoils Geology
Location: WALLINGSTOWN, LITTLE ISLAND, CO. CORK	File Location: GIS\THORNBUSH\FIGI.3	Checked by: CC	Source: Teagasc/ Environmental Protection Agency			Scale: 1:10,000
Project: WASTE LICENCE APPLICATION	ORDNANCE SURVEY OF IRELAND LICENCE NUMBER **AR0056008**	Approved by: CW				Figure No. **I.3**



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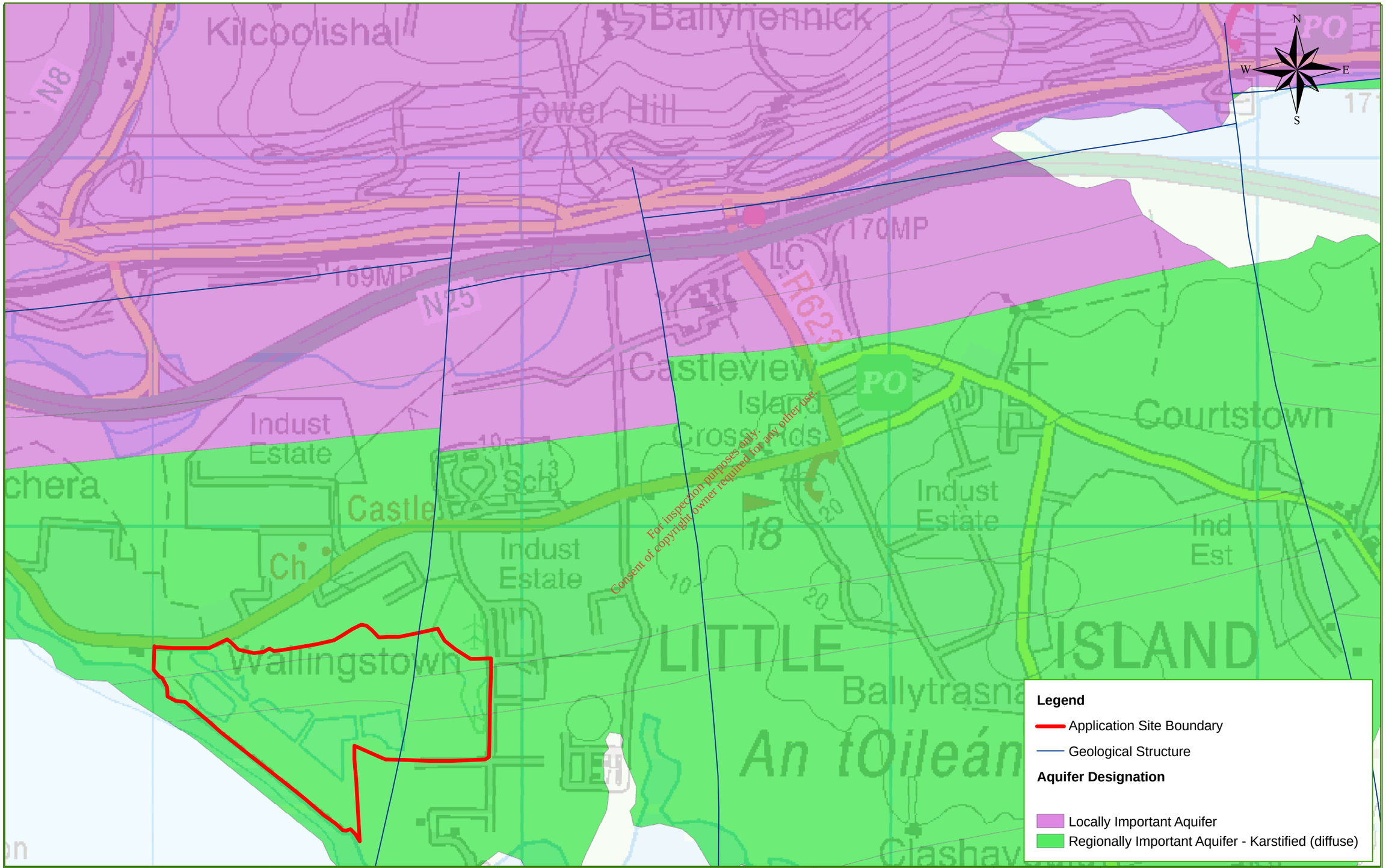
Client: **THORNBUSH HOLDINGS LTD.**	Project number: 07507120021	Created by: JH	Issue to: Environmental Protection Agency	Date: MAY. '08	Revision: B	Title: Bedrock Geology
Location: WALLINGSTOWN, LITTLE ISLAND, CO. CORK	File Location: GIS\THORNBUSH\FIGI.4	Checked by: CC	Source: Geological Survey of Ireland			Figure No. **I.4**
Project: WASTE LICENCE APPLICATION	ORDNANCE SURVEY OF IRELAND LICENCE NUMBER **AR0056008**	Approved by: CW				Scale: 1:10,000



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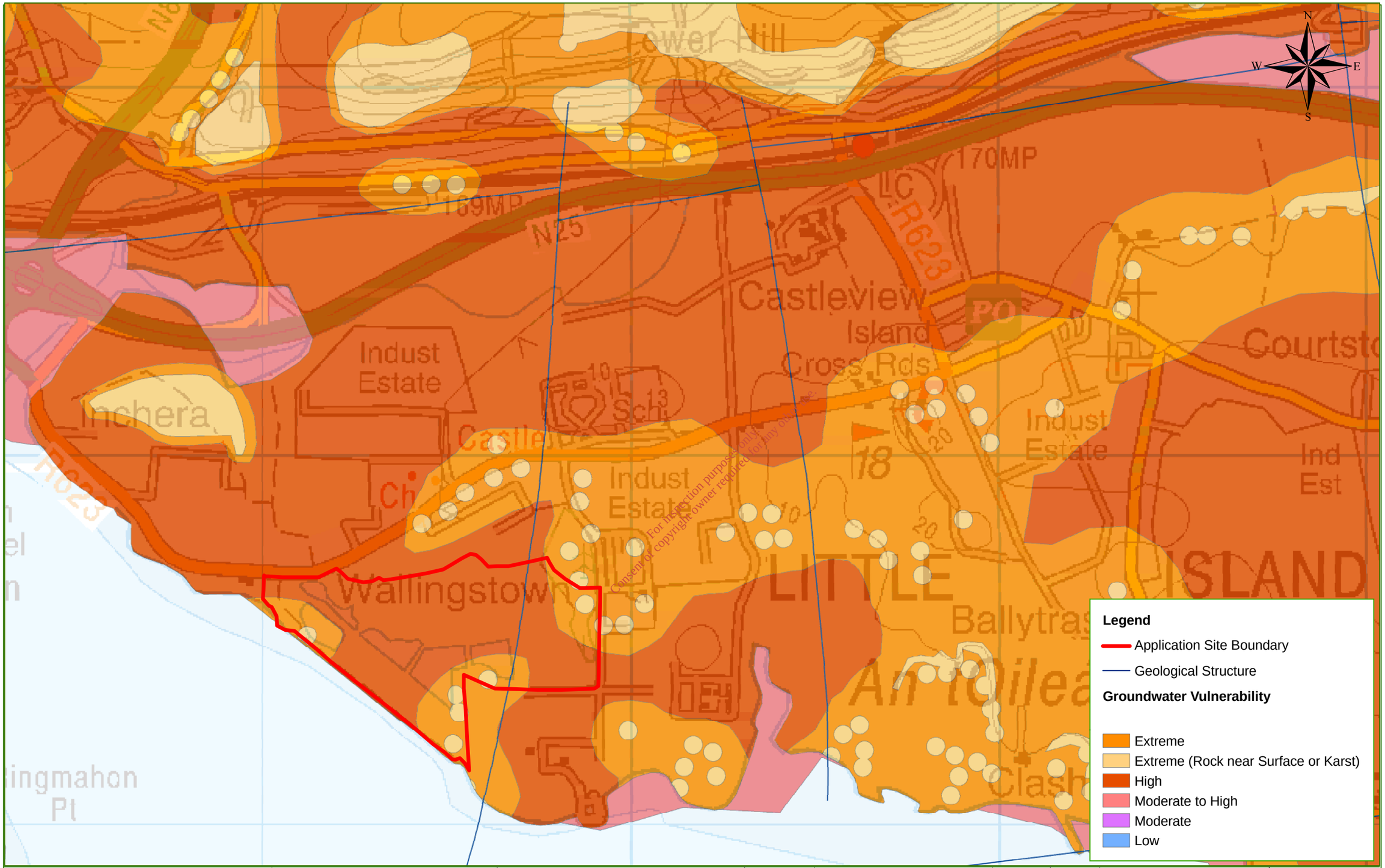
Client: **THORNBUSH HOLDINGS LTD.**	Project number: 07507120021	Created by: JH	Issue to: *Environmental Protection Agency*	Date: *MAY '08*	Revision: *B*	Title: *Bedrock Aquifer Designation*
Location: WALLINGSTOWN, LITTLE ISLAND, CO. CORK	File Location: GIS\THORNBUSH\FIGI.5	Checked by: CC	*Source: Geological Survey of Ireland*			Figure No. **I.5**
Project: WASTE LICENCE APPLICATION	ORDNANCE SURVEY OF IRELAND LICENCE NUMBER **AR0056008**	Approved by: CW				Scale: *1:10,000*



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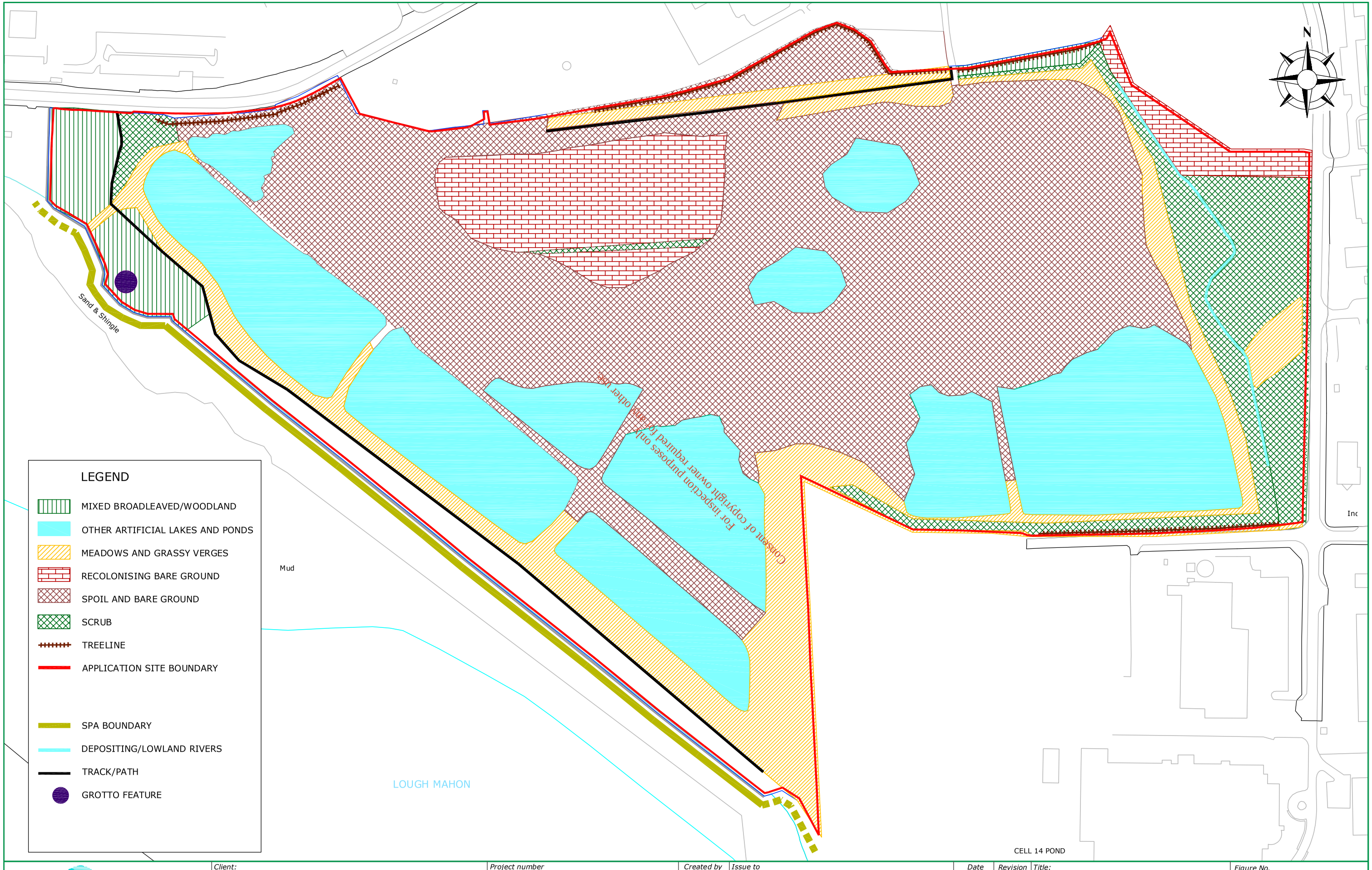
Client: **THORNBUSH HOLDINGS LTD.**	Project number: 07507120021	Created by: JH	Issue to: *Environmental Protection Agency*	Date: *MAY '08*	Revision: *B*	Title: *Groundwater Vulnerability*
Location: WALLINGSTOWN, LITTLE ISLAND, CO. CORK	File Location: GIS\THORNBUSH\FIGI.6	Checked by: CC	*Source: Geological Survey of Ireland*			Scale: *1:10,000*
Project: WASTE LICENCE APPLICATION	*ORDNANCE SURVEY OF IRELAND LICENCE NUMBER* **AR0056008**	Approved by: CW				

Figure No. **I.6**



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Client: **THORNBUSH HOLDINGS Ltd.**	*Project number* 07507120021	*Created by* CC	*Issue to* ISSUE TO CLIENT	*Date* May '08	*Revision* A
Location: WALLINGSTOWN, LITTLE ISLAND, CO. CORK	*File Location* GRAPHICS\2.LAND DEVELOPMENT \AUTOCAD\ THORNBUSH\WLA\I.7	*Checked by* DK	ISSUE TO EPA	May '08	A
Project: WASTE LICENCE APPLICATION	ORDNANCE SURVEY IRELAND LICENCE NUMBER **AR0056008**	*Reviewed by* GP			

Title: HABITAT MAP

Scale 1:1,250 A1 1:2,500 A3 1:3,750 A4

Figure No. **I.7**