

# Castleforbes Strategic Housing Development (SHD), Sheriff Street Upper, Dublin 1

Environmental Impact Assessment Report  
(EIAR) - Volume 3 Appendices

**BSM**

Est.  
1968

**Brady Shipman  
Martin**

**Built.  
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Environmental  
Assessment  
**Built  
Environment**

Client:

Glenveagh Living Ltd.

Date:

01 December 2020

DOCUMENT CONTROL SHEET

6608\_RP01\_Environmental Impact Assessment Report (EIAR) - Volume 3 Appendices

Project No. 6608  
Client: Glenveagh Living Ltd.  
Project Name: Castleforbes Strategic Housing Development (SHD), Sheriff Street Upper, Dublin 1  
Report Name: Environmental Impact Assessment Report (EIAR) - Volume 3 Appendices  
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## Contents

- A9.1 EPA - Impact Ratings and Assessment Criteria
- A9.2 NRA - Institute of Geologists of Ireland (IGI) Geological Impact Rating
- A9.3 Borehole and Window Sampling Logs 2018/2019
- A9.4 O' Callaghan Moran & Associates - *Environmental Desk Study and Waste Characterisation Assessment*
- A10.1 NRA -- Institute of Geologists of Ireland (IGI) Hydrology Impact Rating
- A11.1 Ambient Air Quality Standards
- A11.2 Dust Management Plan
- A14.1 Relevant Legislation
- A14.2 Glossary of Impact Assessment
- A18.1 Construction & Demolition (C&D) Waste Management Plan
- A18.2 Operational Waste Management Plan



## A9.1 EPA - Impact Ratings and Assessment Criteria





## Appendix A9.1

### Impact Ratings and Assessment Criteria (Soils, Geology and Hydrogeology)

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

Impact Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment
	Neutral	A change which does not affect the quality of the environment
	Negative/ Adverse	A change which reduces the quality of the environment
Significance	Imperceptible	An effect capable of measurement but without noticeable consequences
	Not significant	An effect which causes noticeable changes in the character of the environment but without noticeable consequences
	Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
	Moderate Effects	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends
	Significant Effects	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment
	Profound Effects	An impact which obliterates sensitive characteristics
Extent & Context	Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect
	Context	Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Probability	Likely Effects	The effects that can reasonably be expected to occur as a result of the planned project if all mitigation measures are properly implemented
	Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration	Momentary	Effects lasting from seconds to minutes
	Brief	Effects lasting less than a day
	Temporary	Effects lasting less than a year
	Short-term	Effects lasting one to seven years
	Medium-term	Effects lasting seven to fifteen years
	Long-term	Effects lasting fifteen to sixty years
	Permanent	Effects lasting over sixty years
Reversible Effects	Effects that can be undone, for example through remediation or restoration	

## Castleforbes Strategic Housing Development

### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

Impact Characteristic	Term	Description
	Frequency of Effects	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly daily, weekly, monthly, annually.
Type	Indirect Effects (a.k.a. Secondary Effects)	Impact on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative	The addition of many small impacts to create one larger, more significant impact
	‘Do Nothing’	The environment as it would be in the future should no development of any kind be carried out
	Worst case Effects	The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable	When the full consequences of a change in the environment cannot be described
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost
	Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken effect
	Synergistic	Where the resultant effect is of greater significance than the sum of its constituents

A9.2 NRA - Institute of Geologists of Ireland (IGI) Geological Impact  
Rating



## Appendix A9.2

### NRA - Institute of Geologists of Ireland (IGI) Geological Impact Rating

Table 1 Criteria for rating site importance of Geological Features (NRA)

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

Table 2 Criteria for rating impact magnitude at EIS stage – Estimation of magnitude of impact on soil / geology attribute (NRA)

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

Table 3 Criteria for rating Site Attributes - Estimation of Importance of Hydrogeology Attributes (NRA)

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

Table 4 Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Hydrogeology Attribute (NRA)

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

Table 5: Rating of Significant Environmental Impacts at EIS Stage (NRA)

Importance of Attribute	Magnitude of Importance			
	Negligible	Small Adverse	Moderate Adverse	Large Adverse
<b>Extremely High</b>	Imperceptible	Significant	Profound	Profound
<b>Very High</b>	Imperceptible	Significant/moderate	Profound/Significant	Profound
<b>High</b>	Imperceptible	Moderate/Slight	Significant/moderate	Profound/Significant
<b>Medium</b>	Imperceptible	Slight	Moderate	Significant
<b>Low</b>	Imperceptible	Imperceptible	Slight	Slight/Moderate

## A9.3 Borehole and Window Sampling Logs 2018/2019





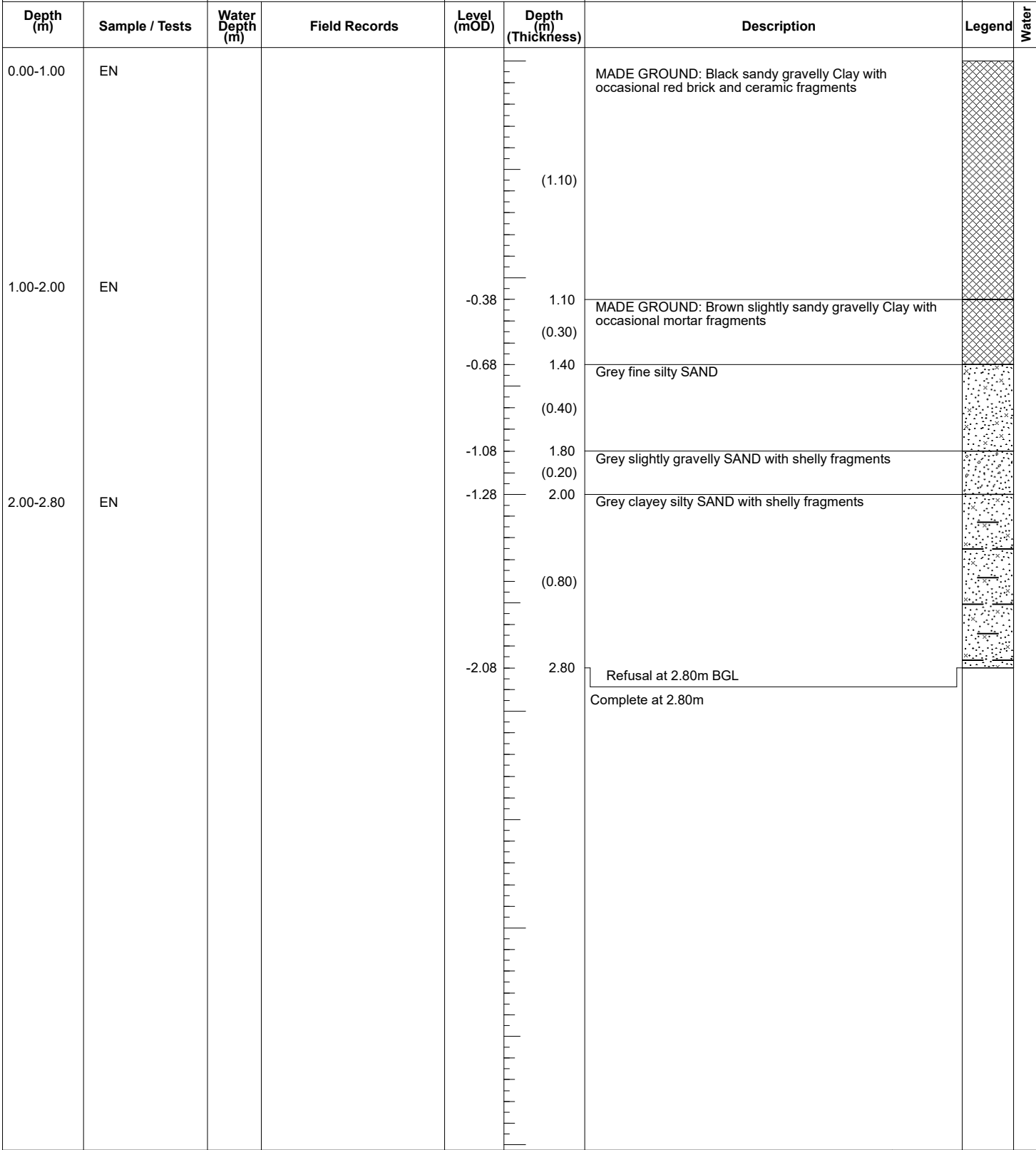


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**Site**  
Castleforbes Business Park

**Number**  
**WS01**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 2.80m	<b>Ground Level (mOD)</b> 0.72	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717619.1 E 734886.5 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1



<b>Remarks</b> 0.00 - 1.00m BGL 85% recovery Refusal at 2.80m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS01	



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**Site**  
Castleforbes Business Park

**Number**  
**WS02**

**Machine :** GEOTEC 10  
**Method :** Drive-in Windowless Sampler

**Dimensions**  
88mm to 2.00m  
68mm to 3.00m

**Ground Level (mOD)**  
0.73

**Client**  
DBFL Consulting Engineers

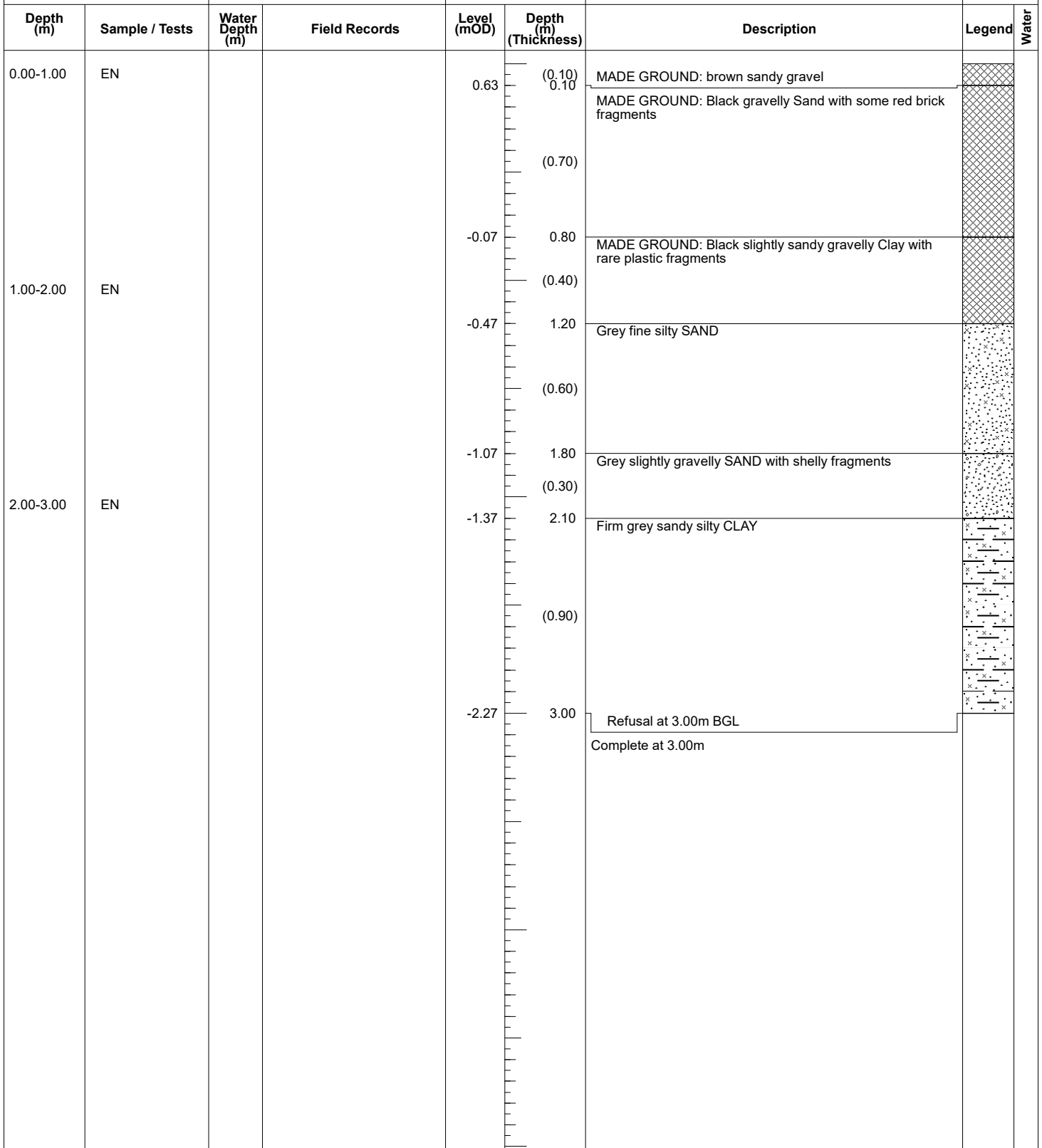
**Job Number**  
8108-10-18

**Location**  
717637.3 E 734872.5 N

**Dates**  
23/10/2018-  
02/11/2018

**Engineer**

**Sheet**  
1/1



**Remarks**  
Refusal at 3.00m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS02



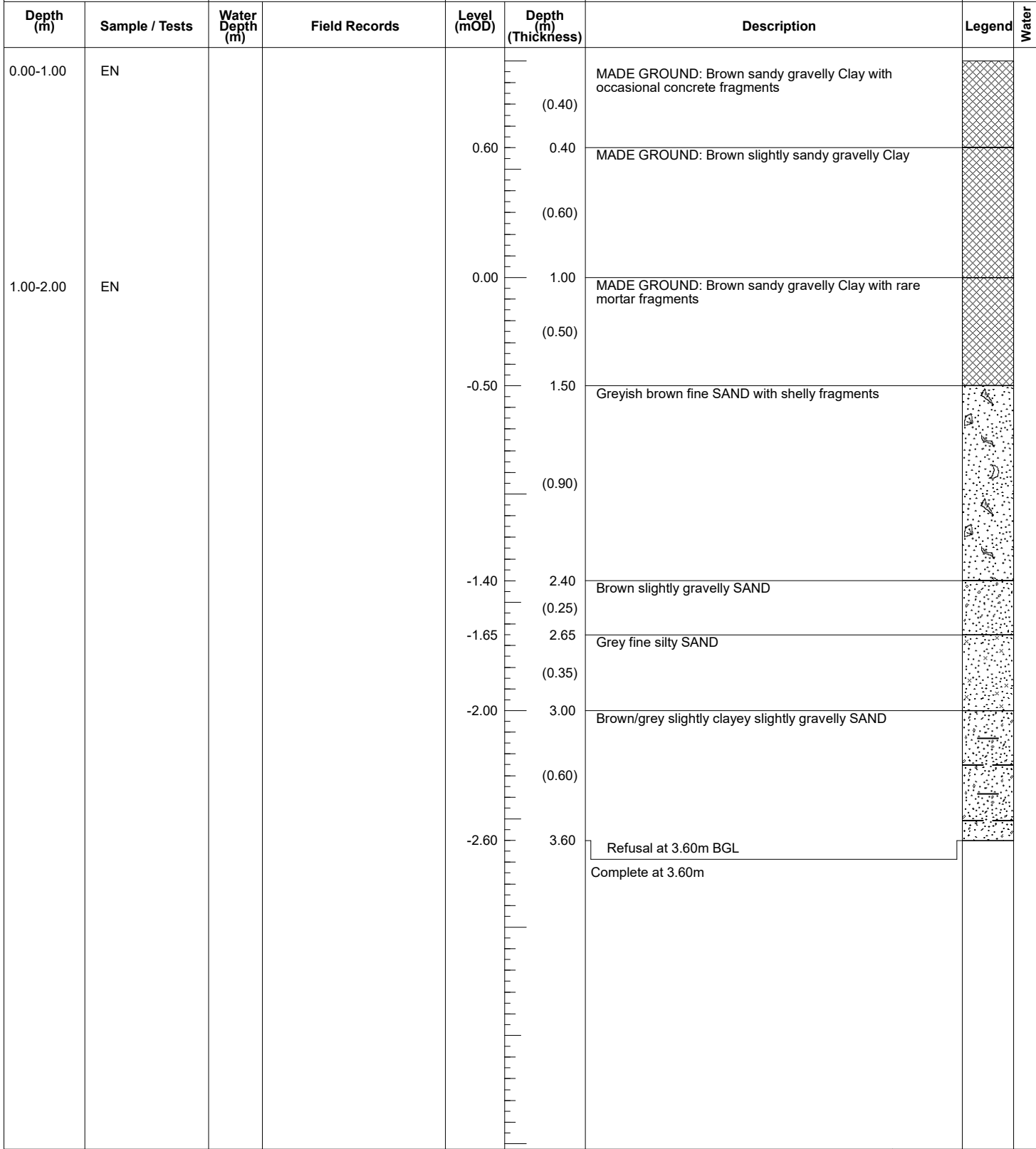
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**Site**  
Castleforbes Business Park

**Number**  
**WS03**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.60m	<b>Ground Level (mOD)</b> 1.00	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717669.1 E 734882.2 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1



<b>Remarks</b> 0.00 - 1.00m BGL 55% recovery 1.00 - 2.00m BGL 80% recovery 2.00 - 3.00m BGL 90% recovery Refusal at 3.60m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS03	



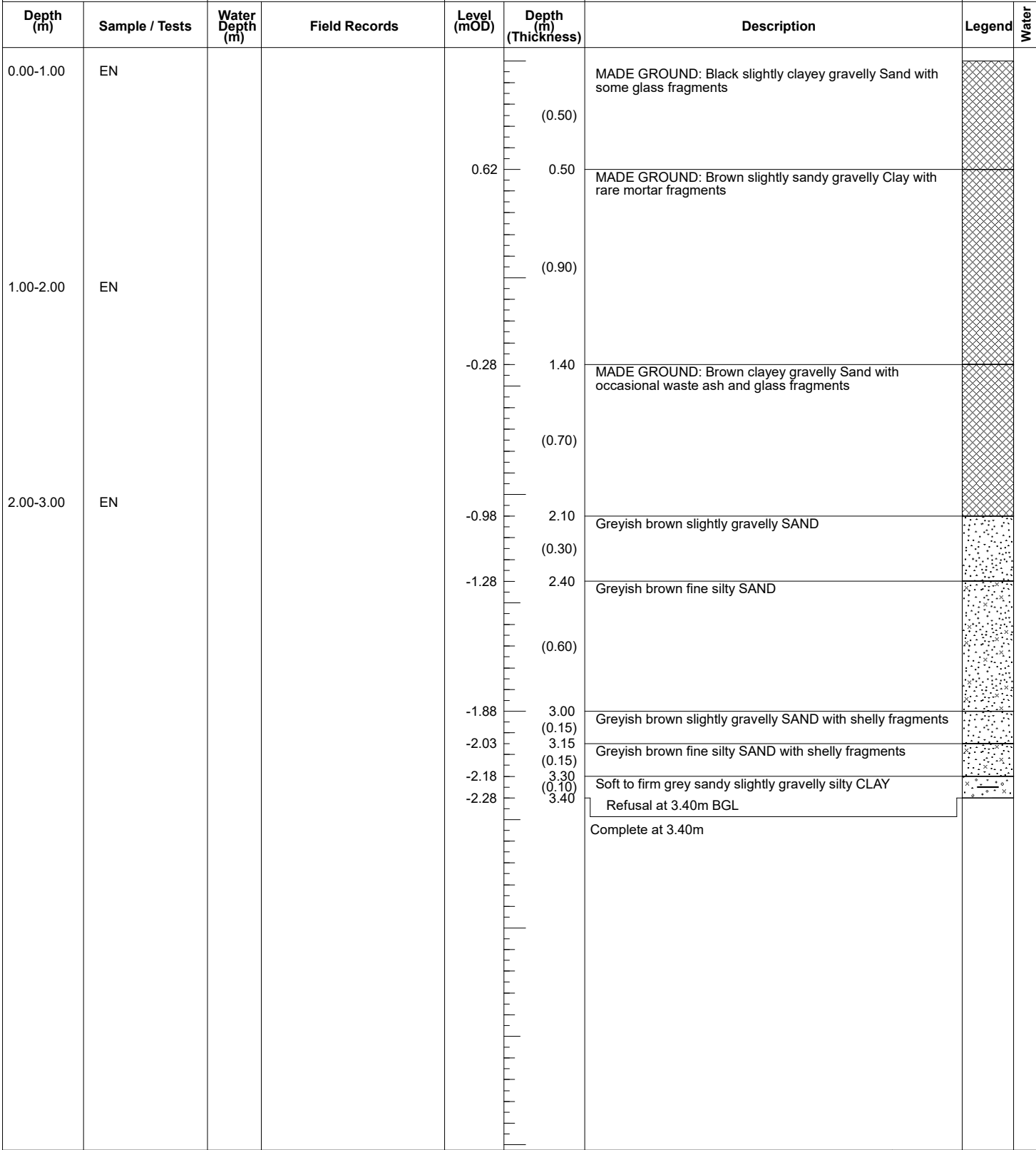
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**Site**  
Castleforbes Business Park

**Number**  
**WS04**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.40m	<b>Ground Level (mOD)</b> 1.12	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717701 E 734879 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1



<b>Remarks</b> 0.00 - 1.00m BGL 75% recovery 1.00 - 2.00m BGL 80% recovery 2.00 - 3.00m BGL 60% recovery Refusal at 3.40m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS04	



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**Site**  
Castleforbes Business Park

**Number**  
**WS05**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 2.75m	<b>Ground Level (mOD)</b> 1.06	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717730.1 E 734863.6 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN			0.51	0.55	MADE GROUND: Brown slightly clayey gravelly Sand		
					0.55	MADE GROUND: Dark brown sandy gravelly Clay with occasional red brick and mortar fragments		
2.00-2.75	EN			-0.64	1.70	Grey fine silty SAND		
					2.00	Brown slightly gravelly SAND		
					2.35	Soft grey clayey sandy slightly gravelly SILT with shelly fragments		
					2.75	Refusal at 2.75m BGL Complete at 2.75m		

<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery Refusal at 2.75m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS05	



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**Site**  
Castleforbes Business Park

**Number**  
**WS06**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.60m	<b>Ground Level (mOD)</b> 1.15	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717582.9 E 734853.9 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.00-1.00	EN				(0.35)	MADE GROUND: Black sandy gravelly Clay with occasional mortar fragments			
					0.80	(0.65)	MADE GROUND: Black gravelly Sand with occasional plastic fragments		
1.00-2.00	EN				0.15	MADE GROUND: Black clayey slightly gravelly Sand with occasional ceramic fragments			
					-0.20	(0.35)	MADE GROUND: Dark brown slightly sandy slightly gravelly clayey Silt with occasional mortar fragments		
2.00-3.00	EN				-0.60	1.75	Grey fine silty SAND		
					(0.55)				
					-1.15	2.30	Grey slightly gravelly SAND with shelly fragments		
					-1.30	(0.15)	2.45	Soft grey clayey slightly gravelly SILT	
					(0.65)				
					-1.95	3.10	Soft grey clayey sandy gravelly SILT		
					(0.50)				
					-2.45	3.60	Refusal at 3.60m BGL		
							Complete at 3.60m		

<b>Remarks</b> 0.00 - 1.00m BGL 55% recovery 1.00 - 2.00m BGL 85% recovery 2.00 - 3.00m BGL 90% recovery Refusal at 3.60m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS06	



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**Site**  
Castleforbes Business Park

**Number**  
**WS07**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 0.70m	<b>Ground Level (mOD)</b> 1.99	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717626.9 E 734856.4 N	<b>Dates</b> 23/10/2018-02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				1.29	0.70	MADE GROUND: Black sandy Gravel with occasional subangular cobbles  Refusal at 0.70m BGL Complete at 0.70m		

<b>Remarks</b> Refusal at 0.70m BGL	<b>Scale (approx)</b> 1:25	<b>Logged By</b> B
<b>Figure No.</b> 8108-10-18.WS07		



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**Site**  
Castleforbes Business Park

**Number**  
**WS08**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 1.00m	<b>Ground Level (mOD)</b> 1.99	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717667.7 E 734848.4 N	<b>Dates</b> 23/10/2018-02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				1.84	(0.15) 0.15	MADE GROUND: Brown slightly clayey sandy Gravel with some red brick fragments		
					(0.85)	MADE GROUND: Grey slightly sandy Gravel with occasional subangular-angular cobbles		
				0.99	1.00	Refusal at 1.00m BGL Complete at 1.00m		

<b>Remarks</b> 0.00 - 1.00m BGL 30% recovery Refusal at 1.00m BGL	<b>Scale (approx)</b> 1:25	<b>Logged By</b> EB
<b>Figure No.</b> 8108-10-18.WS08		





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**Site**  
Castleforbes Business Park

**Number**  
**WS09**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 2.80m	<b>Ground Level (mOD)</b> 0.81	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717683.4 E 734858 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN					MADE GROUND: Black clayey sandy Gravel with some red brick fragments		
				0.21	0.60 (0.60)	MADE GROUND: Black sandy gravelly Clay with occasional mortar fragments		
1.00-2.00	EN			-0.34	1.15 (0.25)	MADE GROUND: Grey slightly sandy slightly gravelly silty Clay with occasional plastic fragments		
				-0.59	1.40 (0.30)	Grey sandy silty CLAY		
				-0.89	1.70 (0.55)	Grey slightly gravelly SAND		
2.00-2.80	EN			-1.44	2.25 (0.55)	Grey fine silty SAND		
				-1.99	2.80	Refusal at 2.80m BGL Complete at 2.80m		

<b>Remarks</b> Refusal at 2.80m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS09	



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**Site**  
Castleforbes Business Park

**Number**  
**WS10**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.30m	<b>Ground Level (mOD)</b> 1.12	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method :</b> Drive-in Windowless Sampler	<b>Location</b> 717722.6 E 734847.4 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN					CONCRETE core		
				0.82	0.30	MADE GROUND: Dark brown clayey gravelly Sand with some mortar fragments		
					(0.85)			
1.00-2.00	EN			-0.03	1.15	MADE GROUND: Black slightly sandy slightly gravelly Clay with occasional mortar fragments. Hydrocarbon odour present		
					(0.35)			
				-0.38	1.50	Grey fine silty SAND		
					(0.50)			
				-0.88	2.00	Grey slightly gravelly SAND		
					(0.35)			
				-1.23	2.35	Grey sandy silty CLAY		
					(0.65)			
				-1.88	3.00	Grey slightly gravelly SAND with shelly fragments		
					(0.30)			
				-2.18	3.30	Refusal at 3.30m BGL Complete at 3.30m		

<b>Remarks</b> 2.00 - 3.00m 65% recovery Refusal at 3.30m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS10	



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**Site**  
Castleforbes Business Park

**Number**  
**WS11**

**Machine** : GEOTECH 10  
**Method** : Drive-in Windowless Sampler

**Dimensions**  
88mm to 0.60m

**Ground Level (mOD)**  
1.66

**Client**  
DBFL Consulting Engineers

**Job Number**  
8108-10-18

**Location**  
717752.9 E 734840.1 N

**Dates**  
23/10/2018-  
02/11/2018

**Engineer**

**Sheet**  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				1.51	(0.15) 0.15	MADE GROUND: Dark brown sandy Gravel		
					(0.45)	MADE GROUND: Brown sandy gravelly Clay with occasional red brick and mortar fragments		
				1.06	0.60	Refusal at 0.60m BGL Complete at 0.60m		

**Remarks**  
Refusal at 0.60m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS11



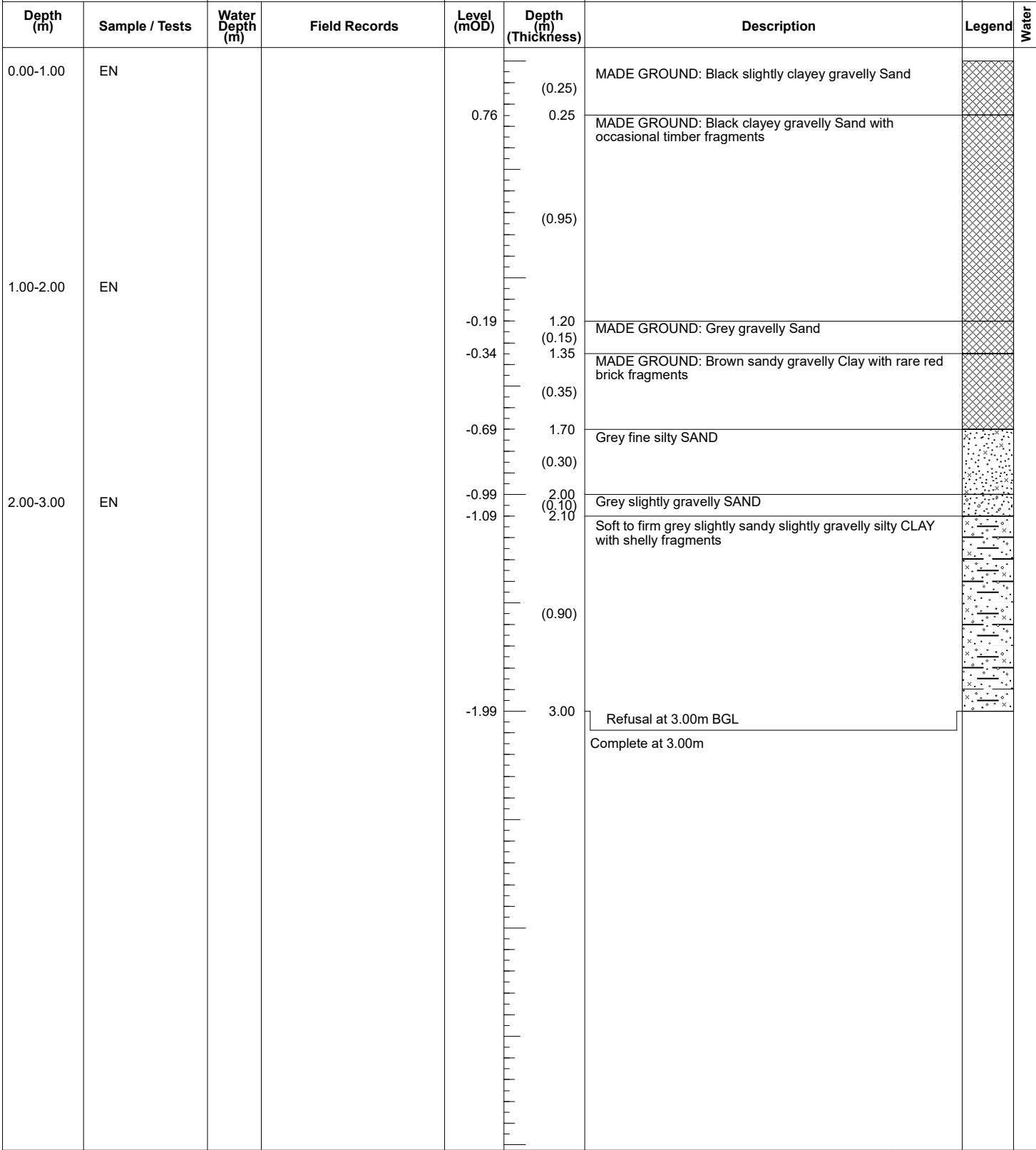
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**Site**  
Castleforbes Business Park

**Number**  
**WS12**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.00m	<b>Ground Level (mOD)</b> 1.01	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717570 E 734832.3 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1



<b>Remarks</b> 0.00 - 1.00m BGL 75% recovery 2.00 - 3.00m BGL 70% recovery Refusal at 3.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS12	



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**Site**  
Castleforbes Business Park

**Number**  
**WS14**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.50m	<b>Ground Level (mOD)</b> 2.03	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717624.4 E 734817.4 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.00-1.00	EN			1.73	(0.30)	MADE GROUND: Brown slightly gravelly Sand			
					0.30	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional red brick and mortar fragments			
1.00-2.00	EN			0.83	(0.90)				
					1.20	MADE GROUND: Grey sandy slightly gravelly Clay with rare plastic fragments			
2.00-3.00	EN			0.03	2.00	MADE GROUND: Black gravelly Sand			
					(0.15)				
					2.15	MADE GROUND: Dark brown sandy gravelly Silt with occasional mortar fragments			
					(0.40)				
					-0.52	2.55			MADE GROUND: Grey Sand
					(0.45)				
					-0.97	3.00			MADE GROUND: Dark brown slightly gravelly Sand with occasional red brick fragments
(0.30)									
				-1.27	3.30	MADE GROUND: Brown Sand			
					(0.30)				
					-1.57	3.60			MADE GROUND: Grey sandy Silt
					(0.40)				
					-1.97	4.00			MADE GROUND: Black slightly clayey slightly gravelly Sand with occasional red brick fragments
(0.30)									
				-2.27	4.30	Grey clayey sandy GRAVEL			
					(0.20)				
					-2.47	4.50			Refusal at 4.50m BGL Complete at 4.50m

<b>Remarks</b> 0.00 - 1.00m BGL 60% recovery 1.00 - 2.00m BGL 75% recovery 2.00 - 3.00m BGL 75% recovery 3.00 - 4.00m BGL 70% recovery Refusal at 4.50m BGL	<b>Scale (approx)</b> 1:25	<b>Logged By</b> EB
<b>Figure No.</b> 8108-10-18.WS14		



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**Site**  
Castleforbes Business Park

**Number**  
**WS15**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.50m	<b>Ground Level (mOD)</b> 1.99	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717664.4 E 734816.8 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN			0.99	1.00 (0.15)	MADE GROUND: Brown/red slightly clayey sandy Gravel with many red brick fragments		
						MADE GROUND: Black fine Gravel		
						MADE GROUND: Dark brown sandy gravelly Clay with occasional mortar and red brick fragments		
2.00-3.00	EN			-0.01	2.00 (0.25)	MADE GROUND: Dark brown sandy gravelly Silt with rare plastic fragments		
						POSSIBLE MADE GROUND: Grey sandy slightly gravelly clayey Silt		
						Grey slightly gravelly SAND		
3.00-4.00	EN			-1.16	3.15 (0.25)	Soft to firm grey sandy slightly gravelly clayey SILT		
						Grey slightly gravelly SAND		
						Firm grey sandy slightly gravelly clayey SILT		
4.00-4.50	EN			-2.16	4.15 (0.15)	Refusal at 4.50m BGL		
						Complete at 4.50m		

<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery 1.00 - 2.00m BGL 85% recovery 2.00 - 3.00m BGL 50% recovery 3.00 - 4.00m BGL 65% recovery Refusal at 4.50m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS15	



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**Site**  
Castleforbes Business Park

**Number**  
**WS16**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.00m	<b>Ground Level (mOD)</b> 2.02	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717688.8 E 734810.6 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.00-1.00	EN			1.57	0.45	MADE GROUND: Black slightly sandy gravelly Clay with occasional mortar fragments			
					(0.45)	MADE GROUND: Grey slightly clayey gravelly Sand			
1.00-2.00	EN			0.82	1.20	MADE GROUND: Brown/black slightly sandy gravelly Clay with occasional yellow brick fragments			
					(0.50)	MADE GROUND: brown sandy gravelly Clay with rare yellow brick fragments			
2.00-3.00	EN			0.32	1.70	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional mortar fragments			
					(0.30)	Grey fine silty SAND with shelly fragments			
					-0.63	2.65			Grey slightly gravelly SAND with shelly fragments
					-1.18	3.20			Grey sandy silty CLAY
				-1.63	3.65	Refusal at 4.00m BGL			
				-1.98	4.00	Complete at 4.00m			

<b>Remarks</b> 0.00 - 1.00m BGL 80% recovery 1.00 - 2.00m BGL 90% recovery 2.00 - 3.00m BGL 80% recovery 3.00 - 4.00m BGL 80% recovery Refusal at 4.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS16	



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**Site**  
Castleforbes Business Park

**Number**  
**WS17**

<b>Machine</b> : GEOTECH 10	<b>Dimensions</b> 88mm to 0.55m	<b>Ground Level (mOD)</b> 1.83	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717717.6 E 734809.9 N	<b>Dates</b> 23/10/2018-02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Reddish brown sandy Gravel		
				1.63	0.20 (0.15)	MADE GROUND: Brown sandy gravelly Clay with rare red brick and mortar fragments		
				1.48	0.35 (0.20)	MADE GROUND: Grey/brown sandy Gravel with some red brick fragments		
				1.28	0.55	Refusal at 0.55m BGL Complete at 0.55m		

<b>Remarks</b> Refusal at 0.55m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS17	





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**Site**  
Castleforbes Business Park

**Number**  
**WS18**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.20m	<b>Ground Level (mOD)</b> 1.83	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717742.5 E 734819.6 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN					MADE GROUND: Dark brown sandy gravelly Clay with occasional red brick and concrete fragments		
1.00-2.00	EN			0.83	1.00 (0.40)	MADE GROUND: Greyish brown sandy slightly gravelly Clay with rare plastic fragments		
				0.43	1.40 (0.45)	MADE GROUND: Brown slightly gravelly Clay with rare red brick fragments		
2.00-3.00	EN			-0.02	1.85 (0.40)	MADE GROUND: Brown slightly clayey slightly gravelly Sand with occasional mortar fragments		
				-0.42	2.25 (0.40)	Greyish brown fine SAND		
				-0.82	2.65 (0.35)	Greyish brown slightly gravelly SAND		
3.00-4.00	EN			-1.17	3.00 (0.15)	Greyish brown fine SAND		
				-1.32	3.15 (0.50)	Greyish brown slightly gravelly SAND		
				-1.82	3.65 (0.10)	Soft to firm grey sandy SILT. Sand is fine		
				-1.92	3.75 (0.45)	Grey slightly clayey sandy GRAVEL		
				-2.37	4.20	Refusal at 4.20m BGL Complete at 4.20m		

<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery 2.00 - 3.00m BGL 80% recovery 3.00 - 4.00m BGL 75% recovery Refusal at 4.20m BGL	<b>Scale (approx)</b> 1:25	<b>Logged By</b> EB
<b>Figure No.</b> 8108-10-18.WS18		



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**Site**  
Castleforbes Business Park

**Number**  
**WS19**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.75m	<b>Ground Level (mOD)</b> 1.72	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717776 E 734811.5 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(0.35)	CONCRETE core		
				1.37	0.35 (0.40)	MADE GROUND: Brown slightly clayey gravelly Clay with frequent yellow and red brick fragments		
				0.97	0.75 (0.50)	MADE GROUND: Black clayey gravelly Sand with many mortar fragments		
				0.47	1.25 (1.10)	MADE GROUND: Grey/brown sandy gravelly Clay with occasional ceramic and red brick fragments		
2.00-3.00	EN			-0.63	2.35 (0.35)	Grey fine silty SAND		
				-0.98	2.70 (0.80)	Brown/grey slightly gravelly SAND		
				-1.78	3.50 (0.25)	Grey silty slightly gravelly SAND		
				-2.03	3.75	Refusal at 3.75m BGL Complete at 3.75m		

<b>Remarks</b> 2.00 - 3.00m BGL 80% recovery Refusal at 3.75m BGL	<b>Scale (approx)</b> 1:25	<b>Logged By</b> EB
<b>Figure No.</b> 8108-10-18.WS19		



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**Site**  
Castleforbes Business Park

**Number**  
**WS20**

<b>Machine</b> : GEOTECH 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.80m	<b>Ground Level (mOD)</b> 1.32	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717810.2 E 734799.8 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(0.65)	CONCRETE core		
				0.67	0.65	MADE GROUND: grey slightly gravelly silty Sand		
				0.17	1.15	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional ceramic fragments		
2.00-3.00	EN				(0.85)			
				-0.68	2.00	Grey fine silty SAND		
				-1.03	2.35	Grey slightly gravelly SAND with shelly fragments		
3.00-3.80	EN				(0.55)			
				-1.58	2.90	Grey fine silty SAND		
				-1.78	3.10	Grey slightly gravelly SAND with shelly fragments		
				-2.13	3.45	Soft grey sandy gravelly silty CLAY		
				-2.48	3.80	Refusal at 3.80m BGL Complete at 3.80m		

<b>Remarks</b> Refusal at 3.80m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS20	



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**Site**  
Castleforbes Business Park

**Number**  
**WS21**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 3.90m	<b>Ground Level (mOD)</b> 1.40	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717543.8 E 734802.6 N	<b>Dates</b> 24/10/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.25-0.75	EN			1.25	(0.15)	CONCRETE core		
				0.95	0.15	MADE GROUND: Brown clayey gravelly Sand with some red brick and mortar fragments		
1.00-2.00	EN			0.80	0.30	MADE GROUND: Brown slightly gravelly silty Clay		
				0.45	0.15	MADE GROUND: Brown clayey gravelly Sand with some mortar fragments		
2.00-3.00	EN			0.45	0.35	MADE GROUND: Black sandy Gravel		
				0.05	0.40	MADE GROUND: Dark brown sandy gravelly Clay with frequent mortar fragments		
3.00-3.90	EN			-0.40	1.35	MADE GROUND: Brown slightly sandy gravelly Clay with occasional red brick fragments		
				-0.80	0.45	Grey slightly clayey slightly gravelly SAND with articulated and disarticulated shell fragments (Strong hydrocarbon odour)		
3.00-3.90	EN			-1.40	1.80	Grey slightly gravelly clayey SILT (Strong hydrocarbon odour)		
				-1.80	0.40	Grey SAND with shelly fragments. Sand is coarse (Strong hydrocarbon odour)		
				-2.20	0.60	Grey slightly gravelly clayey SILT (Strong hydrocarbon odour)		
				-2.50	3.20	Refusal at 3.90m BGL Complete at 3.90m		

<b>Remarks</b> 1.00 - 2.00m BGL 90% recovery 2.00 - 3.00m BGL 80% recovery Refusal at 3.90m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS21	



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**Site**  
Castleforbes Business Park

**Number**  
**WS22**

**Machine :** GEOTEC 10  
**Method :** Drive-in Windowless Sampler

**Dimensions**  
88mm to 0.60m

**Ground Level (mOD)**  
1.98

**Client**  
DBFL Consulting Engineers

**Job Number**  
8108-10-18

**Location**  
717572.5 E 734802.1 N

**Dates**  
24/10/2018

**Engineer**

**Sheet**  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				1.38	0.60	MADE GROUND: Reddish brown clayey slightly gravelly Sand with many red brick fragments  Refusal at 0.60m BGL Complete at 0.60m		

**Remarks**  
Refusal at 0.60m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS22



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**Site**  
Castleforbes Business Park

**Number**  
**WS23**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 1.60m	<b>Ground Level (mOD)</b> 2.01	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717593.1 E 734795.8 N	<b>Dates</b> 24/10/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.25-0.75	EN			1.86	(0.15) 0.15	MADE GROUND: Grey/black sandy Gravel		
					(1.15)	MADE GROUND: Dark brown sandy gravelly Clay with frequent mortar and red brick fragments		
1.00-1.60	EN			0.71	1.30	MADE GROUND: Black very sandy gravelly Clay with occasional waste ash fragments		
				0.41	(0.30) 1.60	Refusal at 1.60m BGL Complete at 1.60m		

<b>Remarks</b> 0.00 - 1.00m BGL 55% recovery Refusal at 1.60m BGL	<b>Scale (approx)</b> 1:25	<b>Logged By</b> EB
	<b>Figure No.</b> 8108-10-18.WS23	



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**Site**  
Castleforbes Business Park

**Number**  
**WS24**

**Machine :** GEOTEC 10  
**Method :** Drive-in Windowless Sampler

**Dimensions**  
68mm to 1.00m

**Ground Level (mOD)**  
1.93

**Client**  
DBFL Consulting Engineers

**Job Number**  
8108-10-18

**Location**  
717624.1 E 734795.4 N

**Dates**  
23/10/2018-  
02/11/2018

**Engineer**

**Sheet**  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN			0.93	1.00	MADE GROUND: Dark brown sandy ground clay with occasional mortar and red brick fragments  Refusal at 1.00m BGL Complete at 1.00m		

**Remarks**  
Refusal at 1.00m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS24



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**Site**  
Castleforbes Business Park

**Number**  
**WS25**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 1.00m 68mm to 1.20m	<b>Ground Level (mOD)</b> 1.98	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method :</b> Drive-in Windowless Sampler	<b>Location</b> 717662.2 E 734789.3 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				0.78	1.20	MADE GROUND: Dark brown sandy gravelly Clay with frequent red brick and mortar fragments  (1.20)  Refusal at 1.20m BGL Complete at 1.20m		

<b>Remarks</b> Refusal at 1.20m BGL	<b>Scale (approx)</b> 1:25	<b>Logged By</b> EB
<b>Figure No.</b> 8108-10-18.WS25		





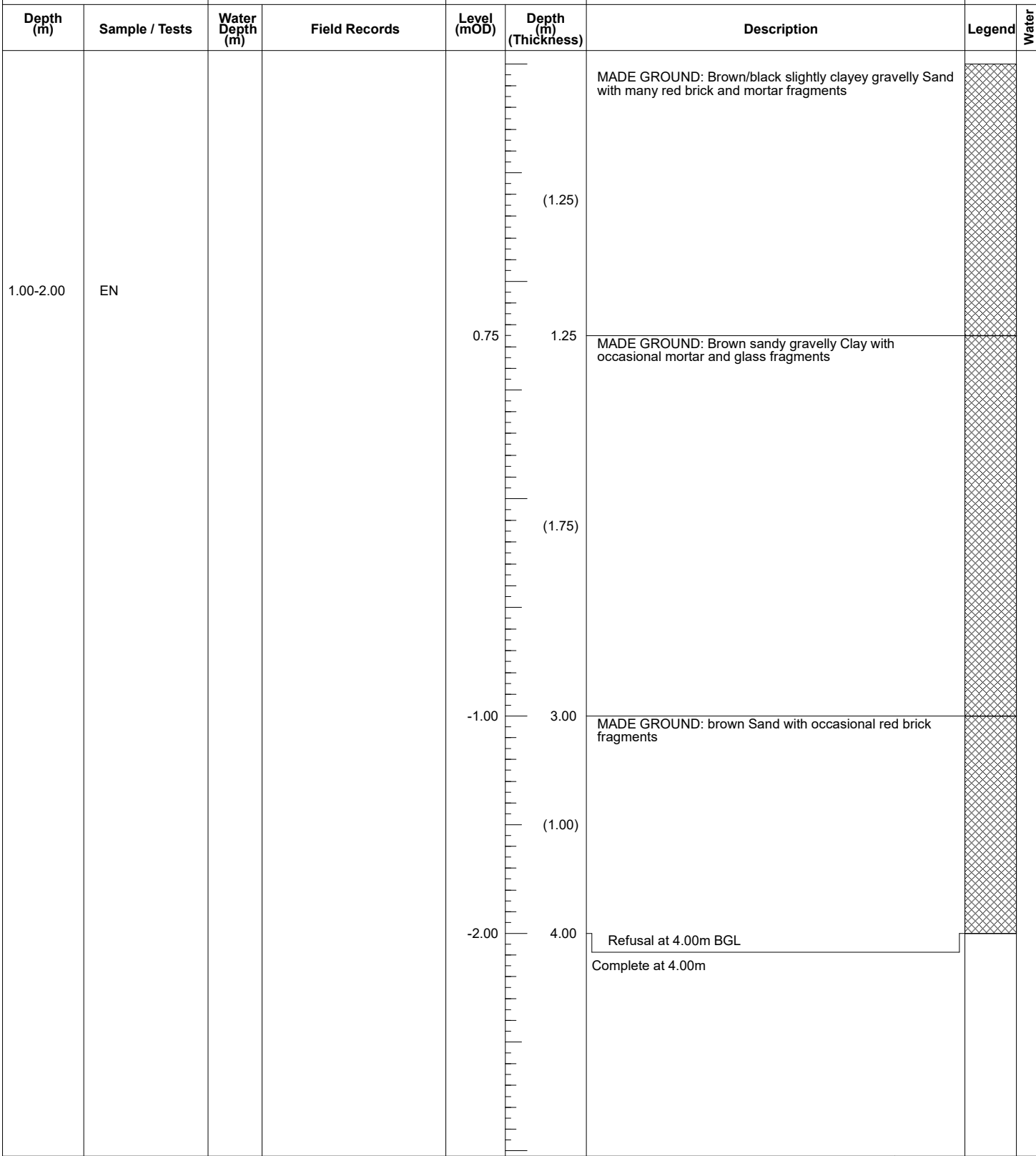
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**Site**  
Castleforbes Business Park

**Number**  
**WS26**

<b>Machine</b> : GEOTECH 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.00m	<b>Ground Level (mOD)</b> 2.00	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717684.8 E 734789.3 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1



<b>Remarks</b> 0.00 - 1.00m BGL 65% recovery 1.00 - 2.00m BGL 90% recovery 2.00 - 3.00m BGL 35% recovery 3.00 - 4.00m BGL 40% recovery Refusal at 4.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS26	



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**Site**  
Castleforbes Business Park

**Number**  
**WS28**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.00m	<b>Ground Level (mOD)</b> 1.77	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717750.4 E 734786.8 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN			0.62	(1.15) 1.15	MADE GROUND: Grey slightly clayey sandy Gravel with occasional ceramic fragments		
2.00-3.00	EN			-0.23	(0.85) 2.00	MADE GROUND: Brown sandy gravelly Clay with occasional glass and ceramic fragments		
				-0.83	(0.60) 2.60	MADE GROUND: Brown slightly sandy slightly gravelly Clay with rare red brick fragments. Hydrocarbon odour present		
				-1.73	(0.90) 3.50	Brown slightly gravelly SAND. (Strong hydrocarbon odour)		
				-1.83	(0.10) 3.60	Grey fine silty SAND. (Strong hydrocarbon odour)		
						Refusal at 3.60m BGL		
						Complete at 4.00m		

<b>Remarks</b> 0.00 - 1.00m BGL 40% recovery 1.00 - 2.00m BGL 90% recovery 2.00 - 3.00m BGL 80% recovery 3.00 - 4.00m BGL 60% recovery Refusal at 4.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS28	



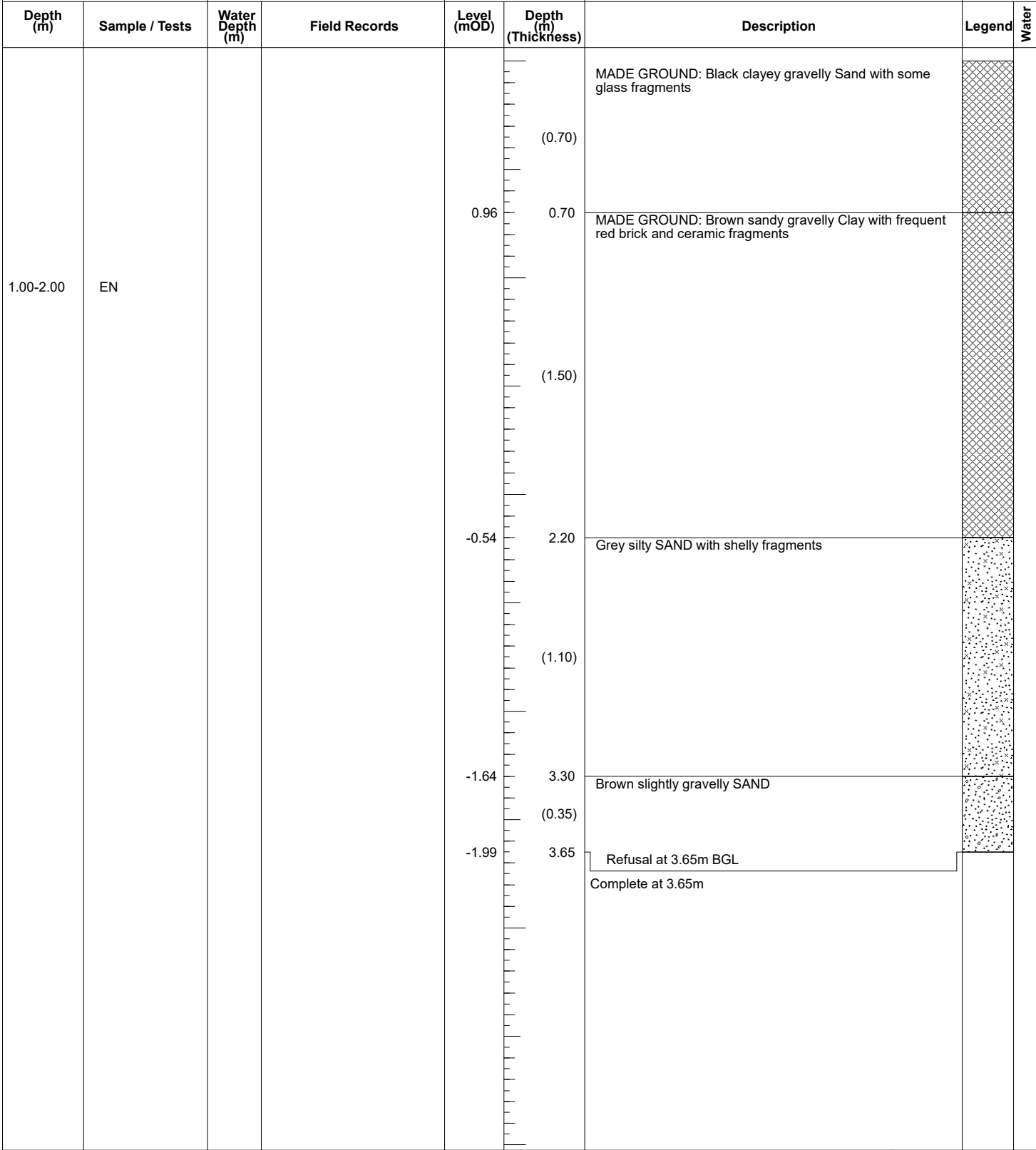
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**Site**  
Castleforbes Business Park

**Number**  
**WS29**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.65m	<b>Ground Level (mOD)</b> 1.66	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717770.6 E 734793.7 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1



<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery 2.00 - 3.00m BGL 70% recovery Refusal at 3.65m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS29	



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**Site**  
Castleforbes Business Park

**Number**  
**WS30**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.00m	<b>Ground Level (mOD)</b> 3.66	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717810.4 E 734779.9 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(2.00)	MADE GROUND: Brown sandy gravelly Clay with frequent red brick, mortar and plastic fragments		
2.00-3.00	EN			1.66	2.00 (0.60)	MADE GROUND: Black sandy gravelly Clay with rare mortar fragments		
3.00-4.00	EN			1.06	2.60 (0.40)	MADE GROUND: Light brown sandy gravelly Clay		
				0.66	3.00 (0.20)	MADE GROUND: Brown sandy gravelly Clay with occasional red brick fragments		
				0.46	3.20 (0.40)	MADE GROUND: Grey slightly sandy slightly gravelly Clay		
				0.06	3.60 (0.25)	MADE GROUND: Brown slightly sandy slightly gravelly Clay		
				-0.19	3.85 (0.15)	MADE GROUND: Black slightly gravelly Clay with rare ceramic fragments		
				-0.34	4.00	Refusal at 4.00m BGL Complete at 4.00m		

<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery 1.00 - 2.00m BGL 85% recovery 2.00 - 3.00m BGL 90% recovery Refusal at 4.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS30	



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**Site**  
Castleforbes Business Park

**Number**  
**WS31**

<b>Machine</b> : GEOTECH 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 6.00m	<b>Ground Level (mOD)</b> 3.51	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717836.5 E 734771.6 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN					MADE GROUND: Brown sandy gravelly Clay with frequent red brick and plastic fragments		
1.00-2.00	EN				(2.25)			
2.00-3.00	EN			1.26	2.25 (0.20)	MADE GROUND: Black sandy gravelly Clay with frequent red brick fragments		
3.00-4.00	EN			1.06	2.45	MADE GROUND: Brown sandy slightly gravelly Clay with occasional red brick and plastic fragments		
4.00-5.00	EN				(2.05)			
				-0.99	4.50 (0.15)	Grey fine silty SAND		
				-1.14	4.65 (0.55)	Grey slightly gravelly SAND with shelly fragments		

<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery 1.00 - 2.00m BGL 65% recovery 2.00 - 3.00m BGL 70% recovery 3.00 - 4.00m BGL 70% recovery 5.00 - 6.00m BGL 40% recovery Refusal at 6.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS31	



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**Site**  
Castleforbes Business Park

**Number**  
**WS31**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 6.00m	<b>Ground Level (mOD)</b> 3.51	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> 717836.5 E 734771.6 N	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 2/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
5.00-6.00	EN			-1.69	5.20	Grey fine silty SAND with shelly fragments		
					(0.80)			
				-2.49	6.00	Refusal at 6.00m BGL Complete at 6.00m		

<b>Remarks</b>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> EB
	<b>Figure No.</b> 8108-10-18.WS31	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH01**

<b>Machine</b> : Dando 2000 & Beretta T47S <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 10.30m 150mm cased to 18.70m 100mm cased to 35.40m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 27/11/2018-15/01/2019	<b>Engineer</b>	<b>Sheet</b> 3/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.40-20.85 20.40					6,8/10,10,13,15 SPT(C) N=48		20.40	OVERBURDEN: Driller notes black slightly sandy slightly gravelly silty CLAY with occasional cobbles. Recovery consists of black slightly sandy slightly gravelly silty CLAY. (Very Stiff)		
	30					(1.50)				
21.90-22.29 21.90					5,9/14,14,16,6 SPT(C) 50/240		21.90	OVERBURDEN: Driller notes black slightly sandy slightly gravelly silty CLAY with occasional cobbles. Recovery consists of multicoloured subangular to subrounded fine to coarse Gravel with occasional cobble fragments and occasional black slightly sandy slightly gravelly silty Clay. (Very Stiff)		
	10									
23.40-23.85 23.40					4,4/6,7,7,8 SPT(C) N=28					
	0									
24.90-25.35 24.90					3,5/6,6,6,8 SPT(C) N=26		(7.50)			
	17									
26.40-26.79 26.40					6,10/14,15,17,4 SPT(C) 50/240					
	17									
27.90-28.33 27.90					5,7/11,13,13,13 SPT(C) 50/280					
	17									
29.40-29.84 29.40					8,13/21,29 SPT(C) 50/290		29.40	Weak to medium strong thinly laminated black calcareous MUDSTONE interbedded with a medium strong to strong thinly laminated to thinly bedded dark grey fine grained LIMESTONE. The mudstone is partially weathered to		

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	SC + JC
	<b>Figure No.</b> 8108-10-18.BH01	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
BH01

<b>Machine</b> : Dando 2000 & Beretta T47S <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 10.30m 150mm cased to 18.70m 100mm cased to 35.40m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 27/11/2018-15/01/2019	<b>Engineer</b>	<b>Sheet</b> 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
30.90	85	17	11					residual with a clay smearing along fractures. The limestone is partially to distinctly weathered with occasional calcite veins.  29.40m to 35.40m - Mostly non-intact		
32.40	57	2	0	NI		(6.00)				
33.90	87	26	20							
35.40	80	4	0			35.40				
								Complete at 35.40m		

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	SC + JC
	<b>Figure No.</b> 8108-10-18.BH01	





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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH02**

<b>Machine</b> : Dando 2000 & Beretta T47s	<b>Casing Diameter</b> 200mm cased to 14.30m 150mm cased to 22.00m 100mm cased to 30.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Location</b>	<b>Dates</b> 07/11/2018-04/01/2019	<b>Engineer</b>	<b>Sheet</b> 1/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B					0.10	CONCRETE		
1.00-1.45 1.00	SPT(C) N=2 B			0,1/1,0,0,1		(1.70)	MADE GROUND: Dark brown sandy gravelly Clay with fragments of red brick		
2.00-2.45 2.00	SPT(C) N=3 B			1,1/1,0,1,1		1.80 (1.10)	Soft grey/brown slightly sandy slightly gravelly SILT		
3.00 3.00-3.45	B SPT(C) N=19			Water strike(1) at 2.90m, rose to 2.80m in 20 mins. 2,3/4,4,5,6		2.90	Medium dense to dense grey sandy coarse rounded GRAVEL		▼1
4.00-4.45 4.00	SPT(C) N=22 B			2,3/3,5,7,7		(2.10)			
5.00-5.40 5.00	SPT(C) 50/250 B			3,5/7,8,10,25		5.00	Medium dense to dense grey very sandy fine to coarse angular to sub-rounded GRAVEL		
6.00-6.45 6.00	SPT(C) N=36 B			4,5/7,8,10,11					
7.00-7.20 7.00	SPT(C) 50/50 B			25/50		(4.40)			
8.00-8.45 8.00	SPT(C) N=34 B			2,4/7,10,8,9					
9.00-9.38 9.00	SPT(C) 50/230 B			4,7/9,13,28					
10.00-10.45	SPT(C) N=10			1,2/2,2,3,3		9.40	Medium dense grey slightly clayey fine to coarse SAND		

<b>Remarks</b> Cable Percussion from 0.00m to 22.00m BGL with Rotary Core follow on 22.00m to 30.90m BGL Borehole backfilled upon completion	<b>Scale (approx)</b> 1:50	<b>Logged By</b> S. Connolly
<b>Figure No.</b> 8108-10-18.BH02		



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH02**

<b>Machine</b> : Dando 2000 & Beretta T47s	<b>Casing Diameter</b> 200mm cased to 14.30m 150mm cased to 22.00m 100mm cased to 30.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Location</b>	<b>Dates</b> 07/11/2018-04/01/2019	<b>Engineer</b>	<b>Sheet</b> 2/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B								
11.00-11.45 11.00	SPT(C) N=12 B			2,3/3,3,3,3		(3.80)			
12.00-12.45 12.00	SPT(C) N=15 B			2,2/3,3,4,5					
13.00-13.45 13.00	SPT(C) N=31 B			3,4/5,7,9,10		13.20	Dense grey slightly sandy fine to coarse rounded GRAVEL with many cobbles		
14.00-14.45 14.00	SPT(C) N=32 B			4,5/6,7,8,11		14.30 (0.50)	Stiff black slightly sandy slightly gravelly CLAY with many cobbles		
15.00-15.45 15.00	SPT(C) N=21 B			2,4/4,5,6,6		14.80	Dense grey sandy medium to coarse rounded GRAVEL with many cobbles		
16.00-16.40 16.00	SPT(C) 50/245 B			3,3/4,5,8,33		(2.60)			
17.00-17.45 17.00	SPT(C) N=32 B			2,3/5,7,9,11		17.40 (0.60)	Stiff black/brown slightly sandy slightly gravelly CLAY with many cobbles		
18.00-18.45 18.00	SPT(C) N=32 B			3,5/7,7,8,10		18.00 (1.00)	Dense grey sandy fine to medium rounded GRAVEL with many cobbles		
19.00-19.45 19.00	SPT(C) N=40 B			4,6/7,9,11,13		19.00	Dense dark grey/brown clayey fine to coarse SAND		
20.00-20.45	SPT(C) N=24			3,4/5,5,7,7					

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	S. Connolly
	<b>Figure No.</b> 8108-10-18.BH02	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH02**

<b>Machine :</b> Dando 2000 & Beretta T47s  <b>Method :</b> Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 14.30m 150mm cased to 22.00m 100mm cased to 30.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 07/11/2018-04/01/2019	<b>Engineer</b>	<b>Sheet</b> 3/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.00	B					(3.00)			
21.00 21.00-21.45	B SPT(C) N=31			4,5/6,8,8,9					
22.00 22.00-22.13 22.00	<b>TCR</b> <b>SCR</b> <b>RQD</b> <b>FI</b>			25/50 B SPT(C)		22.00	OVERBURDEN: Driller notes grey sandy fine to coarse rounded GRAVEL with many cobbles. Recovery consists of grey rounded cobble fragments		
23.40-23.85 23.40	9   -			2,4/4,5,6,5 SPT(C) N=20		(1.40)			
24.90-25.35 24.90	0   -			4,6/8,8,14,13 SPT(C) N=43		23.40	OVERBURDEN: No recovery		
26.40-26.60 26.40	77   -			9,15/50 SPT(C) 50/45		(1.50)			
27.90-28.19 27.90	41   -			8,13/21,29 SPT(C) 50/135		24.90	OVERBURDEN: Recovery consists of black slightly sandy gravelly CLAY with many cobbles		
29.40-29.78 29.40	15   -			6,10/15,16,17,2 SPT(C) 50/230		(3.00)			
						27.90	OVERBURDEN: Driller notes grey/brown sandy fine to coarse rounded GRAVEL with occasional cobbles. Recovery consists of grey rounded cobble fragments		
						(1.50)			
						29.40	OVERBURDEN: Recovery consists of brown fine to coarse SAND		

<b>Remarks</b> Chiselling from 21.90m to 22.00m for 1 hour.	<b>Scale (approx)</b> 1:50	<b>Logged By</b> S. Connolly
<b>Figure No.</b> 8108-10-18.BH02		



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH02**

<b>Machine</b> : Dando 2000 & Beretta T47s <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 14.30m 150mm cased to 22.00m 100mm cased to 30.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 07/11/2018-04/01/2019	<b>Engineer</b>	<b>Sheet</b> 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
	28	-					(1.50)			
30.90	<b>Sample / Tests</b>		<b>Casing Depth (m)</b>	<b>Water Depth (m)</b>			30.90	Complete at 30.90m		
30.90-31.30	SPT(C)	50/250			5,8/9,12,20,9					

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	S. Connolly
	<b>Figure No.</b> 8108-10-18.BH02	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH03**

<b>Machine</b> : Dando 2000 & Beretta T47s	<b>Casing Diameter</b> 200mm cased to 13.00m 100mm cased to 21.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Location</b>	<b>Dates</b> 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B					(0.30) 0.30	CONCRETE		
1.00-1.45 1.00	SPT(C) N=3 B			1,1/0,1,1,1		(1.90)	MADE GROUND: Brown sandy gravelly Clay with fragments of red brick		
2.00-2.45 2.00	SPT(C) N=4 B			1,2/1,1,1,1		2.20	Soft grey slightly sandy SILT		
3.00-3.45 3.00	SPT(C) N=4 B			1,0/1,1,1,1		(1.50)			
4.00-4.45 4.00	SPT(C) N=17 B			Water strike(1) at 3.60m, rose to 3.50m in 20 mins. 2,2/3,4,5,5		3.70	Medium dense grey sandy fine to coarse sub-angular to rounded GRAVEL		▼ V1
5.00-5.45 5.00	SPT(C) N=23 B			2,3/4,5,7,7					
6.00-6.45 6.00	SPT(C) N=28 B			3,5/5,7,7,9		(5.90)			
7.00-7.45 7.00	SPT(C) N=26 B			2,4/5,8,6,7					
8.00-8.45 8.00	SPT(C) N=28 B			3,3/5,9,6,8					
9.00-9.35 9.00	SPT(C) 50/200 B			4,5/8,11,31					
10.00-10.45	SPT(C) N=25			3,5/5,6,7,7		9.60	Stiff grey silty sandy CLAY		

<b>Remarks</b> Cable Percussion from 0.00m to 13.00m BGL with Rotary Core follow on 13.00m to 21.90m BGL Borehole backfilled upon completion	<b>Scale (approx)</b> 1:50	<b>Logged By</b> S. Connolly
<b>Figure No.</b> 8108-10-18.BH03		



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH03**

<b>Machine</b> : Dando 2000 & Beretta T47s	<b>Casing Diameter</b> 200mm cased to 13.00m 100mm cased to 21.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Location</b>	<b>Dates</b> 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B					(0.90)			
11.00 11.00-11.45	B SPT(C) N=34			6,7/7,8,9,10		10.50  (1.50)	Medium dense grey sandy fine to coarse rounded GRAVEL with many cobbles		
12.00 12.00-12.45	B SPT(C) N=30			4,5/6,6,9,9		12.00	Stiff black slightly sandy gravelly CLAY with many cobbles		
13.00 13.00	<b>TCR</b> <b>SCR</b> <b>RQD</b> <b>FI</b>			B		(2.40)			
14.40-14.85 14.40	13   -			4,4/6,7,6,8 SPT(C) N=27		14.40	OVERBURDEN: Driller notes black silty gravelly SAND with occasional cobbles. Recovery consists of grey fine to coarse rounded Gravel with occasional cobbles		
15.90-16.35 15.90	15   -			3,6/8,8,10,10 SPT(C) N=36		(4.50)			
17.40-17.85 17.40	17   -			4,7/9,11,14,14 SPT(C) N=48					
18.90-19.35 18.90	15   -			5,7/11,11,13,15 SPT(C) N=50		18.90	OVERBURDEN: Recovery consists of brown/grey silty fine SAND		
	7   -								

<b>Remarks</b> Chiselling from 12.90m to 13.00m for 1 hour.	<b>Scale (approx)</b> 1:50	<b>Logged By</b> S. Connolly
<b>Figure No.</b> 8108-10-18.BH03		



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**Site**  
Castleforbes Business Park  
**Borehole Number**  
**BH03**

<b>Machine</b> : Dando 2000 & Beretta T47s <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 13.00m 100mm cased to 21.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.40-20.61 20.40					7,14/50 SPT(C) 50/60		(3.00)			
	20	-								
21.90							21.90	Complete at 21.90m		
	<b>Sample / Tests</b>		<b>Casing Depth (m)</b>	<b>Water Depth (m)</b>						
21.90-22.27	SPT(C) 50/220				8,12/22,28					

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	S. Connolly
<b>Figure No.</b> 8108-10-18.BH03		



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH08**

<b>Machine</b> : Dando 2000 & Beretta T47S  <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 6.50m 150mm cased to 18.70m 100mm cased to 33.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 15/11/2018-24/01/2019	<b>Engineer</b>	<b>Sheet</b> 1/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B					(0.30)	CONCRETE		
						0.30	MADE GROUND: Brown sandy gravelly Clay with fragments of red brick		
1.00	B			1,1/0,1,1,1		(0.40)			
1.00-1.45	SPT(C) N=3					0.70	CONCRETE		
						(0.20)	MADE GROUND: Brown sandy gravelly Clay with fragments of red brick		
						0.90			
2.00	B			1,1/2,2,2,1		(1.60)			
2.00-2.45	SPT(C) N=7								▼1
3.00	B			Water strike(1) at 2.90m, rose to 2.40m in 20 mins. 2,4/5,5,6,6		2.50	Soft to firm dark grey fine SAND		▼1
3.00-3.45	SPT(C) N=22					(0.50)			
4.00	B			25/50		3.00	Medium dense to dense grey sandy fine to coarse angular GRAVEL with many cobbles		
4.00-4.17	SPT(C) 50/20								
5.00	B			3,4/4,5,7,6		(3.50)			
5.00-5.45	SPT(C) N=22								
6.00	B			3,5/7,9,34		6.50	OVERBURDEN: Driller notes SAND and GRAVEL. No recovery. (Medium Dense)		
6.00-6.30	SPT(C) 50/150								
6.30	TCR	SCR	RQD	FI					
8.20-8.55				2,2/8,17,25 SPT(C) 50/200		(3.20)			
9.70-10.15	0			5,6/4,4,4,4 SPT(C) N=16		9.70	OVERBURDEN: Driller notes black slightly sandy slightly gravelly silty CLAY with occasional cobbles. No recovery.		

<b>Remarks</b> Cable Percussion from 0.00m to 6.50m BGL with Rotary Core follow on 6.50m to 33.90m BGL Borehole backfilled upon completion Chiselling from 0.70m to 0.90m for 1 hour. Chiselling from 4.00m to 4.20m for 0.8 hours. Chiselling from 6.40m to 6.50m for 1.5 hours.	<b>Scale (approx)</b>  1:50	<b>Logged By</b>  SC + JC
<b>Figure No.</b> 8108-10-18.BH08		





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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH08**

<b>Machine :</b> Dando 2000 & Beretta T47S <b>Flush :</b> <b>Core Dia:</b> mm <b>Method :</b> Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 6.50m 150mm cased to 18.70m 100mm cased to 33.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 15/11/2018-24/01/2019	<b>Engineer</b>	<b>Sheet</b> 2/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
11.20-11.65					3,4/5,5,6,8 SPT(C) N=24		(3.00)	(Stiff)		
12.70-13.10 12.70	15				7,11/12,15,16,7 SPT(C) 50/250		12.70	OVERBURDEN: Driller notes grey/brown sandy subrounded to rounded fine to coarse GRAVEL with some cobbles. Recovery consists of multicoloured subrounded coarse GRAVEL with some cobble fragments. (Dense)		
14.20-14.58 14.20	15				6,11/14,14,19,3 SPT(C) 50/230		(3.00)			
15.70-15.87 15.70	73				10,15/50 SPT(C) 50/20		15.70	OVERBURDEN: Very stiff black slightly sandy slightly gravelly CLAY with occasional cobble fragments.		
17.20-17.49 17.20	30				9,12/18,32 SPT(C) 50/140		17.20	OVERBURDEN: Driller notes black slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of black slightly sandy slightly gravelly CLAY with occasional cobble fragments. (Very Stiff)		
18.70-19.09 18.70	9				7,10/10,16,19,5 SPT(C) 50/240		18.70	OVERBURDEN: Driller notes black slightly sandy slightly gravelly silty CLAY with occasional cobbles. Recovery consists of multicoloured subangular to subrounded fine to coarse Gravel with occasional cobble fragments (Very Stiff)		

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	SC + JC
	<b>Figure No.</b> 8108-10-18.BH08	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH08**

<b>Machine</b> : Dando 2000 & Beretta T47S <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 6.50m 150mm cased to 18.70m 100mm cased to 33.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 15/11/2018-24/01/2019	<b>Engineer</b>	<b>Sheet</b> 3/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.40-20.77 20.40					4,8/11,16,23 SPT(C) 50/220		(3.20)			
21.90-22.26 21.90	17				6,10/14,18,18 SPT(C) 50/210		21.90	OVERBURDEN: Driller notes black slightly sandy slightly gravelly silty CLAY with occasional cobbles. No recovery. (Very Stiff)		
23.40-23.85 23.40	0				4,5/5,7,9,9 SPT(C) N=30		(1.50)			
24.90-25.28 24.90	23				7,11/14,15,18,3 SPT(C) 50/230		23.40	OVERBURDEN: Driller notes black silty SAND with beds of Gravel and Clay. Recovery consists of multicoloured subangular to subrounded fine to coarse Gravel with occasional cobble fragments (Dense/Very Stiff)		
26.40-26.68 26.40	10				9,14/21,29 SPT(C) 50/130		(4.50)			
27.90-28.34 27.90	9				5,7/8,11,16,15 SPT(C) 50/290		27.90	OVERBURDEN: Driller notes black silty SAND with beds of Gravel and Clay. No recovery. (Dense/Very Stiff)		
29.40-29.72 29.40	0				6,12/17,22,11 SPT(C) 50/170		(1.50)			
29.40-29.72 29.40							29.40	OVERBURDEN: Driller notes black silty SAND with beds of Gravel and Clay. Recovery consists of multicoloured subangular to subrounded fine to coarse Gravel with occasional cobble fragments (Dense/Very Stiff)		

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	SC + JC
	<b>Figure No.</b> 8108-10-18.BH08	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH08**

<b>Machine</b> : Dando 2000 & Beretta T47S <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 6.50m 150mm cased to 18.70m 100mm cased to 33.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 15/11/2018-24/01/2019	<b>Engineer</b>	<b>Sheet</b> 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
30.90-31.29 30.90	10				8,9/12,14,19,5 SPT(C) 50/240		(1.50)	OVERBURDEN: Driller notes black slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of black/brown slightly sandy slightly gravelly silty CLAY with occasional cobble fragments. (Very Stiff)		
32.40-32.72 32.40	53			6,10/15,17,18 SPT(C) 50/170		(3.00)				
33.90	40					33.90	Complete at 33.90m			
33.90-34.18					9,15/22,28					
	<b>Sample / Tests</b>		<b>Casing Depth (m)</b>	<b>Water Depth (m)</b>						
	SPT(C) 50/130									

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	SC + JC
	<b>Figure No.</b> 8108-10-18.BH08	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH09**

<b>Machine</b> : Dando 2000	<b>Casing Diameter</b> 200mm cased to 4.40m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Cable Percussion	<b>Location</b>	<b>Dates</b> 22/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B					0.10 (0.60)	CONCRETE MADE GROUND: Grey sandy gravelly Clay with fragments of red brick		
1.00-1.45 1.00	SPT(C) N=14 B			3,5/5,3,3,3		0.70   (2.30)	MADE GROUND: Dark brown clayey sandy fine to medium Gravel with fragments of red brick. Strong diesel odour		
2.00-2.45 2.00	SPT(C) N=13 B			2,2/3,3,4,3		3.00	Dense grey sandy coarse angular GRAVEL with many cobbles		
3.00-3.45 3.00	SPT(C) N=17 B			3,4/4,4,3,6		(1.30)			
4.00-4.20 4.00	SPT(C) 50/50 B			25/50		4.30 4.40	OBSTRUCTION: Presumed rock or boulder Complete at 4.40m		

<b>Remarks</b> Borehole backfilled upon completion Chiselling from 4.30m to 4.40m for 1 hour.	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	S. Connolly
	<b>Figure No.</b> 8108-10-18.BH09	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH10**

<b>Machine</b> : Dando 2000 & Beretta T47s	<b>Casing Diameter</b> 200mm cased to 14.40m 100mm cased to 21.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Location</b>	<b>Dates</b> 19/11/2018-10/01/2019	<b>Engineer</b>	<b>Sheet</b> 1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B					(0.20) 0.20	CONCRETE		
1.00-1.45 1.00	SPT(C) N=3 B			1,0/1,1,0,1		(2.50)	MADE GROUND: Black sandy gravelly Clay with fragments of red brick. Slight diesel odour		
2.00-2.45 2.00	SPT(C) N=5 B			1,2/1,1,1,2		2.70	MADE GROUND: Black clayey sandy fine to coarse angular Gravel with fragments of red brick. Strong diesel odour		▼ 1
3.00-3.45 3.00	SPT(C) N=10 B			Water strike(1) at 2.60m, rose to 2.50m in 20 mins. 1,2/2,2,3,3		(1.10)			
4.00-4.45 4.00	SPT(C) N=19 B			2,3/4,4,5,6		3.80	Medium dense grey clayey sandy fine to coarse sub-angular to rounded GRAVEL with many cobbles		
5.00-5.40 5.00	SPT(C) 50/250 B			3,4/5,9,11,25		5.00	Medium dense grey sandy fine to coarse sub-angular to rounded GRAVEL with many cobbles		
6.00-6.45 6.00	SPT(C) N=22 B			2,3/5,7,5,5					
7.00-7.45 7.00	SPT(C) N=23 B			3,4/4,5,7,7					
8.00-8.45 8.00	SPT(C) N=24 B			3,5/7,7,5,5		(6.80)			
9.00-9.45 9.00	SPT(C) N=18 B			2,2/3,4,5,6					
10.00-10.45	SPT(C) N=22			2,4/4,5,7,6					

<b>Remarks</b> Cable Percussion from 0.00m to 14.40m BGL with Rotary Core follow on 14.40m to 21.90m BGL Borehole backfilled upon completion	<b>Scale (approx)</b> 1:50	<b>Logged By</b> S. Connolly
<b>Figure No.</b> 8108-10-18.BH10		



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH10**

<b>Machine</b> : Dando 2000 & Beretta T47s	<b>Casing Diameter</b> 200mm cased to 14.40m 100mm cased to 21.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Location</b>	<b>Dates</b> 19/11/2018-10/01/2019	<b>Engineer</b>	<b>Sheet</b> 2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B								
11.00 11.00-11.45	B SPT(C) N=27			2,4/5,7,7,8					
12.00 12.00-12.45	B SPT(C) N=49			2,5/5,9,15,20		11.80	Dense grey/brown clayey sandy fine to coarse rounded GRAVEL with many cobbles		
13.00 13.00-13.45	B SPT(C) N=38			2,3/6,8,10,14		(2.60)			
14.00 14.00-14.30	B SPT(C) 50/150			3,4/7,9,34					
14.40	<b>TCR</b> <b>SCR</b> <b>RQD</b> <b>FI</b>					14.40	OVERBURDEN: Driller notes dark grey/black slightly sandy gravelly CLAY with many cobbles and boulders. Recovery consists of dark grey sub-rounded to rounded cobble fragments		
	13   -								
15.90-16.35 15.90				4,6/6,8,7,10 SPT(C) N=31		(3.20)			
	12   -								
17.40-17.85 17.40				4,5/7,7,12,14 SPT(C) N=40					
	75   -					17.60	OVERBURDEN: Recovery consists of dark grey/black slightly sandy gravelly CLAY with fragments of cobbles		
18.90-19.11 18.90				9,15/50 SPT(C) 50/60					
	33   -					(4.30)			

<b>Remarks</b> Chiselling from 11.80m to 11.90m for 1 hour. Chiselling from 14.30m to 14.40m for 1 hour.	<b>Scale (approx)</b> 1:50	<b>Logged By</b> S. Connolly
<b>Figure No.</b> 8108-10-18.BH10		



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH10**

<b>Machine</b> : Dando 2000 & Beretta T47s <b>Flush</b> :	<b>Casing Diameter</b> 200mm cased to 14.40m 100mm cased to 21.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Core Dia:</b> mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Location</b>	<b>Dates</b> 19/11/2018-10/01/2019	<b>Engineer</b>	<b>Sheet</b> 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.40-20.27 20.40					8,13/19,31 SPT(C)					
	24	-								
21.90							21.90	Complete at 21.90m		
	<b>Sample / Tests</b>		<b>Casing Depth (m)</b>	<b>Water Depth (m)</b>						
21.90-22.29	SPT(C)	50/235			6,8/14,14,17,5					

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	S. Connolly
	<b>Figure No.</b> 8108-10-18.BH10	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH11**

<b>Machine</b> : Dando 2000 & Beretta T44  <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 14.30m 150mm cased to 17.20m 100mm cased to 33.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 23/11/2018-09/01/2019	<b>Engineer</b>	<b>Sheet</b> 1/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B					0.10 0.20 (0.20) 0.40	TARMACADAM MADE GROUND: Grey fine to coarse angular Gravel Fill CONCRETE MADE GROUND: Black sandy gravelly Clay with fragments of red brick		
1.00-1.45 1.00	SPT(C) N=9 B			1,2/3,2,2,2		(2.20)			
2.00-2.45 2.00	SPT(C) N=5 B			1,2/2,1,1,1		2.60	Soft to soft to firm grey silty fine to medium SAND		▼1
3.00-3.45 3.00	SPT(C) N=8 B			1,1/2,2,2,2 Water strike(1) at 3.20m, rose to 2.60m in 20 mins.		(1.90)			▽1
4.00-4.45 4.00	SPT(C) N=11 B			2,2/2,3,3,3		4.50	Medium dense grey sandy coarse angular GRAVEL with many cobbles		
5.00-5.45 5.00	SPT(C) N=24 B			2,3/5,6,6,7		(1.20)			
6.00-6.45 6.00	SPT(C) N=28 B			5,14/6,6,5,11		5.70	Medium dense grey sandy fine to coarse rounded GRAVEL with many cobbles		
7.00-7.45 7.00	SPT(C) N=21 B			3,4/4,5,6,6					
8.00-8.45 8.00	SPT(C) N=20 B			2,3/4,5,5,6					
9.00-9.45 9.00	SPT(C) N=16 B			4,7/4,4,4,4					
10.00-10.17	SPT(C) 50/20			25/50					

<b>Remarks</b> Cable Percussion from 0.00m to 14.30m BGL with Rotary Core follow on 14.30m to 33.90m BGL Borehole backfilled upon completion Redrilled from 12.70m to 14.30m BGL due to blowing sands	<b>Scale (approx)</b> 1:50	<b>Logged By</b> SC + JC
<b>Figure No.</b> 8108-10-18.BH11		





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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH11**

<b>Machine :</b> Dando 2000 & Beretta T44  <b>Method :</b> Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 14.30m 150mm cased to 17.20m 100mm cased to 33.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 23/11/2018-09/01/2019	<b>Engineer</b>	<b>Sheet</b> 2/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B					(8.60)			
11.00 11.00-11.16	B SPT(C) 50/10			25/50					
12.00 12.00-12.45	B SPT(C) N=22			4,4/4,6,7,5					
13.00 12.70 13.00-13.45	TCR    SCR	RQD	FI	B 2,2/3,3,7,7 SPT(C) N=20					
	0								
14.00-14.20 14.00				25/50 SPT(C) 50/50 B					
14.30						14.30	OVERBURDEN: Driller notes blowing SAND. Recovery consists of black sandy silty Clay with some loose gravels and cobble fragments.		
	43					(1.40)			
15.70-16.15 15.70				4,6/6,8,11,10 SPT(C) N=35		15.70	OVERBURDEN: Driller notes black slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of black slightly sandy slightly gravelly silty CLAY. (Very Stiff)		
	63					(1.50)			
17.20-17.48 17.20				7,13/19,31 SPT(C) 50/130		17.20	OVERBURDEN: Driller notes black slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of multicoloured subangular to subrounded fine to coarse Gravel. (Very Stiff)		
	11					(1.70)			
18.90-19.19 18.90				6,11/19,31 SPT(C) 50/140		18.90	OVERBURDEN: Very stiff black slightly sandy slightly gravelly CLAY		
	89					(1.50)			

<b>Remarks</b> Chiselling from 14.20m to 14.30m for 1 hour.	<b>Scale (approx)</b>  1:50	<b>Logged By</b>  SC + JC
<b>Figure No.</b> 8108-10-18.BH11		



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH11**

<b>Machine</b> : Dando 2000 & Beretta T44 <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 14.30m 150mm cased to 17.20m 100mm cased to 33.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 23/11/2018-09/01/2019	<b>Engineer</b>	<b>Sheet</b> 3/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.40-20.55 20.40					8,17/50 SPT(C) 25*/140 50/10		20.40	OVERBURDEN: Driller notes black slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of black slightly sandy slightly gravelly CLAY with loose gravel and cobble fragments. (Very Stiff)		
	23					(1.50)				
21.90-22.18 21.90					6,14/21,29 SPT(C) 50/130		21.90	OVERBURDEN: Driller notes black gravelly silty SAND. Recovery consists of multicoloured subangular to subrounded fine to coarse Gravel with occasional cobble fragments. (Dense)		
23.40-23.85 23.40					5,7/7,9,13,18 SPT(C) N=47		(4.50)			
24.90-25.33 24.90					6,8/10,10,15,15 SPT(C) 50/280					
26.40-26.66 26.40					5,9/18,32 SPT(C) 50/110		26.40	OVERBURDEN: Driller notes black slightly sandy gravelly CLAY with occasional cobbles. Recovery consists of black slightly sandy gravelly CLAY with some cobble fragments. (Very Stiff)		
27.90-28.09 27.90					8,15/50 SPT(C) 50/40		(2.90)			
29.30 29.40	41	8	8				29.30	Weak to medium strong thinly laminated black calcareous MUDSTONE interbedded with a medium strong to strong thinly laminated to thinly bedded dark grey fine grained LIMESTONE. The mudstone is partially weathered to distinctly weathered with a clay smearing along fractures.		

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	SC + JC
	<b>Figure No.</b> 8108-10-18.BH11	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
BH11

<b>Machine :</b> Dando 2000 & Beretta T44 <b>Flush :</b> <b>Core Dia:</b> mm <b>Method :</b> Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 14.30m 150mm cased to 17.20m 100mm cased to 33.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 23/11/2018-09/01/2019	<b>Engineer</b>	<b>Sheet</b> 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
30.90	90	33	29	NI				The limestone is partially weathered.		
32.00	87	35	24				(4.60)	29.30m to 32.00m - Mostly non-intact		
32.40				11				32.00m to 33.90m - One fracture set - F1: very close to closely spaced, 0 to 10 degrees, planar, smooth, with occasional clay smearing		
33.90	100	62	58				33.90	Complete at 33.90m		

<b>Remarks</b>	<b>Scale (approx)</b> 1:50	<b>Logged By</b> SC + JC
	<b>Figure No.</b> 8108-10-18.BH11	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH12**

<b>Machine</b> : Dando 2000 & Beretta T44	<b>Casing Diameter</b> 200mm cased to 8.70m 150mm cased to 14.20m 100mm cased to 21.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Location</b>	<b>Dates</b> 04/12/2018-22/01/2019	<b>Engineer</b>	<b>Sheet</b> 1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B					0.17	CONCRETE		
1.00-1.00	B SPT(C) 25*/0 50/0			25/50			MADE GROUND: Dark grey/brown sandy gravelly Clay with occasional cobbles and fragments of red brick, scrap metal, timber		
1.50	B								
2.00-2.27	B SPT(C) 50/120			3,7/18,32					
3.00-3.45	B SPT(C) N=13			1,1/2,2,4,5		(4.63)			
4.00-4.45	B SPT(C) N=5			0,1/0,1,2,2					
5.00-5.45	B SPT(C) N=8			1,0/1,2,2,3		4.80	Loose grey/brown slightly gravelly silty fine to coarse SAND		▼1
6.00-6.45	B SPT(C) N=5			0,1/0,0,3,2		(1.50)			
7.00-7.00	B SPT(C) 25*/0 50/0			Water strike(1) at 6.40m, rose to 4.80m in 20 mins. 25/50		6.30	Medium dense grey gravelly fine to coarse SAND		▼1
8.00-8.45	B SPT(C) N=27			3,6/7,7,5,8		(1.70)			
8.30	TCR    SCR	RQD	FI			(0.70)	Medium dense grey sandy rounded fine to coarse GRAVEL with occasional cobbles		
9.70-10.15	0			4,5/7,7,10,9		8.70	OVERBURDEN: Driller notes blowing SAND and GRAVEL. Recovery consists of a bag sample of grey gravelly fine to coarse SAND. (Medium Dense)		
9.90				SPT(C) N=33					

<b>Remarks</b> Cable Percussion from 0.00m to 8.70m BGL with Rotary Core follow on 8.70m to 21.90m BGL Redrilled from 8.30m to 8.70m BGL due to blowing sands Blowing sands from 8.30m to 14.20m BGL. Borehole backfilled upon completion Chiselling from 1.00m to 1.10m for 1 hour. Chiselling from 6.80m to 7.40m for 1.5 hours. Chiselling from 8.30m to 8.70m for 2 hours.	<b>Scale (approx)</b> 1:50	<b>Logged By</b> JC
<b>Figure No.</b> 8108-10-18.BH12		



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH12**

<b>Machine</b> : Dando 2000 & Beretta T44 <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 8.70m 150mm cased to 14.20m 100mm cased to 21.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
			<b>Engineer</b>	<b>Sheet</b> 2/3
		<b>Location</b>	<b>Dates</b> 04/12/2018-22/01/2019	

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
11.20-11.65 11.20	0				4,4/7,6,9,9 SPT(C) N=31		(5.50)			
12.70-13.15 12.70	0				5,8/10,12,12,14 SPT(C) N=48					
14.20-14.65 14.20	0				3,3/4,4,4,5 SPT(C) N=17		14.20	OVERBURDEN: Driller notes black slightly gravelly silty CLAY. Recovery consists of black sandy silty CLAY. (Stiff)		
15.70-16.05 15.70	27				5,8/10,19,21 SPT(C) 50/200		(1.50)			
17.40-17.85 17.40	21				4,9/9,11,12,15 SPT(C) N=47		15.70	OVERBURDEN: Driller notes black slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of multicoloured subangular to subrounded fine to coarse Gravel with cobble fragments (Very Stiff)		
18.90-19.35 18.90	27				4,9/9,11,12,15 SPT(C) N=47		(3.20)			
18.90-19.35 18.90	30				4,6/6,14,13,14 SPT(C) N=47		18.90	OVERBURDEN: Driller notes black slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of black slightly sandy slightly gravelly CLAY with loose gravel and cobble fragments. (Very Stiff)		
18.90-19.35 18.90							(1.50)			

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	JC
<b>Figure No.</b> 8108-10-18.BH12		



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH12**

<b>Machine</b> : Dando 2000 & Beretta T44 <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 8.70m 150mm cased to 14.20m 100mm cased to 21.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 04/12/2018-22/01/2019	<b>Engineer</b>	<b>Sheet</b> 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.40							20.40	OVERBURDEN: Driller notes GRAVEL. No recovery. (Dense)		
20.40-20.61	SPT(C)	50/60			6,16/50		(1.50)			
21.90-22.35	SPT(C)	N=38			3,8/8,7,10,13		21.90	Complete at 21.90m		

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	JC
	<b>Figure No.</b> 8108-10-18.BH12	

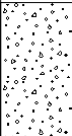


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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH13**

<b>Machine</b> : Dando 2000	<b>Casing Diameter</b> 200mm cased to 0.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
<b>Method</b> : Cable Percussion	<b>Location</b>	<b>Dates</b> 04/12/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.90)	CONCRETE		
						0.90	Obstruction: possible service		
							Complete at 0.90m		

<b>Remarks</b> Borehole backfilled upon completion	<b>Scale (approx)</b> 1:50	<b>Logged By</b> JC
	<b>Figure No.</b> 8108-10-18.BH13	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH14**

<b>Machine</b> : Dando 2000 & Beretta T44  <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 13.00m 150mm cased to 17.20m 100mm cased to 38.40m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 29/11/2018-18/01/2019	<b>Engineer</b>	<b>Sheet</b> 1/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B						See adjacent window sample log		
1.00	B								
2.00	B					(4.50)			▼1
3.00	B								▼1
4.00	B			Water strike(1) at 3.20m, rose to 2.60m in 20 mins.					
5.00	B					4.50	MADE GROUND: Dark brown slightly sandy very gravelly Clay with fragments of red brick		
6.00-6.45 6.00	SPT(C) N=35 B			2,3/5,7,10,13		6.10	Dense dark grey sandy fine to coarse sub-angular to rounded GRAVEL with many cobbles		
7.00-7.38 7.00	SPT(C) 50/225 B			3,9/15,20,15					
8.00-8.45 8.00	SPT(C) N=28 B			4,5/5,7,9,7					
9.00-9.38 9.00	SPT(C) 50/225 B			3,7/9,14,16,11					
10.00-10.45	SPT(C) N=31			4,5/6,6,8,11		(6.90)			

<b>Remarks</b> Window sample from 0.00m - 4.10m BGL, cable percussion from 4.10m to 13.00m BGL, Rotary Core follow on from 13.00m to 38.40m BGL Redrilled from 12.20m to 13.00m BGL due to blowing sands Standpipe 1 - 50mm slotted standpipe with a pea gravel surround installed from 2.50m to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL. Standpipe 2 - 50mm slotted standpipe with a pea gravel surround installed from 7.00m to 3.00m BGL. 50mm plain standpipe with a bentonite seal installed from 3.00m BGL to GL. Flush cover installed over standpipes.	<b>Scale (approx)</b> 1:50	<b>Logged By</b> SC + JC
	<b>Figure No.</b> 8108-10-18.BH14	





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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH14**

<b>Machine</b> : Dando 2000 & Beretta T44  <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 13.00m 150mm cased to 17.20m 100mm cased to 38.40m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 29/11/2018-18/01/2019	<b>Engineer</b>	<b>Sheet</b> 2/4

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B								
11.00 11.00-11.45	B SPT(C) N=31			3,5/6,8,8,9					
12.00 12.00-12.45	B SPT(C) N=24			3,3/5,5,7,7					
13.00 13.00-13.05 13.00	<b>TCR</b> <b>SCR</b>	<b>RQD</b>	<b>FI</b>	25/50 B SPT(C) 25*/30 50/20		13.00	OVERBURDEN: Driller notes brown slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of multicoloured rounded medium to coarse Gravel with cobbles fragments and occasional pockets of brown slightly sandy slightly gravelly CLAY. (Stiff)		
	18					(1.20)			
14.20-14.65 14.20				4,4/6,7,7,6 SPT(C) N=26		14.20	OVERBURDEN: Driller notes black sandy SILT with gravel. Recovery consists of dark grey slightly gravelly sandy clayey SILT. (Stiff)		
	13					(1.50)			
15.70-16.15 15.70				3,4/4,4,6,6 SPT(C) N=20		15.70	OVERBURDEN: Driller notes black sandy SILT with gravel. Recovery consists of multicoloured rounded fine to coarse Gravel with cobble fragments and occasional pockets of black slightly sandy slightly gravelly silty CLAY. (Stiff)		
	40					(1.50)			
17.20-17.63 17.20				4,7/11,12,14,13 SPT(C) 50/280		17.20	OVERBURDEN: Driller notes black slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of multicoloured rounded medium to coarse Gravel with cobbles fragments and occasional pockets of black slightly sandy slightly gravelly CLAY. (Very Stiff)		
	12								
18.90-19.33 18.90				4,9/10,14,14,12 SPT(C) 50/280		(3.20)			
	30								

<b>Remarks</b> Chiselling from 13.00m to 13.00m for 1.5 hours.	<b>Scale (approx)</b>  1:50	<b>Logged By</b>  SC + JC
<b>Figure No.</b> 8108-10-18.BH14		



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH14**

<b>Machine</b> : Dando 2000 & Beretta T44 <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 13.00m 150mm cased to 17.20m 100mm cased to 38.40m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 29/11/2018-18/01/2019	<b>Engineer</b>	<b>Sheet</b> 3/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.40-20.80 20.40					6,10/11,13,18,8 SPT(C) 50/250		20.40	OVERBURDEN: Driller notes black slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of black slightly sandy slightly gravelly CLAY. (Very Stiff)		
	43						(1.50)			
21.90-22.36 21.90					5,9/13,17,20 SPT(C) 50/310		21.90	OVERBURDEN: Driller notes black slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of multicoloured rounded fine to coarse Gravel. (Very Stiff)		
	13						(1.50)			
23.40-23.85 23.40					3,4/4,5,7,7 SPT(C) N=23		23.40	OVERBURDEN: Driller notes black silty SAND with fine gravel. Recovery consists of multicoloured rounded fine to medium Gravel. (Medium Dense)		
	10						(1.50)			
24.90-25.02 24.90					9,16/50 SPT(C) 25*/120 50/0		24.90	OVERBURDEN: Very stiff brown slightly sandy gravelly CLAY		
	80						(3.00)			
26.40-26.67 26.40					7,13/23,25 SPT(C) 48/120		26.40			
	63						(3.00)			
27.90-28.26 27.90					6,9/11,14,25 SPT(C) 50/210		27.90	OVERBURDEN: Driller notes slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of brown slightly sandy gravelly CLAY. (Very Stiff)		
	13						(1.50)			
29.40-29.85 29.40					5,8/8,13,14,14 SPT(C) N=49		29.40	OVERBURDEN: Driller notes slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of multicoloured rounded fine to coarse Gravel with cobble fragments and occasional pockets of brown slightly sandy		

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	SC + JC
	<b>Figure No.</b> 8108-10-18.BH14	



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**Site**  
Castleforbes Business Park

**Borehole Number**  
**BH14**

<b>Machine</b> : Dando 2000 & Beretta T44 <b>Flush</b> : <b>Core Dia</b> : mm <b>Method</b> : Cable Percussion with Rotary Core follow on	<b>Casing Diameter</b> 200mm cased to 13.00m 150mm cased to 17.20m 100mm cased to 38.40m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL Consulting Engineers	<b>Job Number</b> 8108-10-18
	<b>Location</b>	<b>Dates</b> 29/11/2018-18/01/2019	<b>Engineer</b>	<b>Sheet</b> 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
30.90-31.32 30.90	27				4,8/11,12,16,11 SPT(C) 50/270		(1.50)	gravelly CLAY. (Very Stiff)		
32.40-32.73 32.40	53				7,13/19,24,7 SPT(C) 50/180		30.90	OVERBURDEN: Driller notes slightly sandy slightly gravelly CLAY with occasional cobbles. Recovery consists of brown/black slightly sandy gravelly CLAY. (Very Stiff)		
33.90-34.34 33.90	60				8,10/10,12,13,15 SPT(C) 50/290		(3.60)			
34.50	70	44	25				34.50	Weak to medium strong thinly laminated black calcareous MUDSTONE interbedded with a medium strong to strong thinly laminated to thinly bedded dark grey fine grained LIMESTONE. The mudstone is partially weathered with occasional clay smearing along fractures. The limestone is partially weathered with occasional calcite veins and rare pyrite lenses.		
35.40				10				34.50m to 36.60m - Two fracture sets - F1: close to medium spaced, 0 to 10 degrees, planar, smooth, with occasional clay smearing. F2: close to widely spaced, 40 to 60 degrees, planar, smooth.		
36.60	100	68	53				(3.90)	36.60m to 36.90m - Mostly non-intact		
36.90				NI				36.90m to 38.00m - Two fracture sets - F1: close to medium spaced, 0 to 10 degrees, planar, smooth, with occasional clay smearing. F2: close to widely spaced, 40 to 60 degrees, planar, smooth.		
38.00	100	75	75	5				38.00m to 38.40m - Mostly non-intact		
38.40				NI			38.40	Complete at 38.40m		

<b>Remarks</b>	<b>Scale (approx)</b>	<b>Logged By</b>
	1:50	SC + JC
	<b>Figure No.</b> 8108-10-18.BH14	

A9.4 O' Callaghan Moran & Associates - *Environmental Desk Study  
and Waste Characterisation Assessment*



Unit 15  
Melbourne Business Park  
Model Farm Road  
Cork T12 WR89



T: 021 434 5366  
E:admin@ocallaghanmoran.com  
www.ocallaghanmoran.com

**Environmental Desk Study and  
Waste Characterisation Assessment  
Proposed Residential and Retail Development  
Castleforbes Road  
Dublin 1**

**Prepared For: -**

DBFL Consulting Engineers  
Ormond House  
Upper Ormond Quay  
Dublin 7

**Prepared By: -**

O' Callaghan Moran & Associates  
Unit 15 Melbourne Business Park  
Model Farm Road  
Cork

**March 2019**

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## TABLE OF CONTENTS

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	<u>PAGE</u>
<b>1 INTRODUCTION.....</b>	<b>1</b>
1.1    METHODOLOGY .....	1
1.2    LIMITATIONS .....	1
<b>2 SITE DESCRIPTION AND ENVIRONMENTAL SETTING .....</b>	<b>2</b>
2.1    SITE LOCATION.....	2
2.2    SITE LAYOUT.....	2
2.3    SITE HISTORY .....	2
2.4    PROPOSED DEVELOPMENT.....	2
2.5    GEOLOGY .....	2
2.6    HYDROGEOLOGY .....	8
2.7    FLOOD RISK.....	8
2.8    RADON.....	9
2.9    ECOLOGICALLY SENSITIVE/DESIGNATED AREAS .....	9
2.10   HYDROLOGY.....	9
<b>3 SOILS ASSESSMENT .....</b>	<b>15</b>
3.1    SITE INVESTIGATION.....	15
3.2    GROUND CONDITIONS .....	15
3.3    SAMPLE COLLECTION .....	15
3.4    LABORATORY ANALYSIS .....	15
3.5    RESULTS .....	16
3.6    REMEDIAL/MITIGATION MEASURES .....	16
<b>4 WASTE CLASSIFICATION ASSESSMENT .....</b>	<b>23</b>
4.1    WASTE CLASSIFICATION.....	23
4.2    WASTE ACCEPTANCE CRITERIA.....	25
4.3    WASTE MANAGEMENT OPTIONS .....	25
<b>5 CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>39</b>
5.1    CONCLUSIONS.....	39
5.2    RECOMMENDATIONS.....	39

## APPENDICES

APPENDIX 1	Ordnance Survey of Ireland Maps and Photographs
APPENDIX 2	Window Sample Logs
APPENDIX 3	Laboratory Results
APPENDIX 4	Waste Classification Report

---

## 1 INTRODUCTION

---

DBFL Consulting Engineers requested O’Callaghan Moran & Associates (OCM) to undertake an environmental desk study assessment and a waste classification at a proposed development site on Castleforbes Road, Dublin 1.

The objective of the environmental assessment was to determine the environmental risk presented to the proposed residential development by the historical use of the site. The waste classification was required to identify offsite disposal options for any soils/wastes that may have to be removed during the development works.

### 1.1 Methodology

The assessment included a site inspection of the open areas by an OCM Senior Environmental Scientist, a desk study of available information on the site history and intrusive site investigations undertaken by Ground Investigations Ireland Ltd (GII).

The data sources reviewed in the desk study included:

- Ordnance Survey of Ireland (OSI) Maps.
- Geological Survey of Ireland (GSI) and Teagasc subsoil, geology, aquifer vulnerability and classification maps.
- GII Window Sample logs

GII provided a description of the ground conditions and opened 32 window sample boreholes, collecting samples of the subsurface materials from nineteen window sample boreholes. The samples were analysed at an accredited laboratory and the results formed the basis for the waste classification which was undertaken by OCM in accordance with the Environmental Protection Agency (EPA) Guidelines on the Classification of Waste (2015).

The Land Quality Management/Chartered Institute of Environmental Health (LQM/CIEH) S4ULs Human Health Risk Assessment-Risk Levels (S4ULs) were used to establish the risk posed to construction workers or future users of the developed site.

### 1.2 Limitations

The site inspection was confined to the external areas of the site and did not include internal assessments of the individual business units.

---

## **2 SITE DESCRIPTION AND ENVIRONMENTAL SETTING**

---

### **2.1 Site Location**

The site is located on Castleforbes Road/Sheriffs Street Upper c300m north of the River Liffey (Figure 2.1). Rail lines servicing Dublin Port run along the northern site boundary. There are residential dwellings to the west and south of the site. There are industrial units on the opposite side of Sherriff Street near the south-west site boundary and an open undeveloped site further to the south-west.

### **2.2 Site Layout**

The existing site layout is shown on Figure 2.2. The site includes a series of enterprise/warehouse units and c2.5ha of open paved yards. The older buildings in the west, north and along the southern site entrance are of concrete block wall construction with asbestos roof sheeting. The newer buildings in the centre and east of the site are of steel frame and concrete walls with metal clad roofs. The units are used for a wide range of activities including tyre sales and servicing, coffee distribution, arts and crafts, and logistics.

### **2.3 Site History**

Historical Maps and photographs are in Appendix 1. The OSI map from 1837-1888 shows the site as being undeveloped land and the railway line had not yet been laid. Between 1888 and 1913 the site was used as a soap works and then a timber yard and the railyards had been developed. The 1995-2005 aerial photographs show the older buildings along the northern, western and southern site boundary and some of the newer units in the centre of the site. By 2005 the layout was similar to the present day.

### **2.4 Proposed Development**

It is proposed to redevelop the site for commercial units and residential housing with associated roads and parking areas.

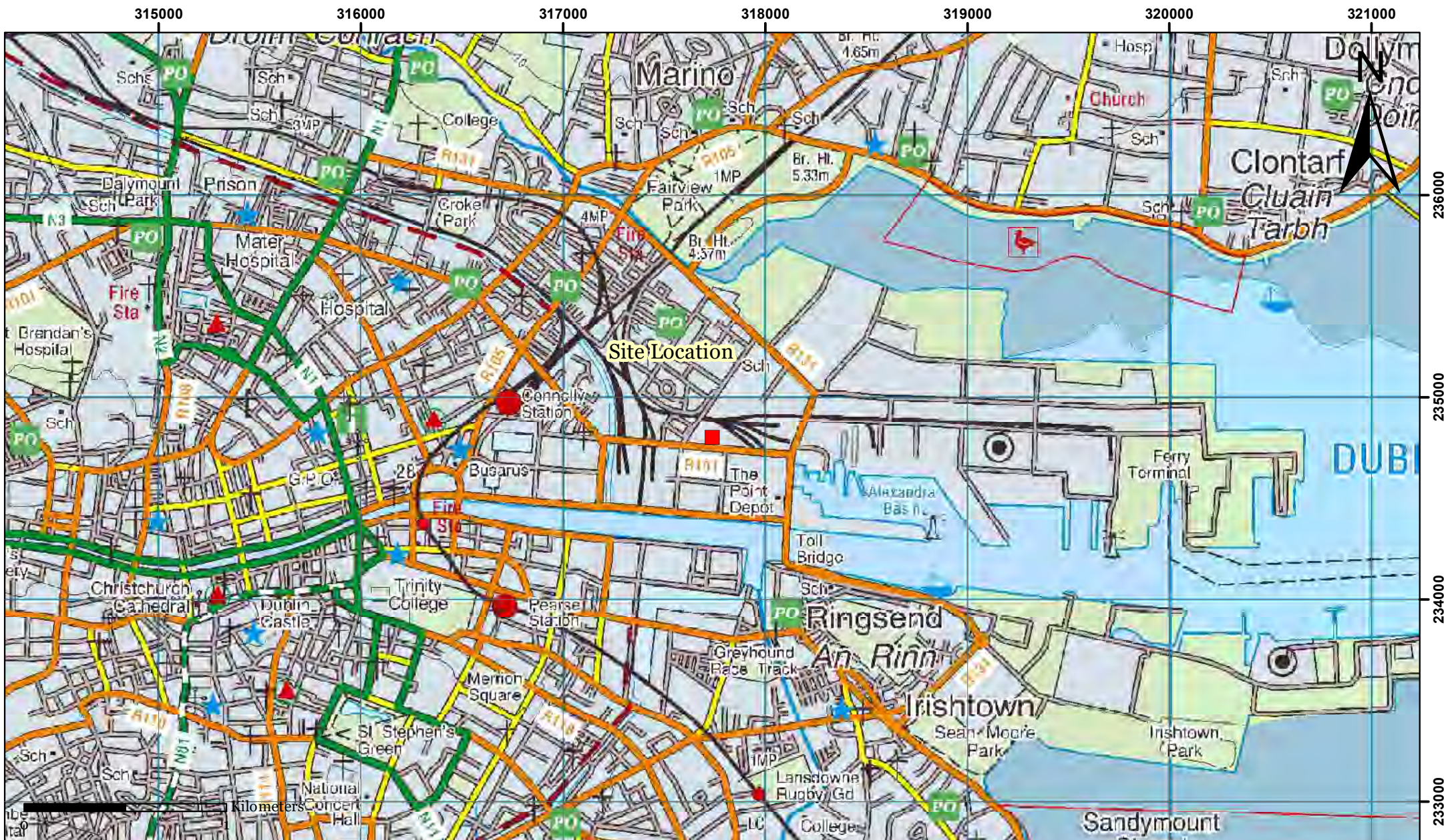
### **2.5 Geology**

The subsoil distribution is shown on Figure 2.3. The Teagasc Soil and Subsoils maps indicate the site is underlain by Made Ground and this was confirmed by the GII site investigation which established the presence of c1-2m of made ground comprising brown and black sandy, gravelly, clay with occasional red brick, timber and ceramic fragments overlying fine, silty and sometimes gravelly sand with shell fragments.



The bedrock geology is shown on Figure 2.4. The site is underlain entirely by the Lucan Formation which comprises dark Carboniferous limestone and shale (calp).





O'Callaghan Moran & Associates,  
 Unit 15 Melbourne Business Park,  
 Model Farm Road, Cork.  
 Tel. (021) 4345366  
 email: info@ocallaghanmoran.com

**CLIENT**  
 Ground Investigations Ireland

**Details:**  
 ■ Site Location


**TITLE**  
 Site Location

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Figure 2.1





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<p>This drawing is the property of O'Callaghan Moran &amp; Associates and shall not be used, produced or disclosed to anyone without the prior written permission at O'Callaghan Moran &amp; Associates and shall be returned upon request.</p>	<p><b>TITLE</b> Site Layout</p>	<p style="text-align: right;"><b>Figure 2.2</b></p>

















**O'Callaghan Moran & Associates,**  
 Unit 15 Melbourne Business Park,  
 Model Farm Road, Cork.  
 Tel. (021) 4345366  
 email: info@ocallaghanmoran.com

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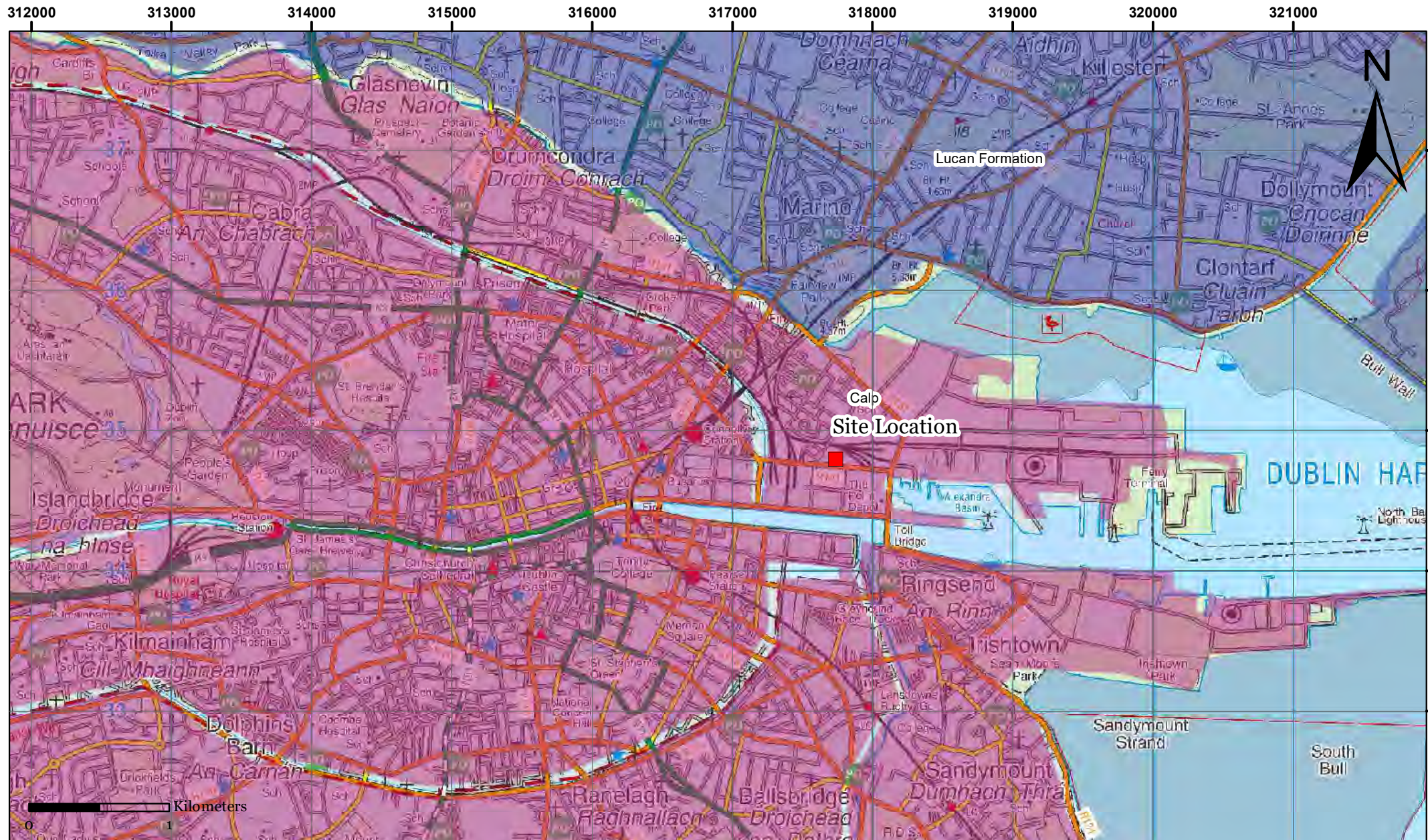
**TITLE**  
 Subsoils

**Details:**

 Site Location	 Rck - Bedrock at Surface
 A - Alluvium	 Tls - Limestone Till
 GLs - Limestone Sands and Gravel	 TdIMr - Tidal Marsh
 Made Ground	 Water
 Mbs - Beach Sand	 Wsd - Blown Sand in Dunes
 Mesc - Esturine Sediments	

**Figure 2.3**





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**TITLE**  
 Bedrock Geology

**Details:**

- Site Location
- Calp - Dark Grey to Black Limestone and Shale
- Lucan Formation - Dark Limestone and Shale

Figure 2.4

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## 2.6 Hydrogeology

GSI has developed a classification system for aquifers based on the value of the resource and their hydrogeological characteristics. The bedrock aquifer is classified as a Locally Important Aquifer (LI), which is productive in local zones (Figure 2.5). Groundwater is expected to flow from west to east toward the River Liffey estuary.

Aquifer vulnerability is defined by the GSI as the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities. Vulnerability categories range from Extreme (E) to High (H) to Moderate (M) to Low (L) and are dependent on the nature and thickness of subsoils above the water table. The GSI vulnerability map indicates that the vulnerability at the site is Low. The groundwater vulnerability is shown on Figure 2.6.

OCM conducted a review of the GSI groundwater well database to identify groundwater wells in the vicinity of the site. The closest recorded borehole is upgradient approximately 450 m to the south-west of the site and is reported to be 7.8 m deep with a 51mm casing diameter. A second well is approximately 560 m to the south-west and is 6.5 m deep also. Both of these wells were drilled in February 1998 and are likely to be groundwater monitoring wells associated with the Sita Environmental waste facility (EPA Licence: W0035). (Figure 2.7).

## 2.7 Flood Risk

A Strategic Flood Risk Assessment was undertaken as part of the preparation of the Dublin City Development Plan 2016-2022 (DCDP), in which flood zones were identified. There are three types or levels of flood zones defined;

- Flood Zone A – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding);
- Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding); and
- Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all other areas that are not in zones A or B.
- Defended Area; where defences are in place for future floods

The site is located in a defended area.

## **2.8 Radon**

The Environmental Protection Agency (EPA) maintains a database on radon. A High Radon Area is one where it is predicted that 10 % or more of homes will exceed the Reference Level of 200 bequerel per cubic metre (Bq/m<sup>3</sup>).

The EPA have prepared a Radon Risk Map in 10km<sup>2</sup> blocks nationally. Radon risk is mapped based on the estimated percentage of homes above the reference level ranging from <1%, 1% - 5%, 5% - 10%, 10% - 20%, and >20%. The EPA caution however that high radon levels can occur in any home in any part of the country, but such homes are more likely to be located in High Radon Areas. The site is located in a Low Radon Risk area, where the reference level is 1% - 5%.

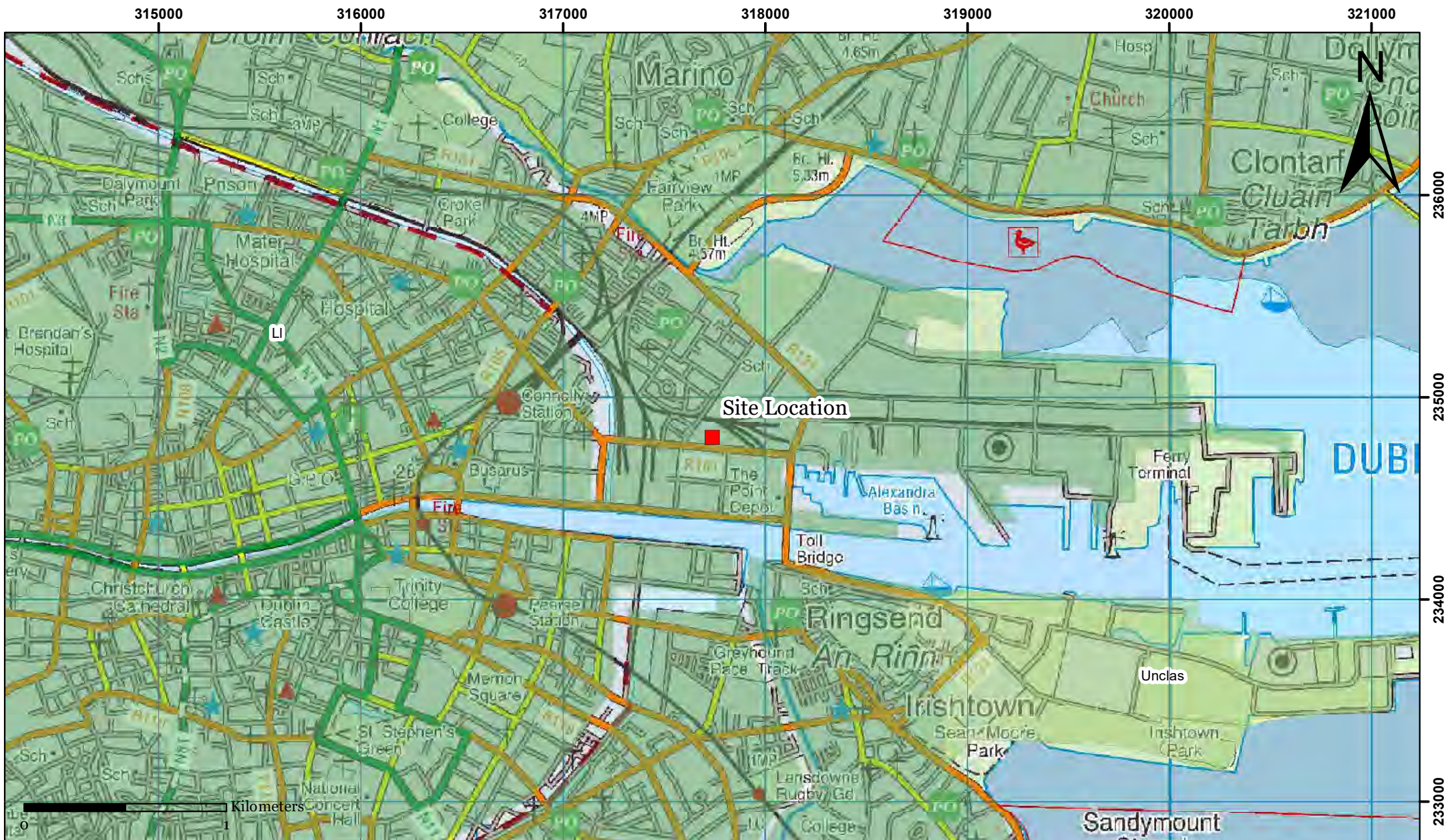
## **2.9 Ecologically Sensitive/Designated Areas**

The nearest designated site is the South Dublin Bay and River Tolka Estuary Special Protection Area (SPA), which is located approximately 800 m to the north of the site at the nearest point. The South Dublin Bay Special Area of Conservation (SAC) is located approximately 1.9 km to the south east and the North Dublin Bay SAC and North Bull Island Nature Reserve is located approximately 3 km north east of the site. There are no other designated sites within 10 km of the site (Figure 2.8).

## **2.10 Hydrology**

The site is located in the Dublin Port area. The River Liffey discharges to the port area/Estuary c 300m to the south of the site. There are no other surface water features on or adjacent to the site (Figure 2.9).









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**TITLE**  
 Aquifer Classification

**Details:**  
 Site Location  
 LI - Locally Important Aquifer. Moderately Productive only in Local Zones  
 Unclassified

**Figure 2.5**












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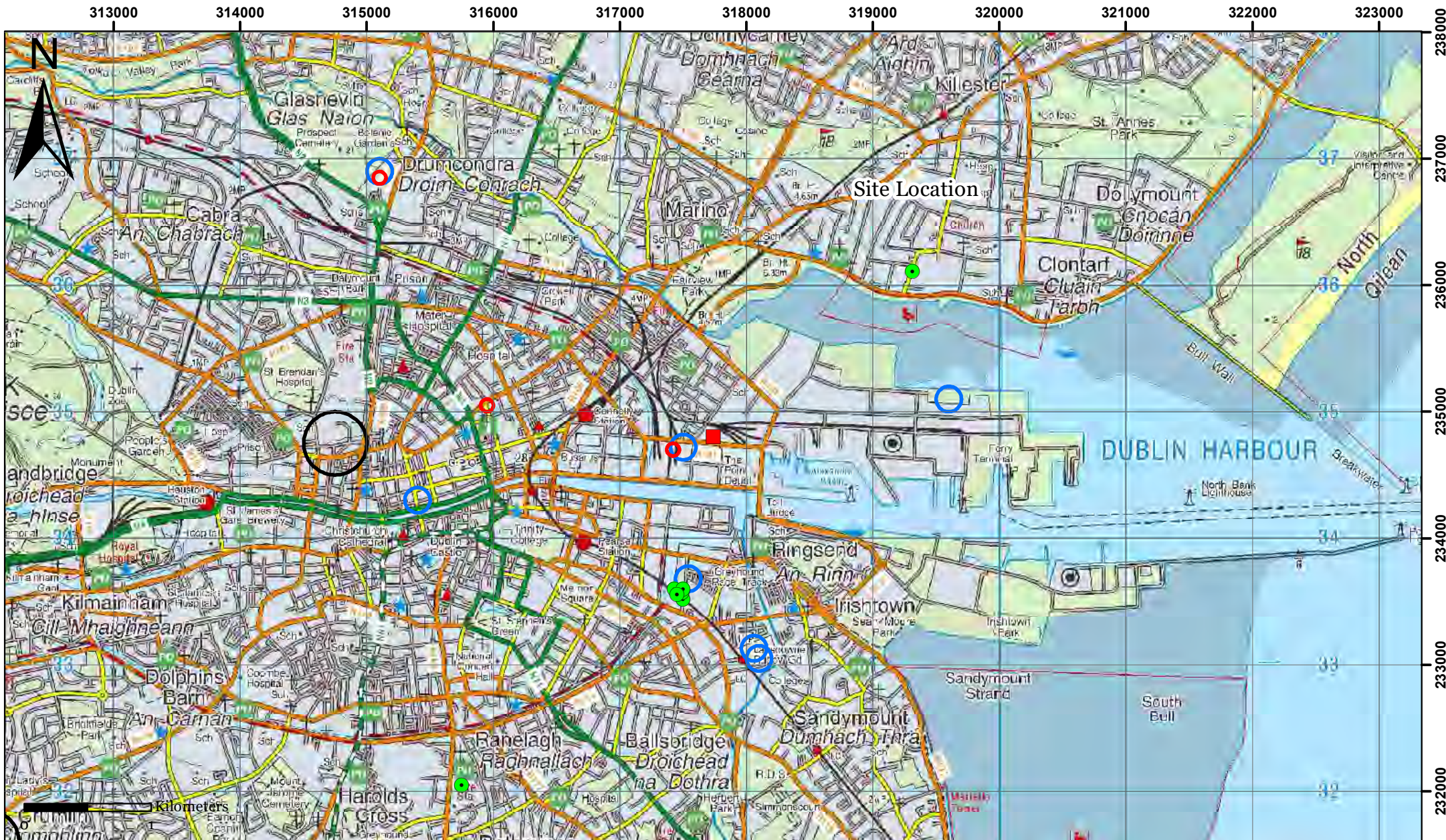
**TITLE**  
 Groundwater Vulnerability

**Details:**

 Site Location ING	 High
 Bedrock near Surface	 Moderate
 Extreme	 Low

**Figure 2.6**





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**TITLE**  
 GSI Well Location Data

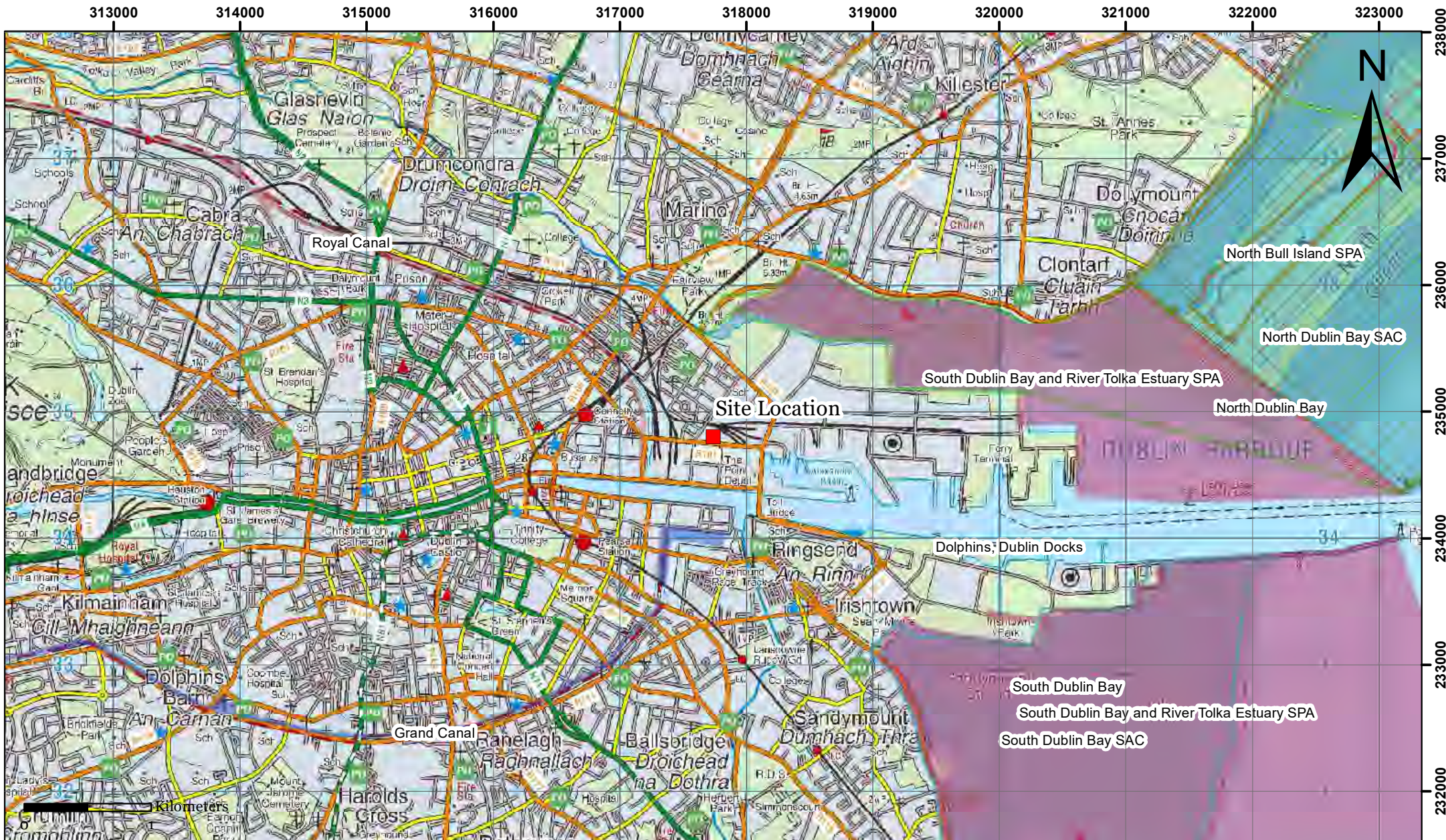
**Details:**  
 Unfortunately many of the borehole logs in the GSI database do not contain accurate location information. The size of the circles shown above is inversely proportional to the accuracy of the well location (i.e. small circles represent high accuracy, where relatively larger circles represent lower accuracy).

- Site Location
- Well 10m to 50m
- Wells 50m to 100m
- Wells 100m to 200m
- Wells 250m to 500m

**Figure 2.7**

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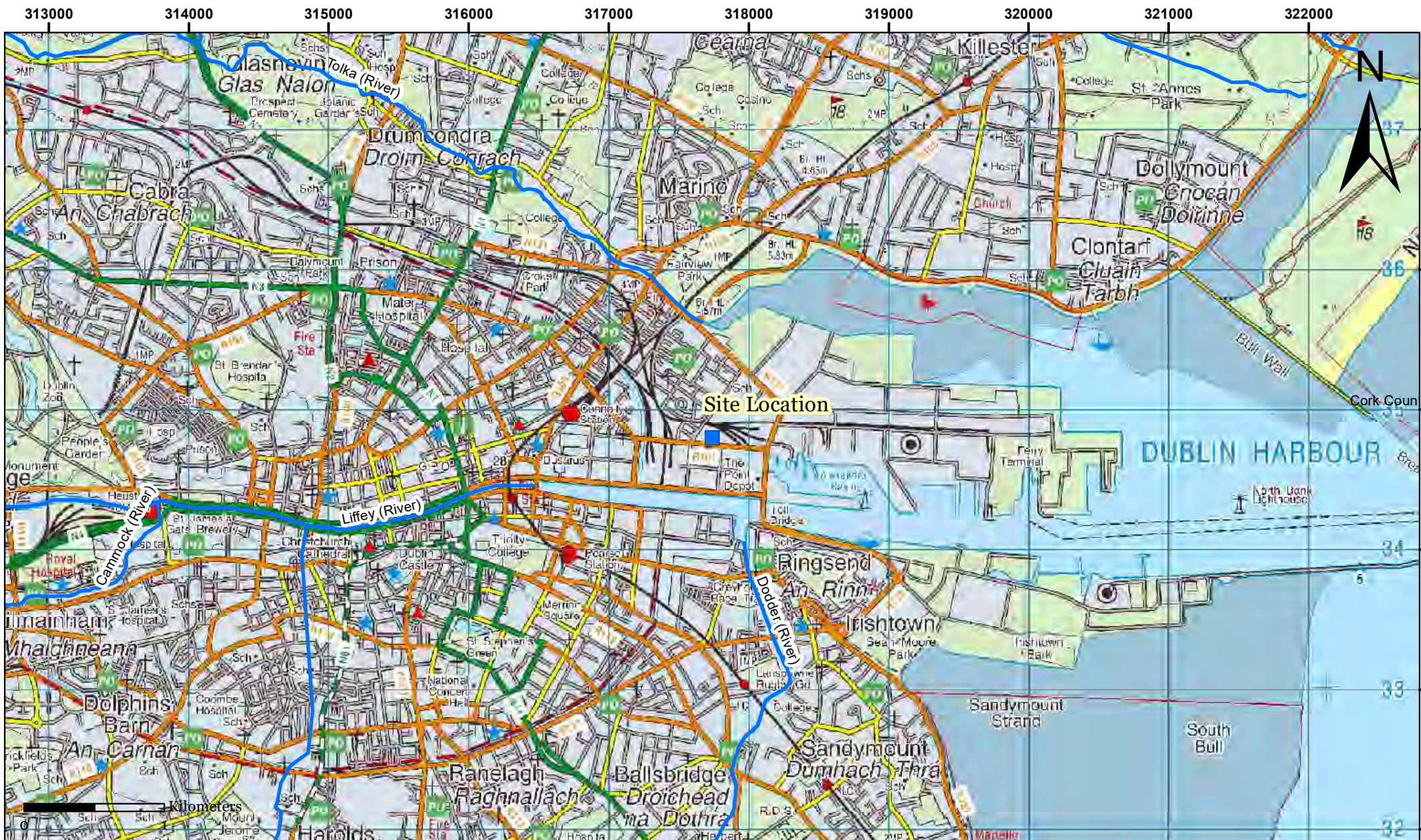
**TITLE**  
 NPWS

**Details:**

- Site Location
- North Dublin Bay SAC
- South Dublin Bay SAC
- North Bull Island SPA
- South Dublin Bay and River Tolka Estuary SPA
- Grand Canal
- North Dublin Bay
- Royal Canal
- South Dublin Bay

**Figure 2.8**








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**TITLE**  
 Hydrology

**Details:**  
 Site Location  
 Rivers

**Figure 2.9**



---

## 3 SOILS ASSESSMENT

---

### 3.1 Site Investigation

The GII site investigation completed in October and November 2018 included the installation of 31 window sample boreholes for collection of samples for waste classification purposes and 10 geotechnical boreholes.

Additional site investigations incorporating four window sample boreholes and two slit trenches were completed in February 2019 in the southwest of the site where the initial investigation indicated the presence of hydrocarbon contamination. This included the installation of four window sample boreholes (WS-201, 202, 203 and 204) and two slit trenches. ST-1 and ST-2. The sample locations are shown on Figure 3.1.

### 3.2 Ground Conditions

The GII logs of the window sample boreholes are in Appendix 2. The logs indicate that the subsurface comprises c1-2m of made ground comprising brown and black sandy, gravelly, clay with occasional red brick, timber and ceramic fragments overlying fine, silty and sometimes gravelly sand with shell fragments.

The southwest corner of the site the additional site investigations detected very strong hydrocarbon odours emanating from the natural ground sand layer.

### 3.3 Sample Collection

Fifty four samples of the made ground at varying depths ranging from 0-4.5m below ground level (bgl) were collected by GII, placed in laboratory prepared containers and stored in coolers prior to shipment to an accredited laboratory, Exova Jones Environmental.

As part of the further investigation GII collected an additional two samples (WS-201 and WS-203) of the contaminated natural ground for full waste classification. In the slit trenches 12 samples were collected for analysis for extractible hydrocarbons as part of the delineation of the impacted area in the southwest of the site.

### 3.4 Laboratory Analysis

The samples were tested for Total Heavy Metals, Total Organic Carbon (TOC), BTEX (benzene, toluene, ethylbenzene and xylene) aliphatic and aromatic hydrocarbons, Polychlorinated Biphenyls (PCB), Mineral Oil, PAH and asbestos. Leachate generated from the samples was tested for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium and zinc, chloride, fluoride, soluble sulphate, phenols, dissolved organic carbon (DOC), total dissolved solids (TDS).

This parameter range also facilitates an assessment of the potentially hazardous properties of the waste, and also allows a determination of appropriate off-site management options based on the Waste Acceptance Criteria (WAC) applied by landfill operators for any material requiring excavation and removal from the site.

The analytical methods were all ISO/CEN approved and the method detection limits were below the relevant guidance/threshold values.

### **3.5 Results**

The full laboratory report is in Appendix 3 and the results are presented in Tables 3.1 3.2 and 3.4. For comparative purposes the tables include Land Quality Management/Chartered Institute of Environmental Health (LQM/CIEH) S4ULs Human Health Risk Assessment-Risk Levels (S4ULs). The S4ULs for residential end use were used to assess human health risk as the proposed development is for residential/student accommodation.

The S4UL for metals was only exceeded for one parameter (arsenic) and in one of fifty six samples (WS-4 at 1-2m).

The S4UL for aliphatic and aromatic hydrocarbons was exceeded in two window sample locations (WS-28 and WS-29) in the initial site investigation.

While elevated hydrocarbons were not detected in the laboratory analysis the samples collected from WS-21 a very strong hydrocarbon odour was recorded in the log for this borehole and further investigation in this area confirmed the presence of elevated hydrocarbons. The S4UL for aliphatic and aromatic hydrocarbons was exceeded in six of the slit trench samples.

The S4UL for Benzo(b)fluoranthene, which is a PAH, was exceeded in 10 samples (WS-1, 2, 4, 9, 12, 18, 21, 22, 24 and 29) in the initial investigation and in two of the samples in the further investigation in the southwest of the site at WS-201 and 203.

Asbestos fibres (<0.001%) were detected in WS-18 (0.25 -0.75m). This is the only sample where asbestos was detected. While it is likely this is a spurious result further investigations in this area are required.

### **3.6 Remedial/Mitigation Measures**

To mitigate the human exposure risk to construction workers and future site users the following remedial measures are proposed.

- The made ground in the areas where the S4ULs have been exceeded should preferably be excavated and removed from the site.
- In areas of the site where the exceedance of the S4ULs occur at depths below the proposed development formation level an alternative to removal is the provision of a barrier layer. In this regard building, roads or car parking will provide a sufficient physical barrier. If it is proposed to provide unpaved open space in these areas separation layer of granular fill of c500mm should be installed.

Strong hydrocarbon odours were detected initially in WS-21 in the southwest of the site when the sample was being collected. The further investigations in this area has indicated the presence of an area of hydrocarbon contamination as shown on Figure 3.2. It is estimated that there could be at least 1500m<sup>3</sup> of contaminated soils present but there could be more if the contamination extends deeper than that proven in the slit trenches. The contamination encountered in this portion of the site should be excavated and removed from the site to mitigate the environmental risk to construction workers and future site users.

**Table 3.1 Metal**

Parameter	Location	WS4	Residential <u>without</u> homegrown produce LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]		
	Depth		1.0-2.0	1 % SOM	2.5% SOM
<b>Metals</b>	<b>Units</b>				
Antimony	mg/kg	5			
Inorganic Arsenic	mg/kg	45.3	NE	NE	40
Barium	mg/kg	160			
Cadmium	mg/kg	0.9	NE	NE	85
Chromium III	mg/kg	107.4	NE	NE	910
Copper	mg/kg	203	NE	NE	7,100
Hexavalent Chromium	mg/kg	<0.3	NE	NE	6*
Lead	mg/kg	536			
Mercury	mg/kg	1.6	NE	NE	56
Molybdenum	mg/kg	7.4			
Nickel	mg/kg	51.5	NE	NE	180*
Selenium	mg/kg	2	NE	NE	430
Zinc	mg/kg	266	NE	NE	40,000
Soil Organic Matter	%	8.07			

NE denotes; Not established



**Table 3.2 Aliphatic and Aromatic Hydrocarbons**

Parameter	Location	WS28	WS28	WS29	Residential <u>without</u> homegrown produce LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]		
	Depth	1.0-2.0	2.0-3.0	1.0-2.0	1 % SOM	2.5%	6 % SOM
<b>Aliphatics</b>	<b>Units</b>						
EC 5-6	mg/kg	<0.1	<0.1	<0.1	42	78	160
EC >6-8	mg/kg	0.1	2.1	<0.1	100	230	530
EC >8-10	mg/kg	0.9	21.6	<0.1	27	65	150
EC >10-12	mg/kg	677.8	302.2	<0.2	130	330	770
EC >12-16	mg/kg	325	147	12	1,100	2,400	4,400
EC >16-35	mg/kg	4009	1993	114	65,000	92,000	110,000
EC >35-44	mg/kg	363	184	14	65,000	92,000	110,000
Total aliphatics C5-40	mg/kg	5376	2650	140			
<b>Aromatics</b>							
EC 5-7	mg/kg	<0.1	<0.1	<0.1	370	690	1,400
EC >7-8	mg/kg	<0.1	0.3	<0.1	860	1,800	3,900
EC >8-10	mg/kg	2.3	10.1	<0.1	47	110	270
EC >10-12	mg/kg	406.0	228.4	133.1	250	590	1,200
EC >12-16	mg/kg	144	87	420	1,800	2,300	2,500
EC >16-21	mg/kg	219	128	1260	1,900	1,900	1,900
EC >21-35	mg/kg	1090	691	2327	1,900	1,900	1,900
EC >35-44	mg/kg	183	140	216	1,900	1,900	1,900
Total aromatics C5-40	mg/kg	2044	1285	4356			
Aliphatics + Aromatics EC >44-70	mg/kg	7420	3935	4496	1,900	1,900	1,900
<b>VOCs</b>							
MTBE	mg/kg	<0.005	<0.005	<0.005			
Benzene	mg/kg	<0.005	<0.005	0.020	0.38	0.7	1.4
Toluene	mg/kg	0.120	0.307	0.014	880	1,900	3,900
Ethylbenzene	mg/kg	1.075	1.492	0.017	83	190	440
p-Xylene	mg/kg	0.857	7.579	0.056	79	180	430
m-Xylene	mg/kg	0.857	7.579	0.056	82	190	450
o-Xylene	mg/kg	0.321	1.000	0.017	88	210	480
Soil Organic Matter	%	8.49	13.14	4.10			

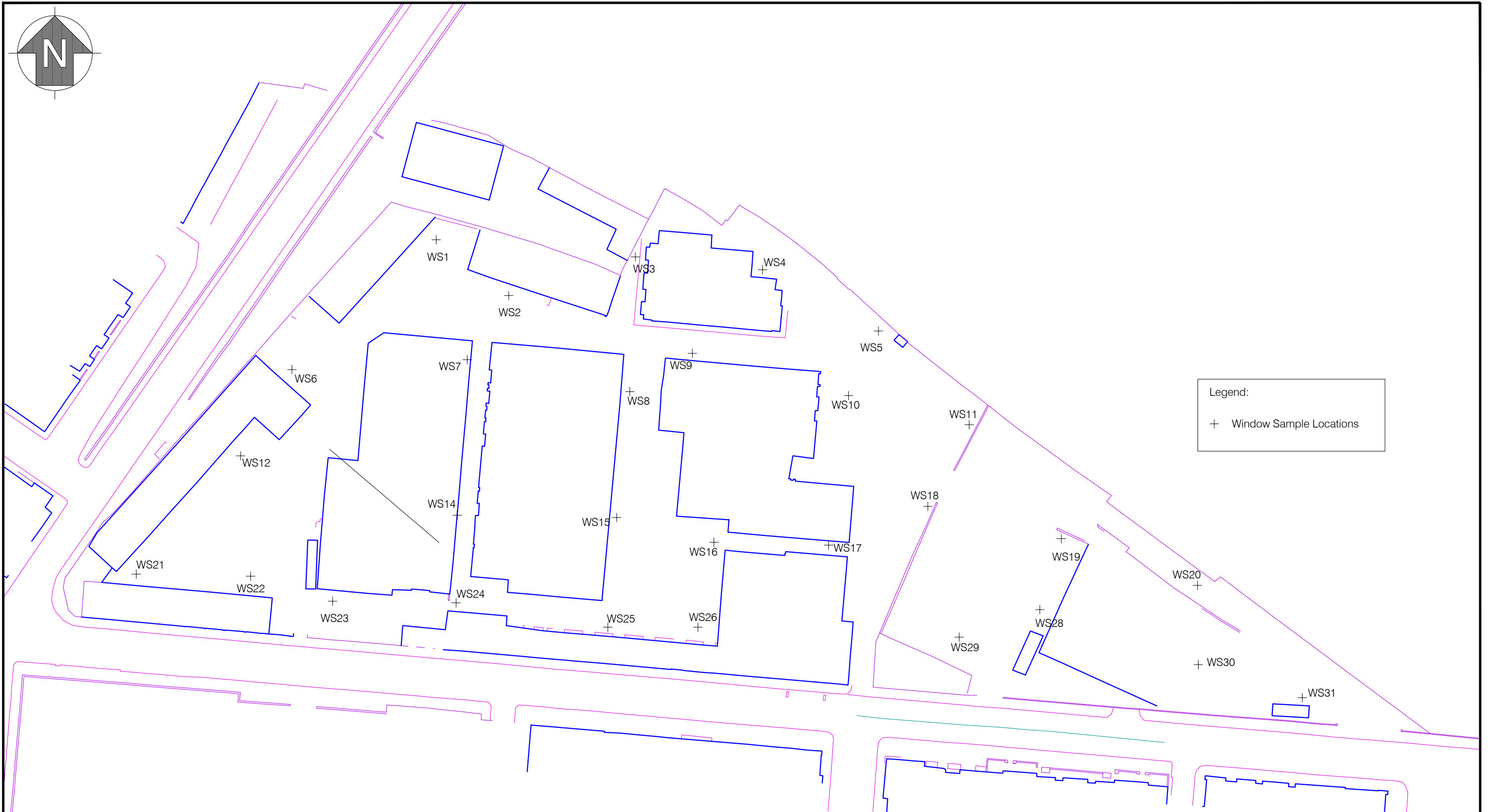
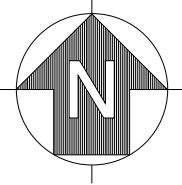
**Table 3.3 PAH**

Parameter	Location	WS1	WS2	WS4	WS9	WS12	WS18	WS22	WS24	WS29	WS30	WS-201	WS-203	Residential <u>without</u> homegrown produce LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]			
		Depth	0.0-1.0	0.0-1.0	1.0-2.0	0.0-1.0	0.25-0.75	0.25-0.75	0.25-0.75	0.0-1.0	1.0-2.0	2.0-3.0	2.00-3.00	0.00-1.00	1 % SOM	2.5% SOM	6 % SOM
<b>PAH MS</b>	<b>Units</b>																
Naphthalene	mg/kg	3.5	0.77	1.8	2.64	0.64	1.94	0.86	3.98	43.88	1.46	2.65	0.49	2.3*	5.6*	13*	
Acenaphthylene	mg/kg	7.01	0.72	0.51	11.77	0.33	2.09	0.11	12.73	0.62	0.27	0.61	0.16	2,900	4,600	6,000	
Acenaphthene	mg/kg	1.52	0.14	2.24	0.87	0.39	2.19	1.71	5.37	8.50	1.37	6.93	1.88	3,000	4,700	6,000	
Fluorene	mg/kg	5.68	0.46	1.45	2.37	0.67	1.42	1.56	17	8.78	1.25	4.71	1.26	2,800	3,800	4,500	
Phenanthrene	mg/kg	37.69	2.26	23.29	35.08	5.67	17.23	10.18	117.87	30.62	15.04	70.01	12.09	1,300	1,500	1,500	
Anthracene	mg/kg	13.36	0.82	3.65	12.92	1.39	4.35	1.83	31.58	5.76	1.80	17.69	2.18	31,000	35,000	37,000	
Fluoranthene	mg/kg	61.98	5.08	33.8	85.89	7.46	26.83	9.11	116.79	24.24	17.72	97.22	11.38	1,500	1,600	1,600	
Pyrene	mg/kg	54.62	5.03	30.85	76.26	6.34	25.09	7.56	93.6	21.51	15.55	76.69	9.65	3,700	3,800	3,800	
Benzo(a)anthracene	mg/kg	29.98	2.97	18.74	37.44	4.37	10.88	2.98	41.6	11.14	6.33	46.01	6.05	11	14	15	
Chrysene	mg/kg	31.22	3.42	22.21	43.51	3.70	14.79	3.41	38.54	10.86	8.29	48.4	5.85	30	31	32	
Benzo(bk)fluoranthene	mg/kg	53.61	8.05	40.22	76.95	6.89	26.09	6.64	72.78	16.37	12.55	82.86	9.00	NE	NE	NE	
Benzo(a)pyrene	mg/kg	30.7	4.15	20.84	43.27	3.32	13.46	3.22	36.13	8.74	5.71	43.82	4.80	3.2	3.2	3.2	
Indeno(123cd)pyrene	mg/kg	16.22	2.91	13.19	25.41	2.31	8.86	1.90	21.52	4.51	3.65	28.07	3.01	45	46	46	
Dibenzo(ah)anthracene	mg/kg	4.72	0.59	3.75	5.72	0.64	1.99	0.67	6.17	1.77	0.99	5.23	0.66	0.31	0.32	0.32	
Benzo(ghi)perylene	mg/kg	17.11	3.15	16.49	27.52	2.04	8.53	2.02	16.62	5.20	3.49	26.74	2.90	360	360	360	
Coronene	mg/kg	2.9	0.51	1.87	4.78	0.34	1.41	0.21	1.97	0.87	0.51	4.09	0.49	NE	NE	NE	
PAH 6 Total	mg/kg	179.62	23.34	124.54	259.04	22.02	83.77	22.89	263.84	59.06	43.12	278.71	31.09	NE	NE	NE	
PAH 17 Total	mg/kg	371.82	41.03	234.9	492.4	46.50	167.15	53.97	634.25	203.37	95.98	561.73	71.85	NE	NE	NE	
Benzo(b)fluoranthene	mg/kg	38.6	5.80	28.96	55.4	4.96	18.78	4.78	52.4	11.79	9.04	59.66	6.48	3.9	4.0	4.0	
Benzo(k)fluoranthene	mg/kg	15.01	2.25	11.26	21.55	1.93	7.31	1.86	20.38	4.58	3.51	23.2	2.52	110	110	110	
Benzo(j)fluoranthene	mg/kg	15	3	11	<10	1	7	1	20	4	4	23	2	NE	NE	NE	
Mineral Oil (C10-C40)	mg/kg	<30	121	<30	40	<30	307	<30	<30	140	<30	<30	68	NE	NE	NE	
Soil Organic Matter	%	13.26	16.96	8.07	12.82	12.94	NDP	9.47	15.62	4.10	5.52	21.33	-	NE	NE	NE	

NE denotes; Not Established

**Table 3.4 Extractible Hydrocarbons Results from Slit Trench Excavations**

Parameter	ST1	ST1	ST1	ST2B	ST2C	ST2C	Residential <u>without</u> homegrown		
	0.10	1.20	2.30	0.10	0.10	2.30	1 % SOM	2.5% SOM	6 % SOM
Aliphatics + Aromatics EC >44-70	67691	15393	20476	2233	2022	2781	1,900	1,900	1,900



O' Callaghan Moran & Associates.  
 Unit 15 Melbourne Business Park  
 Model Farm Road, Cork, Ireland.  
 Tel. (021) 4345366  
 email: info@ocallaghanmoran.com

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FIGURE No.

3.1

TITLE

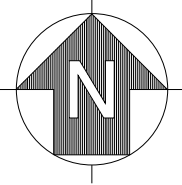
Sample Locations

SCALE

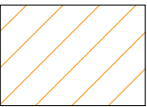
SCALE

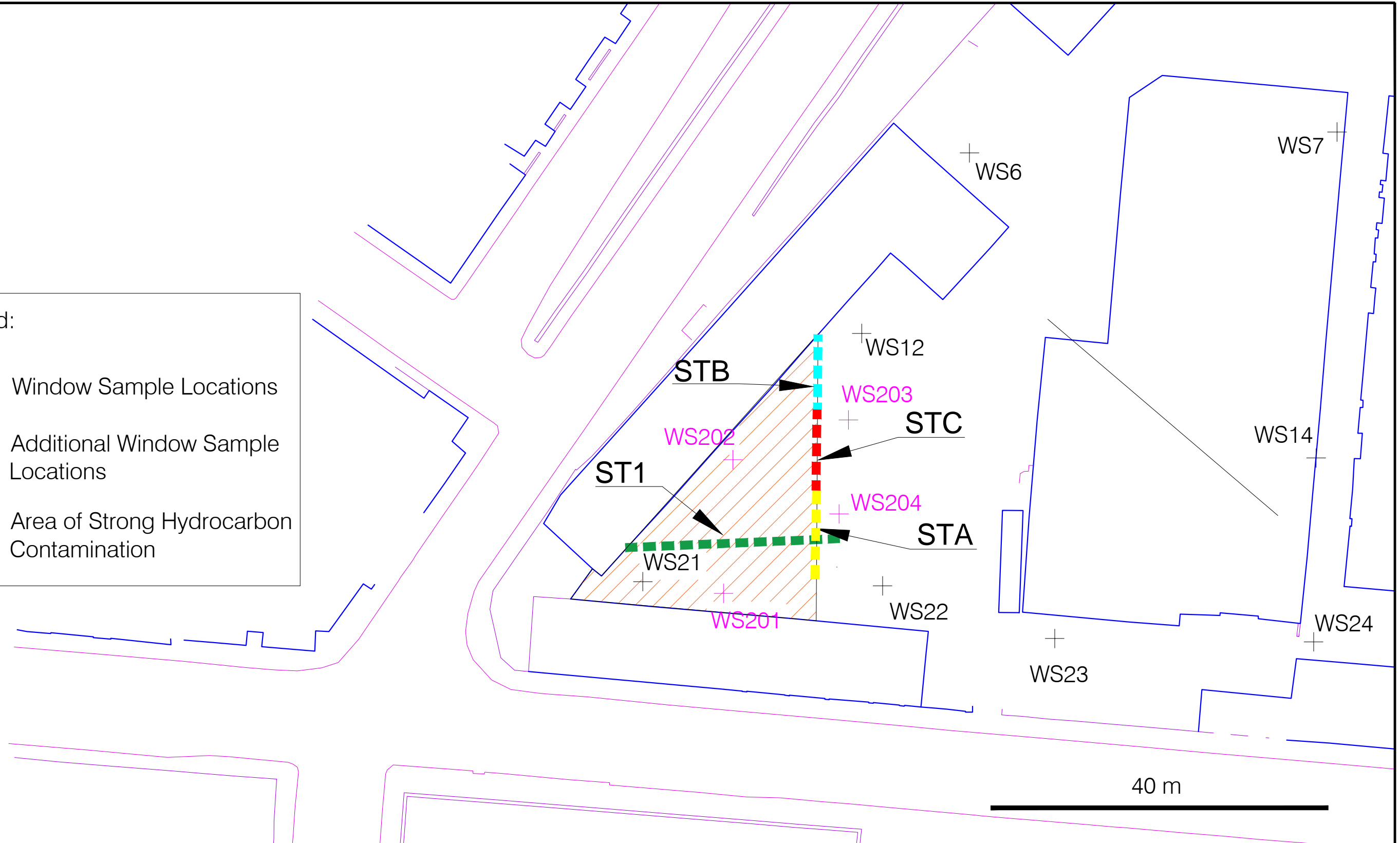
REV.

A



Legend:

- + Window Sample Locations
- + Additional Window Sample Locations
-  Area of Strong Hydrocarbon Contamination



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Model Farm Road, Cork, Ireland.  
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email: info@ocallaghanmoran.com

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FIGURE No.

3.2

TITLE

Area of Hydrocarbon Contamination

SCALE  
SCALE

REV.  
A

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## 4 WASTE CLASSIFICATION ASSESSMENT

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### 4.1 Waste Classification

The Haz Waste Online Classification Engine, developed in the UK by One Touch Data Ltd, was used to determine the waste classification. This tool was developed specifically to establish whether waste is non-hazardous or hazardous and has been approved for use in Ireland by the Environmental Protection Agency.

The results are on Table 4.1 and 4.2 and the full Waste Classification Report is in Appendix 4. In the initial investigation five samples are classified as hazardous due to the presence of elevated Total Petroleum Hydrocarbons (TPH). The samples are (WS-9 (0-1m), WS-18(0.25-0.75m), WS-28 (1-2m and 2-3m) and WS-29(1-2m). One sample is classified as hazardous due to the presence of elevated copper and lead (WS-23 -0.25-0.75m). The appropriate List of Waste (LoW) code for these samples is 17 09 03\* construction demolition waste containing hazardous substances.

Sixteen samples are classified as Non-Hazardous Waste with List of Waste (LoW) code is 17 09 04 (Construction Demolition Waste). The remaining thirty two samples are classified as Non-Hazardous Waste with the List of Waste (LoW) code is 17 05 04 Soil and Stone).

Asbestos was detected in one out of fifty four samples, WS-18 (0.25-0.75m). Quantification analysis indicates that the asbestos level is <0.001%. It is possible that this is a spurious result, but further investigation is required to confirm this.

In the further investigation 11 samples from the slit trenches are classified as hazardous due the presence of elevated hydrocarbons. The appropriate List of Waste (LoW) code for these samples is 17 09 03\* construction demolition waste containing hazardous substances. Three samples are classified as non-hazardous with the List of Waste (LoW) code is 17 05 04 Soil and Stone).

Asbestos was not detected during the further investigation.

**Table 4.1 Waste Classification Results (Initial Investigation)**

Sample No.	Depth	Classification	LoW Code	Determinand
WS9	0.0-1.0	Hazardous	17 09 03	TPH
WS18	0.25-0.75	Hazardous	17 09 03	TPH
WS23	0.25-0.75	Hazardous	17 09 03	Copper, Lead
WS28	1.0-2.0	Hazardous	17 09 03	TPH
WS28	2.0-3.0	Hazardous	17 09 03	TPH
WS29	1.0-2.0	Hazardous	17 09 03	TPH
WS1	0.0-1.0	Non-Hazardous	17 09 04	-
WS3	0.25-0.75	Non-Hazardous	17 09 04	-
WS10	0.0-1.0	Non-Hazardous	17 09 04	-
WS14	0.25-0.75	Non-Hazardous	17 09 04	-
WS15	1.0-2.0	Non-Hazardous	17 09 04	-
WS16	0.00-1.00	Non-Hazardous	17 09 04	-
WS16	1.00-2.00	Non-Hazardous	17 09 04	-
WS21	0.25-0.75	Non-Hazardous	17 09 04	-
WS21	1.00-2.00	Non-Hazardous	17 09 04	-
WS22	2.00-3.00	Non-Hazardous	17 09 04	-
WS22	3.00-3.80	Non-Hazardous	17 09 04	-
WS23	1.00-1.60	Non-Hazardous	17 09 04	-
WS24	0.0-1.0	Non-Hazardous	17 09 04	-
WS30	1.0-2.0	Non-Hazardous	17 09 04	-
WS31	0.25-0.75	Non-Hazardous	17 09 04	-
WS31	1.0-2.0	Non-Hazardous	17 09 04	-
WS1	1.0-2.0	Non-Hazardous	17 05 04	-
WS1	2.0-2.8	Non-Hazardous	17 05 04	-
WS2	0.0-1.0	Non-Hazardous	17 05 04	-
WS2	1.0-2.0	Non-Hazardous	17 05 04	-
WS2	2.0-3.0	Non-Hazardous	17 05 04	-
WS3	1.0-2.0	Non-Hazardous	17 05 04	-
WS4	0.25-0.75	Non-Hazardous	17 05 04	-
WS4	1.0-2.0	Non-Hazardous	17 05 04	-
WS05	1.0-2.0	Non-Hazardous	17 05 04	-
WS05	2.0-2.6	Non-Hazardous	17 05 04	-
WS9	1.0-2.0	Non-Hazardous	17 05 04	-
WS9	2.0-2.8	Non-Hazardous	17 05 04	-
WS10	1.0-2.0	Non-Hazardous	17 05 04	-
WS10	2.0-3.0	Non-Hazardous	17 05 04	-
WS12	0.25-0.75	Non-Hazardous	17 05 04	-
WS12	1.0-2.0	Non-Hazardous	17 05 04	-
WS12	2.0-3.0	Non-Hazardous	17 05 04	-
WS14	1.0-2.0	Non-Hazardous	17 05 04	-
WS14	2.0-3.0	Non-Hazardous	17 05 04	-
WS15	2.0-3.0	Non-Hazardous	17 05 04	-
WS15	3.0-4.0	Non-Hazardous	17 05 04	-
WS15	4.0-4.5	Non-Hazardous	17 05 04	-
WS16	2.00-3.00	Non-Hazardous	17 05 04	-
WS16	3.00-4.00	Non-Hazardous	17 05 04	-
WS18	1.0-2.0	Non-Hazardous	17 05 04	-
WS18	2.0-3.0	Non-Hazardous	17 05 04	-
WS18	3.0-4.0	Non-Hazardous	17 05 04	-
WS30	2.0-3.0	Non-Hazardous	17 05 04	-
WS30	3.0-4.0	Non-Hazardous	17 05 04	-
WS31	2.0-3.0	Non-Hazardous	17 05 04	-
WS31	3.0-4.0	Non-Hazardous	17 05 04	-
WS31	4.0-5.0	Non-Hazardous	17 05 04	-

**Table 4.2 Waste Classification Results (Further Investigation)**

Sample No.	Depth	Classification	LoW Code	Determinand
ST1	0.10	Hazardous	17 09 03	TPH
ST1	1.20	Hazardous	17 09 03	TPH
ST1	2.30	Hazardous	17 09 03	TPH
ST2A	0.10	Hazardous	17 09 03	TPH
ST2A	1.20	Hazardous	17 09 03	TPH
ST2A	2.30	Hazardous	17 09 03	TPH
ST2B	0.10	Hazardous	17 09 03	TPH
ST2B	2.30	Hazardous	17 09 03	TPH
ST2C	0.10	Hazardous	17 09 03	TPH
ST2C	1.20	Hazardous	17 09 03	TPH
ST2C	2.30	Hazardous	17 09 03	TPH
ST2B	1.20	Non-Hazardous	17 09 04	
WS-201	2.00-3.00	Non-Hazardous	17 09 04	-
WS-203	0.00-1.00	Non-Hazardous	17 09 04	-

## 4.2 Waste Acceptance Criteria

The results of the WAC testing are presented in Table 4.3 – 4.8 which includes for comparative purposes the WAC for Inert, Non Hazardous and Hazardous Waste Landfills pursuant to Article 16 of the EU Landfill Directive 1999/31/EC Annex II which establishes criteria and procedures for the acceptance of waste at landfills.

Ten samples meet the inert WAC. WS-1(1-2m), WS-2 (1-2m), WS-3 (0.25 – 0.75m), WS-10 (2-3m), WS15 and WS-16, (3-4m), WS-18 (2-3m and 3-4m), WS-23 (0.25-0.75m), WS-30 (3-m). Samples WS-18 (1-2m), WS-23 (1-1.6m), WS-24 (0-1m) and WS-31 (3-4 and 4-5m) only exceed the inert WAC for TOC. For these samples the DOC is below the inert WAC and the annex indicates that the TOC can be considered to meet the inert WAC where this is the case. The remaining samples exceed the inert WAC.

In the further investigation two samples were tested for WAC testing (WS-201 and WS203). With the exception of TOC (WS 201) both samples meet the inert WAC. The DOC is not elevated in this sample and the TOC can be considered to be complying with the inert WAC.

## 4.3 Waste Management Options

Where material requires excavation and removal from the site the following characterisation and waste acceptance criteria applies;

The soils in the areas where samples WS-9 (0-1m), WS-18(0.25-0.75m), WS-28 (1-2m and 2-3m), WS-29(1-2m) and WS-23 (0.25-0.75m) were collected are classified as Hazardous and the appropriate LoW code is 17 09 03\* construction demolition waste containing hazardous

substances. The soils from these areas must be sent to a licensed hazardous waste facility for treatment/disposal.

The soils from the area where the further investigation was completed in the southwest of the site in the slit trench at ST-1(0.1m, 1.2m, 2.3m) at ST2A(0.1m, 1.2m and 2.3m) at ST2B (0.1m and 2.3m) and ST2C (0.1m, 1.2m and 2.3m) collected are also classified as Hazardous and the appropriate LoW code is 17 09 03\* construction demolition waste containing hazardous substances. The soils from these areas must be sent to a licensed hazardous waste facility for treatment/disposal.

The soils in the area where samples WS-1(1-2m), WS-2 (1-2m), WS-10 (2-3m), WS15 and WS-16, (3-4m), WS-18 (2-3m and 3-4m), WS-30 (3-m) were collected are classified as Non-Hazardous and the appropriate Low Code is 17 05 04. The soils from these areas are suitable for recovery at a waste recovery facility subject to approval of the facility operator.

The soils from the areas where samples WS-18 (1-2m), WS-23 (1-1.6m), WS-24 (0-1m) WS-31 (3-4 and 4-5m) and from WS-201 and WS-203 in the further investigation were collected are also potentially suitable for recovery if the TOC derogation is accepted by the recovery facility. If not the material is suitable for recovery/disposal to non-hazardous landfill subject to approval of the facility operator.

While the soils in the areas where WS-3 (0.25 – 0.75m), WS-23 (0.25-0.75m) collected meet the inert WAC the LoW for these samples is 17 09 04 (Construction Demolition Waste). This material is suitable for disposal to non-hazardous landfill subject to approval of the facility operator.

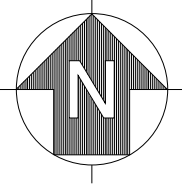
Asbestos fibres (<0.001%) was detected in WS-18 0.25-0.75). This result may be spurious and further testing of this location should be carried out to establish if asbestos is present.

The soils in the remaining areas where samples were collected are classified as Non-Hazardous and are suitable for disposal to Non-Hazardous Waste Landfill subject to approval of the facility operator.

Dig plans for the various layers sampled are included on Figures 4.1 – 4.5. Samples were not collected from each layer at each window sample locations. Where no data is available the grid squares have not been assigned a waste classification or LoW code.

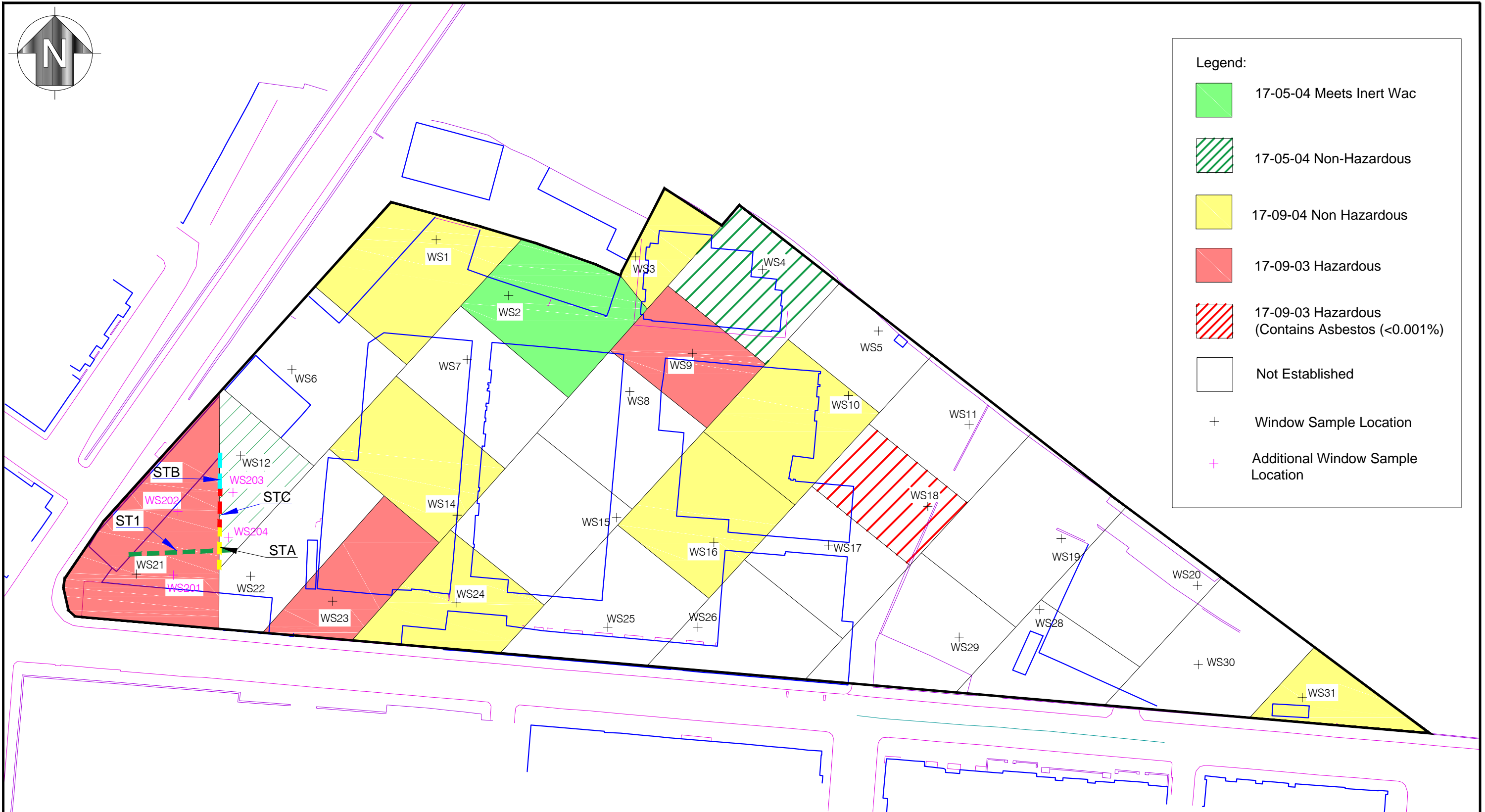
It should be noted that it was not possible to establish the full depth of contamination in the southwest section of the site in the trench due to the ground conditions. While it appears to be primarily in the upper 2m it could extend to deeper level.





**Legend:**

- 17-05-04 Meets Inert Wac
- 17-05-04 Non-Hazardous
- 17-09-04 Non Hazardous
- 17-09-03 Hazardous
- 17-09-03 Hazardous (Contains Asbestos (<0.001%))
- Not Established
- + Window Sample Location
- + Additional Window Sample Location



O' Callaghan Moran & Associates.  
 Unit 15 Melbourne Business Park  
 Model Farm Road, Cork, Ireland.  
 Tel. (021) 4345366  
 email: info@ocallaghanmoran.com

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FIGURE No.

4.1

TITLE

Excavation Plan 0-1m

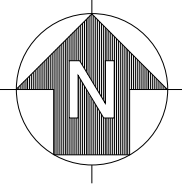
SCALE

SCALE

REV.

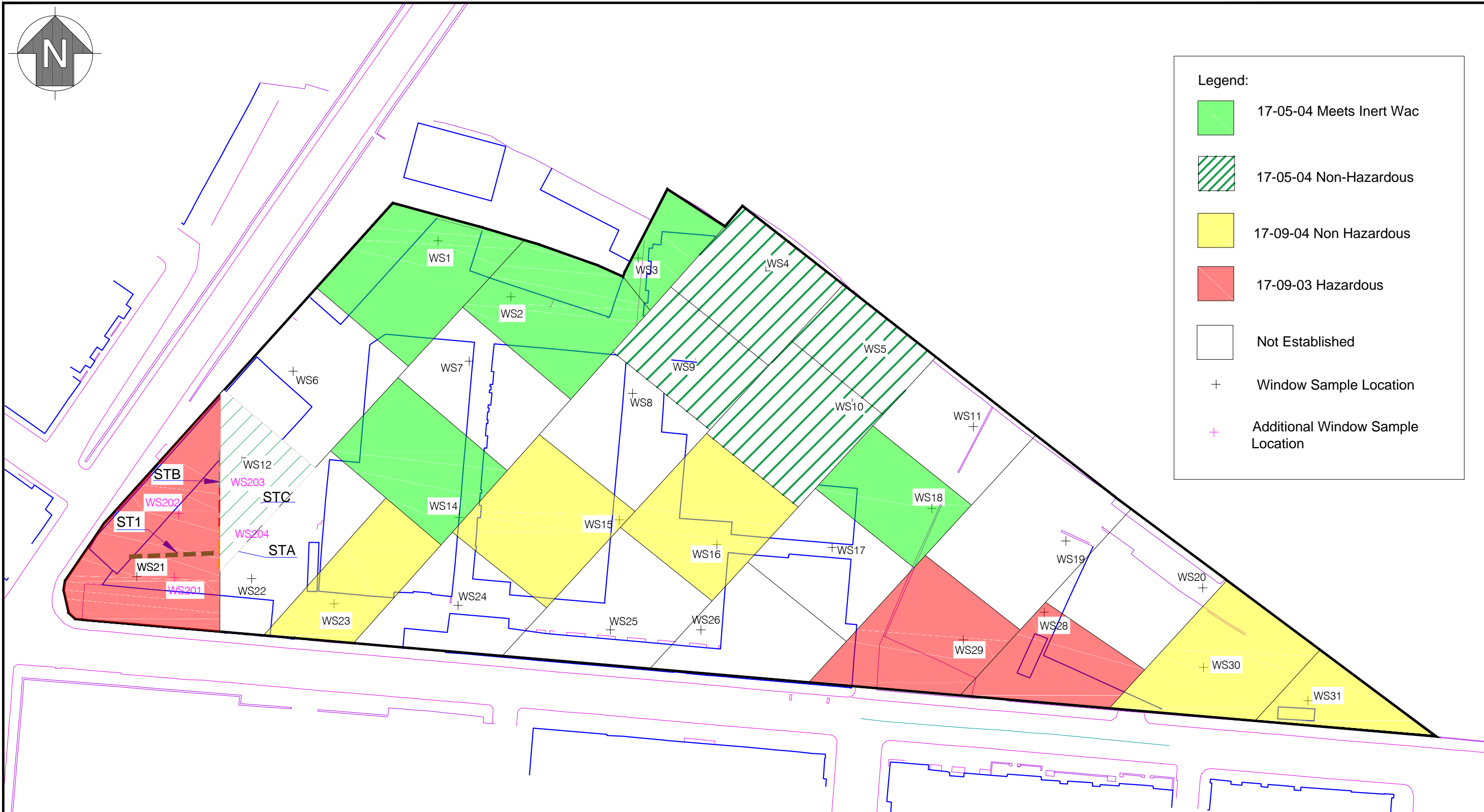
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**Legend:**

- 17-05-04 Meets Inert Wac
- 17-05-04 Non-Hazardous
- 17-09-04 Non Hazardous
- 17-09-03 Hazardous
- Not Established
- + Window Sample Location
- + Additional Window Sample Location



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 Unit 15 Melbourne Business Park  
 Model Farm Road, Cork, Ireland.  
 Tel. (021) 4345366  
 email: info@ocallaghanmoran.com

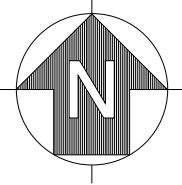
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FIGURE No.  
 4.2

TITLE  
**Excavation Plan 1-2m**

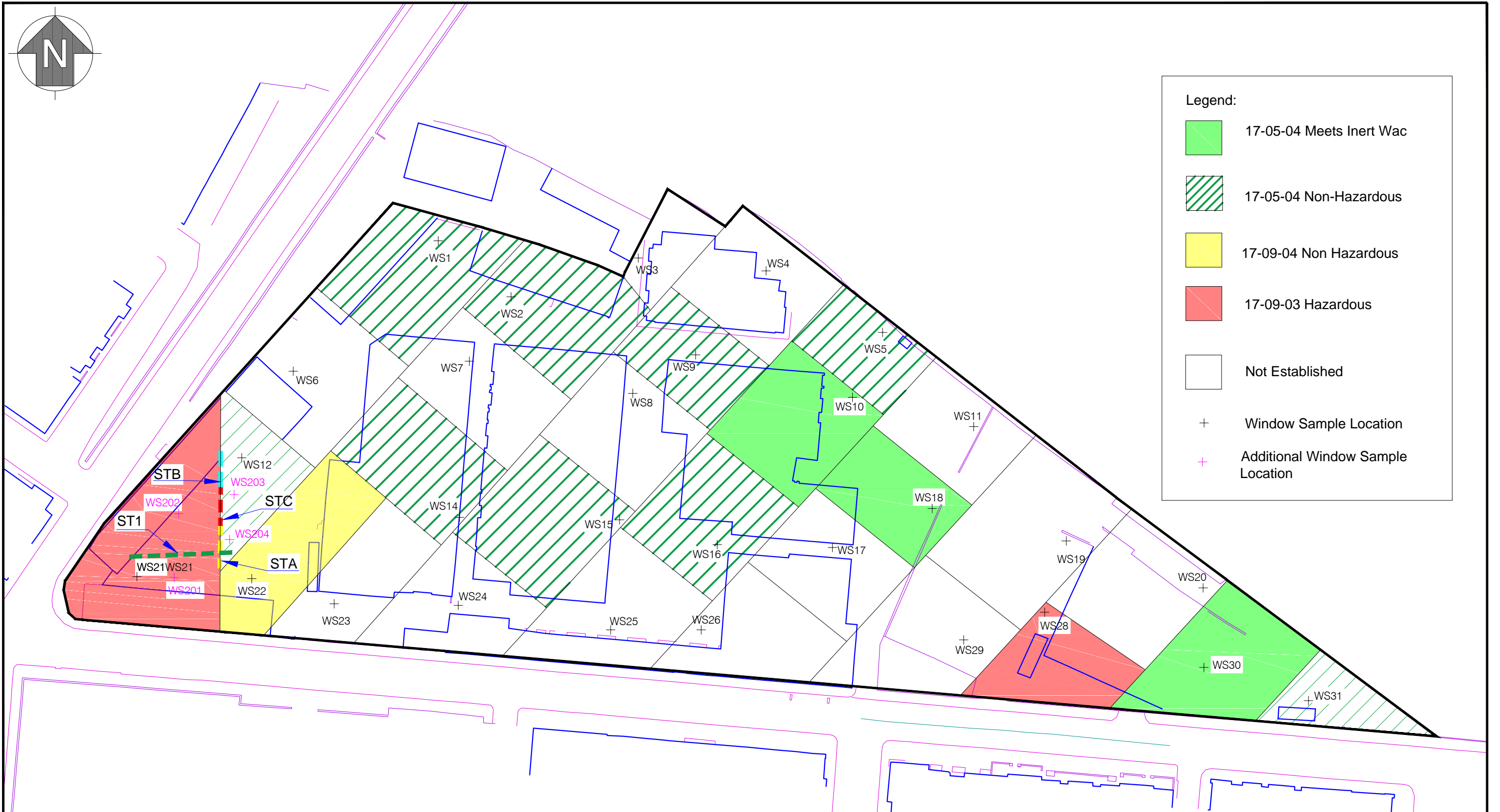
SCALE	REV.
SCALE	A

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**Legend:**

- 17-05-04 Meets Inert Wac
- 17-05-04 Non-Hazardous
- 17-09-04 Non Hazardous
- 17-09-03 Hazardous
- Not Established
- Window Sample Location
- Additional Window Sample Location



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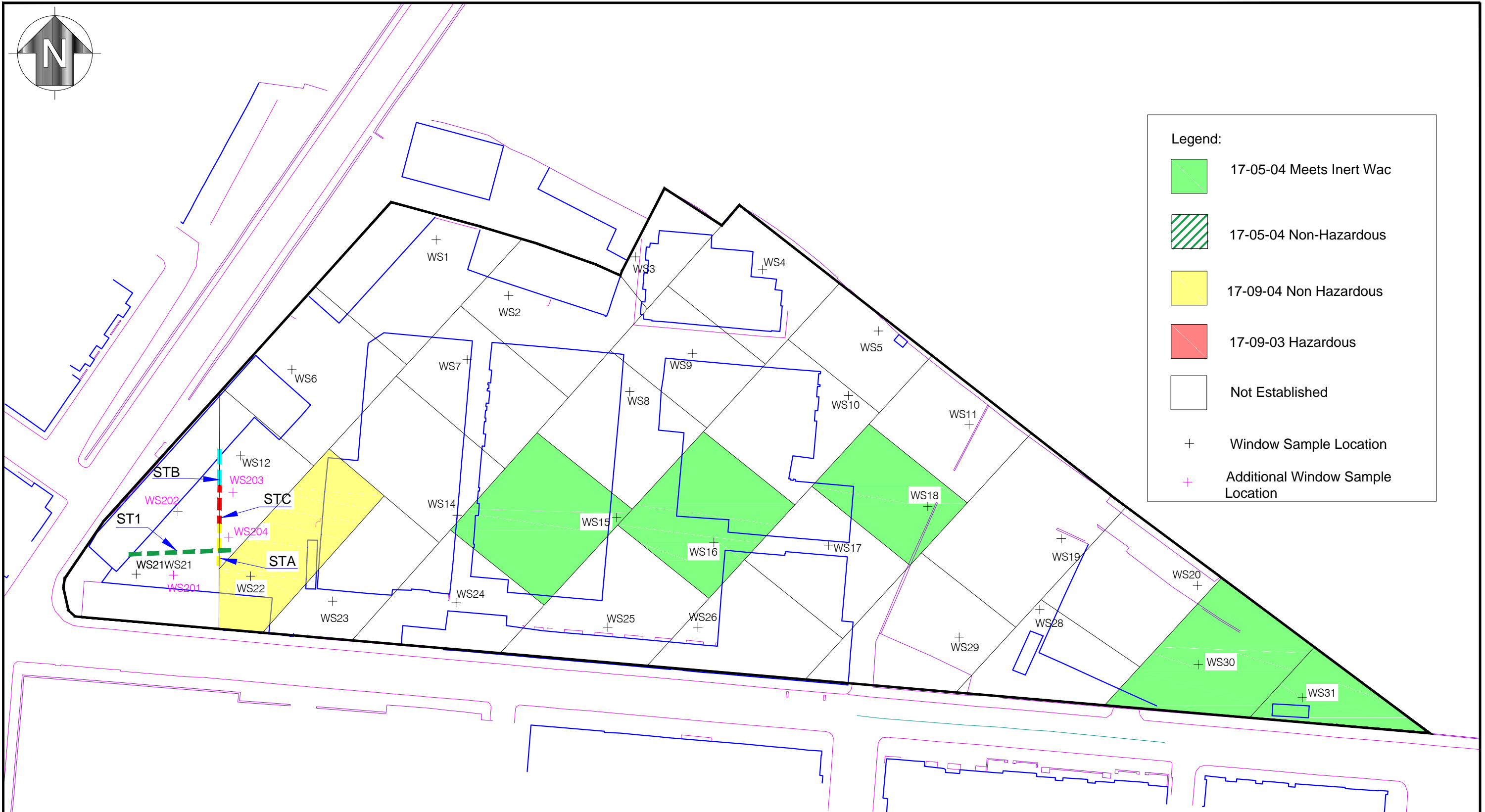
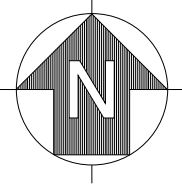
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FIGURE No.  
 4.3

TITLE  
**Excavation Plan 2-3m**

SCALE	REV.
SCALE	A

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**Legend:**

- 17-05-04 Meets Inert Wac
- 17-05-04 Non-Hazardous
- 17-09-04 Non Hazardous
- 17-09-03 Hazardous
- Not Established
- Window Sample Location
- Additional Window Sample Location



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 Model Farm Road, Cork, Ireland.  
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FIGURE No.

4.4

TITLE

Excavation Plan 3-4m

SCALE

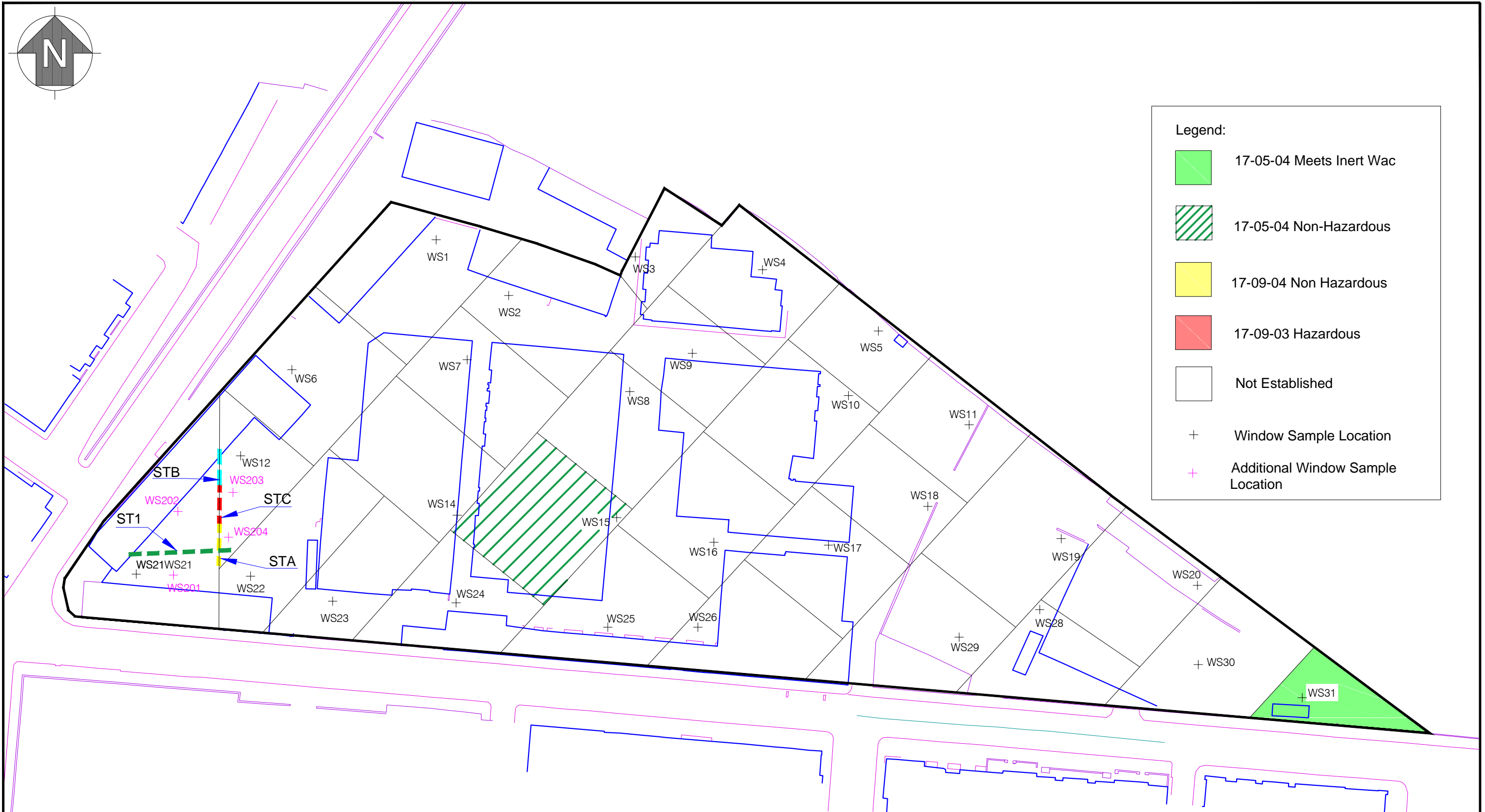
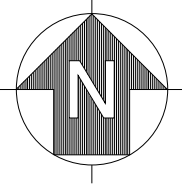
SCALE

REV.

A

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**Legend:**

- 17-05-04 Meets Inert Wac
- 17-05-04 Non-Hazardous
- 17-09-04 Non Hazardous
- 17-09-03 Hazardous
- Not Established
- Window Sample Location
- Additional Window Sample Location



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 Model Farm Road, Cork, Ireland.  
 Tel. (021) 4345366  
 email: info@ocallaghanmoran.com

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FIGURE No.

4.5

TITLE

Excavation Plan 4-5m

SCALE

SCALE

REV.

A

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**Table 4.3 WAC Results**

Parameter	Unit	WS1	WS1	WS1	WS2	WS2	WS2	WS3	WS3	WS4	Inert Landfill	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	0.25-0.75			
Antimony	mg/kg	0.17	0.04	<0.02	0.05	0.04	0.03	<0.02	<0.02	0.08	0.06	0.7	5
Arsenic	mg/kg	0.079	0.055	<0.025	0.045	0.030	0.036	<0.025	<0.025	0.172	0.5	2	25
Barium	mg/kg	0.51	0.10	<0.03	0.30	<0.03	<0.03	<0.03	<0.03	<0.03	20	100	300
Cadmium	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5
Chromium	mg/kg	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70
Copper	mg/kg	0.17	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100
Lead	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50
Molybdenum	mg/kg	0.33	0.25	1.02	0.21	0.11	0.72	0.22	0.13	0.10	0.5	10	30
Nickel	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40
Selenium	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7
Zinc	mg/kg	0.06	<0.03	<0.03	0.25	<0.03	<0.03	<0.03	<0.03	<0.03	4	50	200
Mercury	mg/kg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2
Phenol	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	NE	NE
Fluoride	mg/kg	6	<3	<3	3	<3	<3	10	8	3	10	150	500
Chloride	mg/kg	19	23	132	54	39	160	<3	12	14	800	15,000	25,000
Sulphate	mg/kg	113.4	454.9	131.9	139.4	252.4	160.9	191.1	80.9	10.2	1000*	20000*	50,000
DOC **	mg/kg	30	20	30	60	<20	40	<20	<20	<20	500	800	1,000
pH	pH units	8.24	8.10	8.27	8.22	8.20	8.28	8.26	8.30	8.31	NE	NE	NE
TDS ***	mg/kg	1310	1661	1149	1820	1109	1399	1310	1130	960	4,000	60,000	100,000
TOC	%	13.26	2.52	0.61	16.96	1.96	0.89	0.49	5.91	13.27	3	NE	6
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Toluene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Ethylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
m/p-Xylene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
o-Xylene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
PCB Total of 7	mg/kg	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	NE	NE
Total 17 PAH's	mg/kg	371.82	7.40	2.31	41.03	7.14	<0.64	5.09	6.48	20.66	NE	NE	NE
Mineral Oil	mg/kg	<30	<30	<30	121	<30	<30	<30	<30	<30	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE

NAD denotes No Asbestos Detected

\* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

\*\* denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

\*\*\* denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

**Table 4.4 WAC Results (continued)**

Parameter	Unit	WS4	WS05	WS05	WS9	WS9	WS9	WS10	WS10	WS10	Inert Landfill	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	1.0-2.0	1.0-2.0	2.0-2.6	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0 CORE	1.0-2.0	2.0-3.0			
Antimony	mg/kg	0.09	0.07	0.15	0.10	0.13	0.03	<0.02	0.15	0.04	0.06	0.7	5
Arsenic	mg/kg	0.137	0.049	<0.025	0.062	0.100	0.031	<0.025	0.117	<0.025	0.5	2	25
Barium	mg/kg	<0.03	0.09	<0.03	0.33	0.20	<0.03	0.30	0.04	<0.03	20	100	300
Cadmium	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5
Chromium	mg/kg	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70
Copper	mg/kg	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100
Lead	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50
Molybdenum	mg/kg	0.05	0.24	0.26	0.42	0.50	0.79	0.30	0.22	0.25	0.5	10	30
Nickel	mg/kg	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	0.4	10	40
Selenium	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	<0.03	<0.03	0.1	0.5	7
Zinc	mg/kg	<0.03	<0.03	<0.03	0.04	<0.03	<0.03	0.33	0.05	<0.03	4	50	200
Mercury	mg/kg	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2
Phenol	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	NE	NE
Fluoride	mg/kg	7	3	<3	<3	<3	<3	5	<3	<3	10	150	500
Chloride	mg/kg	15	7	106	336	30	189	115	41	162	800	15,000	25,000
Sulphate	mg/kg	20.2	205.5	91.5	176.8	424.5	442.2	12928.9	320.7	287.5	1000*	20000*	50,000
DOC **	mg/kg	<20	<20	30	70	40	30	<20	40	30	500	800	1,000
pH	pH units	8.18	8.19	8.13	7.97	8.08	8.07	7.80	7.92	8.02	NE	NE	NE
TDS ***	mg/kg	1020	1460	980	1950	2081	1889	19212	1489	1789	4,000	60,000	100,000
TOC	%	8.07	2.83	0.49	12.82	3.82	0.63	8.53	4.58	0.41	3	NE	6
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Toluene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Ethylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
m/p-Xylene	mg/kg	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
o-Xylene	mg/kg	<0.005	<0.005	<0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
PCB Total of 7	mg/kg	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	NE	NE
Total 17 PAH's	mg/kg	234.9	<0.64	<0.64	492.4	2.36	2.79	5.37	3.53	<0.64	NE	NE	NE
Mineral Oil	mg/kg	<30	<30	<30	40	<30	<30	<30	672	<30	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE

NAD denotes No Asbestos Detected

\* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

\*\* denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

\*\*\* denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

**Table 4.5 WAC Results (continued)**

Parameter	Unit	WS12	WS12	WS12	WS14	WS14	WS14	WS15	WS15	WS15	Inert Landfill	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	0.25-0.75	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	2.0-3.0	1.0-2.0	2.0-3.0	3.0-4.0			
Antimony	mg/kg	0.06	0.05	0.15	<0.02	0.04	0.19	0.15	0.58	<0.02	0.06	0.7	5
Arsenic	mg/kg	<0.025	0.066	0.167	<0.025	<0.025	0.060	<0.025	0.050	<0.025	0.5	2	25
Barium	mg/kg	0.30	0.35	<0.03	0.21	0.30	0.16	0.23	0.26	<0.03	20	100	300
Cadmium	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5
Chromium	mg/kg	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70
Copper	mg/kg	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100
Lead	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50
Molybdenum	mg/kg	0.54	0.72	0.59	0.10	0.20	1.08	0.07	1.26	0.49	0.5	10	30
Nickel	mg/kg	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40
Selenium	mg/kg	<0.03	<0.03	<0.03	0.05	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7
Zinc	mg/kg	<0.03	0.05	<0.03	0.06	<0.03	<0.03	<0.03	<0.03	<0.03	4	50	200
Mercury	mg/kg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2
Phenol	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	NE	NE
Fluoride	mg/kg	<3	3	5	<3	4	4	5	4	<3	10	150	500
Chloride	mg/kg	107	32	246	50	13	13	68	111	369	800	15,000	25,000
Sulphate	mg/kg	200.2	336.9	204.3	10982.5	1092.3	387.6	435.1	1006.1	218.7	1000*	20000*	50,000
DOC **	mg/kg	70	60	110	<20	<20	50	<20	60	30	500	800	1,000
pH	pH units	8.26	8.05	8.03	7.68	8.03	8.17	8.10	8.05	8.28	NE	NE	NE
TDS ***	mg/kg	1299	1880	1860	18493	2779	1990	1900	3031	1930	4,000	60,000	100,000
TOC	%	12.94	5.39	0.80	16.11	7.70	10.29	3.64	3.89	0.59	3	NE	6
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Toluene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Ethylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
m/p-Xylene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
o-Xylene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
PCB Total of 7	mg/kg	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	NE	NE
Total 17 PAH's	mg/kg	46.50	23.50	<0.64	26.95	5.15	2.21	9.83	1.57	<0.64	NE	NE	NE
Mineral Oil	mg/kg	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE

NAD denotes No Asbestos Detected

\* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

\*\* denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

\*\*\* denotes TDS. The values for TDS can be used alternative to sulphate and chloride.



**Table 4.6 WAC Results (continued)**

Parameter	Unit	WS15	WS16	WS16	WS16	WS16	WS18	WS18	WS18	WS18	Inert Landfill	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	4.0-4.5	0.00-1.00	1.00-2.00	2.00-3.00	3.00-4.00	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0			
Antimony	mg/kg	<0.02	<0.02	0.05	0.10	<0.02	0.06	<0.02	0.03	0.02	0.06	0.7	5
Arsenic	mg/kg	<0.025	<0.025	<0.025	0.102	<0.025	0.049	0.054	0.044	<0.025	0.5	2	25
Barium	mg/kg	<0.03	0.31	0.25	0.10	<0.03	0.12	0.05	<0.03	<0.03	20	100	300
Cadmium	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5
Chromium	mg/kg	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70
Copper	mg/kg	<0.07	<0.07	<0.07	<0.07	<0.07	0.09	<0.07	0.08	<0.07	2	50	100
Lead	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50
Molybdenum	mg/kg	1.02	0.09	0.22	0.92	0.10	0.09	0.10	0.22	0.19	0.5	10	30
Nickel	mg/kg	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40
Selenium	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7
Zinc	mg/kg	<0.03	<0.03	0.06	0.05	<0.03	0.07	<0.03	<0.03	<0.03	4	50	200
Mercury	mg/kg	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0001	<0.0001	0.01	0.2	2
Phenol	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	NE	NE
Fluoride	mg/kg	<3	<3	<3	<3	<3	8	<3	<3	<3	10	150	500
Chloride	mg/kg	344	33	17	54	91	15	10	14	58	800	15,000	25,000
Sulphate	mg/kg	162.8	2015.4	3668.2	494.4	234.5	260.8	23.8	67.5	81.7	1000*	20000*	50,000
DOC **	mg/kg	40	<20	<20	60	<20	50	<20	60	30	500	800	1,000
pH	pH units	8.18	8.10	8.00	8.15	8.10	8.19	8.23	8.28	8.16	NE	NE	NE
TDS ***	mg/kg	1650	3479	6838	1900	1691	1911	1039	1270	1111	4,000	60,000	100,000
TOC	%	1.08	8.59	9.53	5.40	0.51	NDP	11.24	1.19	0.42	3	NE	6
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Toluene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Ethylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
m/p-Xylene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
o-Xylene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
PCB Total of 7	mg/kg	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	NE	NE
Total 17 PAH's	mg/kg	<0.64	14.42	6.82	<0.64	<0.64	167.15	9.51	0.76	<0.64	NE	NE	NE
Mineral Oil	mg/kg	<30	<30	<30	<30	<30	307	<30	<30	<30	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	<0.1	NAD	NAD	NAD	NE	NE	NE

NAD denotes No Asbestos Detected

\* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

\*\* denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

\*\*\* denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

**Table 4.7 WAC Results (continued)**

Parameter	Unit	WS21	WS21	WS21	WS21	WS23	WS23	WS24	WS28	WS28	Inert Landfill	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	0.25-0.75	1.00-2.00	2.00-3.00	3.00-3.80	0.25-0.75	1.00-1.60	0.0-1.0	1.0-2.0	2.0-3.0			
Antimony	mg/kg	0.17	0.09	0.13	0.12	0.05	0.05	0.03	0.06	0.09	0.06	0.7	5
Arsenic	mg/kg	0.074	0.055	0.040	0.056	0.224	<0.025	0.085	0.093	<0.025	0.5	2	25
Barium	mg/kg	0.07	0.23	0.09	0.11	0.25	0.25	0.11	0.05	0.05	20	100	300
Cadmium	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5
Chromium	mg/kg	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70
Copper	mg/kg	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100
Lead	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50
Molybdenum	mg/kg	1.96	0.82	0.64	0.56	0.37	0.10	0.05	0.84	1.60	0.5	10	30
Nickel	mg/kg	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.4	10	40
Selenium	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7
Zinc	mg/kg	<0.03	<0.03	<0.03	0.04	<0.03	<0.03	0.06	<0.03	<0.03	4	50	200
Mercury	mg/kg	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0008	<0.0001	<0.0001	0.01	0.2	2
Phenol	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	NE	NE
Fluoride	mg/kg	<3	<3	4	5	4	6	<3	<3	<3	10	150	500
Chloride	mg/kg	20	47	151	232	5	9	6	168	193	800	15,000	25,000
Sulphate	mg/kg	148.3	141.5	186.9	100.9	626.7	105.9	109.0	191.7	60.1	1000*	20000*	50,000
DOC **	mg/kg	50	80	90	90	<20	<20	<20	210	60	500	800	1,000
pH	pH units	8.44	7.92	8.13	8.47	8.44	8.33	8.42	8.24	8.32	NE	NE	NE
TDS ***	mg/kg	1169	1289	1691	1530	1639	1150	1320	2061	1889	4,000	60,000	100,000
TOC	%	9.47	12.80	1.02	1.25	12.34	13.52	15.62	8.49	13.14	3	NE	6
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Toluene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.120	0.307	6	NE	NE
Ethylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1.075	1.492	6	NE	NE
m/p-Xylene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.857	7.579	6	NE	NE
o-Xylene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.321	1.000	6	NE	NE
PCB Total of 7	mg/kg	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	NE	NE
Total 17 PAH's	mg/kg	53.97	11.98	<0.64	3.31	6.86	28.18	634.25	4.28	3.95	NE	NE	NE
Mineral Oil	mg/kg	<30	<30	<30	<30	<30	<30	<30	5375	2626	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE

NAD denotes No Asbestos Detected

\* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

\*\* denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

\*\*\* denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

**Table 4.8 WAC Results (continued)**

Parameter	Unit	WS29	WS30	WS30	WS30	WS31	WS31	WS31	WS31	WS31	Inert Landfill	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	1.0-2.0	1.0-2.0	2.0-3.0	3.0-4.0	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0			
Antimony	mg/kg	0.25	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	0.04	0.02	0.06	0.7	5
Arsenic	mg/kg	0.239	<0.025	<0.025	<0.025	0.033	0.047	0.026	0.035	0.037	0.5	2	25
Barium	mg/kg	<0.03	<0.03	0.13	0.17	0.12	0.16	0.21	<0.03	0.04	20	100	300
Cadmium	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5
Chromium	mg/kg	<0.015	<0.015	<0.015	<0.015	<0.015	0.066	<0.015	<0.015	<0.015	0.5	10	70
Copper	mg/kg	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100
Lead	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50
Molybdenum	mg/kg	0.98	0.06	0.07	0.49	0.11	0.10	0.15	0.10	0.16	0.5	10	30
Nickel	mg/kg	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40
Selenium	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7
Zinc	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4	50	200
Mercury	mg/kg	0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2
Phenol	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	NE	NE
Fluoride	mg/kg	<3	4	8	<3	<3	<3	4	4	3	10	150	500
Chloride	mg/kg	44	24	28	33	<3	<3	<3	9	6	800	15,000	25,000
Sulphate	mg/kg	167.8	365.2	377.9	96.0	141.7	4287.1	1891.6	318.9	280.5	1000*	20000*	50,000
DOC **	mg/kg	110	20	<20	50	<20	30	<20	<20	30	500	800	1,000
pH	pH units	8.14	8.12	8.15	8.28	8.19	7.81	7.95	8.20	8.23	NE	NE	NE
TDS ***	mg/kg	1090	1280	1729	2100	950	7457	3419	1580	1521	4,000	60,000	100,000
TOC	%	4.10	1.04	5.52	2.54	5.16	4.44	2.68	5.09	4.43	3	NE	6
Benzene	mg/kg	0.020	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Toluene	mg/kg	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
Ethylbenzene	mg/kg	0.017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
m/p-Xylene	mg/kg	0.056	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
o-Xylene	mg/kg	0.017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6	NE	NE
PCB Total of 7	mg/kg	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	NE	NE
Total 17 PAH's	mg/kg	203.37	1.42	95.98	19.32	5.67	22.34	4.85	<0.64	6.38	NE	NE	NE
Mineral Oil	mg/kg	140	125	<30	<30	<30	<30	<30	<30	<30	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE

NAD denotes No Asbestos Detected

\* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

\*\* denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

\*\*\* denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

**Table 4.9 Further Investigation WAC Results**

Parameter	Unit	WS-201	WS-203	Inert Landfill	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	2.00-3.00	0.00-1.00			
Antimony	mg/kg	0.05	<0.02	0.06	0.7	5
Arsenic	mg/kg	0.037	0.069	0.5	2	25
Barium	mg/kg	0.30	0.13	20	100	300
Cadmium	mg/kg	<0.005	<0.005	0.04	1	5
Chromium	mg/kg	<0.015	0.022	0.5	10	70
Copper	mg/kg	<0.07	<0.07	2	50	100
Lead	mg/kg	<0.05	<0.05	0.5	10	50
Molybdenum	mg/kg	0.35	0.07	0.5	10	30
Nickel	mg/kg	<0.02	<0.02	0.4	10	40
Selenium	mg/kg	<0.03	<0.03	0.1	0.5	7
Zinc	mg/kg	<0.03	<0.03	4	50	200
Mercury	mg/kg	<0.0001	0.0003	0.01	0.2	2
Phenol	mg/kg	<0.1	<0.1	1	NE	NE
Fluoride	mg/kg	<3	<3	10	150	500
Chloride	mg/kg	21	30	800	15,000	25,000
Sulphate	mg/kg	252	248	1000*	20000*	50,000
DOC **	mg/kg	30	<20	500	800	1,000
pH	pH units	8.41	8.59	NE	NE	NE
TDS ***	mg/kg	1240	1569	4,000	60,000	100,000
TOC	%	21.33	NDP	3	NE	6
Benzene	mg/kg	<0.005	<0.005	6	NE	NE
Toluene	mg/kg	<0.005	<0.005	6	NE	NE
Ethylbenzene	mg/kg	<0.005	<0.005	6	NE	NE
m/p-Xylene	mg/kg	<0.005	<0.005	6	NE	NE
o-Xylene	mg/kg	<0.005	<0.005	6	NE	NE
PCB Total of 7	mg/kg	<0.035	<0.035	1	NE	NE
Total 17 PAH's	mg/kg	561.73	71.85	NE	NE	NE
Mineral Oil	mg/kg	<30	68	500	NE	NE
Asbestos	% mass	NAD	NAD	NE	NE	NE

---

## 5 CONCLUSIONS AND RECOMMENDATIONS

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### 5.1 Conclusions

The site is located in a defended flood risk area, but is in a Low Risk Radon area. The S4ULs for residential use were exceeded at a number of the sample locations and remedial measures are required to mitigate the exposure risk to construction workers during the redevelopment works and the end users.

Further investigations have confirmed the presence of hydrocarbon contamination in the southwest portion of the site which will require excavation and removal as part of the redevelopment works. It is estimated that there may be c1,500m<sup>3</sup> of contaminated soils this portion of the site and possibly more if the contamination extends deeper than the depth proven in the slit trenches.

Where the redevelopment requires the removal of the made ground from the site this should be carried out as described in Section 4.3.

### 5.2 Recommendations

The Strategic Flood Risk Assessment in the Dublin City Development Plan (2016-2022) recommends that where development will be in the defended area, the consideration should be given to the likelihood of the defences failing (either through overtopping or breach) and how the operation will ensure it can retain functionality/recover following an extreme flood event. Buildings should be of flood resilient construction.

In the construction stage the risk mitigation measures to be implemented include minimisation of dust generation and the use of long sleeved clothing, protective glasses and gloves by construction workers during the excavation and removal of impacted made ground. The remedial measures outlined in Section 3.6 should be implemented to mitigate the risk to future residents.

OCM recommend that a copy of this report be provided in full to the waste management facilities to which the waste may be consigned to confirm suitability.



## **Appendix 1**

### **OSI Historical Maps and Photographs**



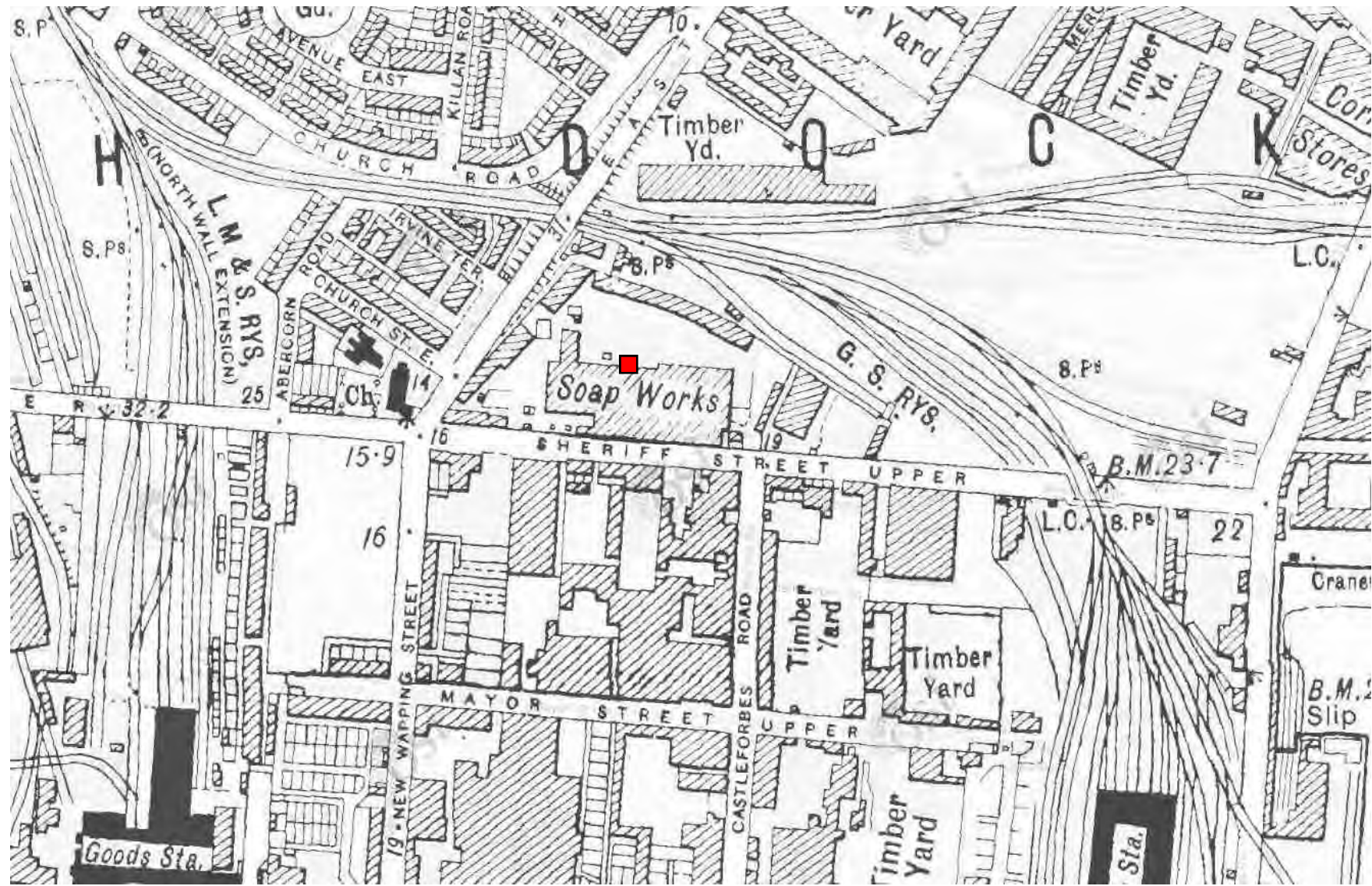
O'Callaghan Moran & Associates,  
 Unit 15 Melbourne Business Park,  
 Model Farm Road, Cork.  
 Tel. (021) 4345366  
 Email: info@ocallaghanmoran.com

**Title:**  
 Historical 6" 1837-1842

**Legend**  
 ■ - Site Location

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**Client:**  
 DBFL



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 Unit 15 Melbourne Business Park,  
 Model Farm Road, Cork.  
 Tel. (021) 4345366  
 Email: info@ocallaghanmoran.com

**Title:**

Historical 6" Cassini

**Legend**

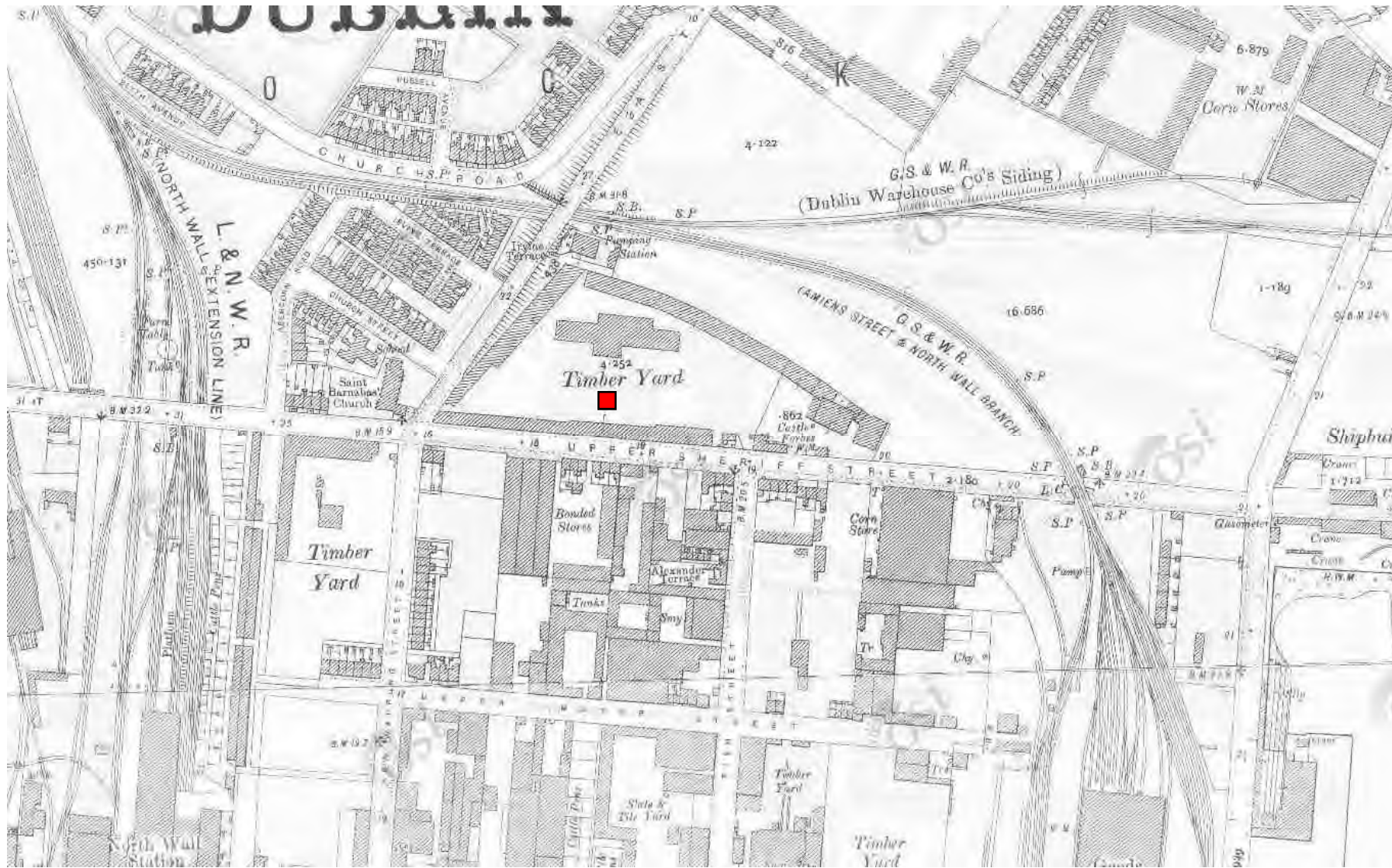
■ - Site Location

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Email: info@ocallaghanmoran.com

**Title:**

Historical 25" 1888-1913

**Legend**

■ - Site Location

**Client:**

DBFL

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 Tel. (021) 4345366

Email: info@ocallaghanmoran.com

**Title:**

Aerial Photograph 1995

**Legend**

■ - Site Location

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**Title:**

Aerial Photograph 2000

**Legend**

■ - Site Location

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Email: [info@ocallaghanmoran.com](mailto:info@ocallaghanmoran.com)

**Title:**

Aerial Photograph 2005

**Legend**

■ - Site Location

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**Client:**

DBFL

**Appendix 2**

**Trial Pit Logs**



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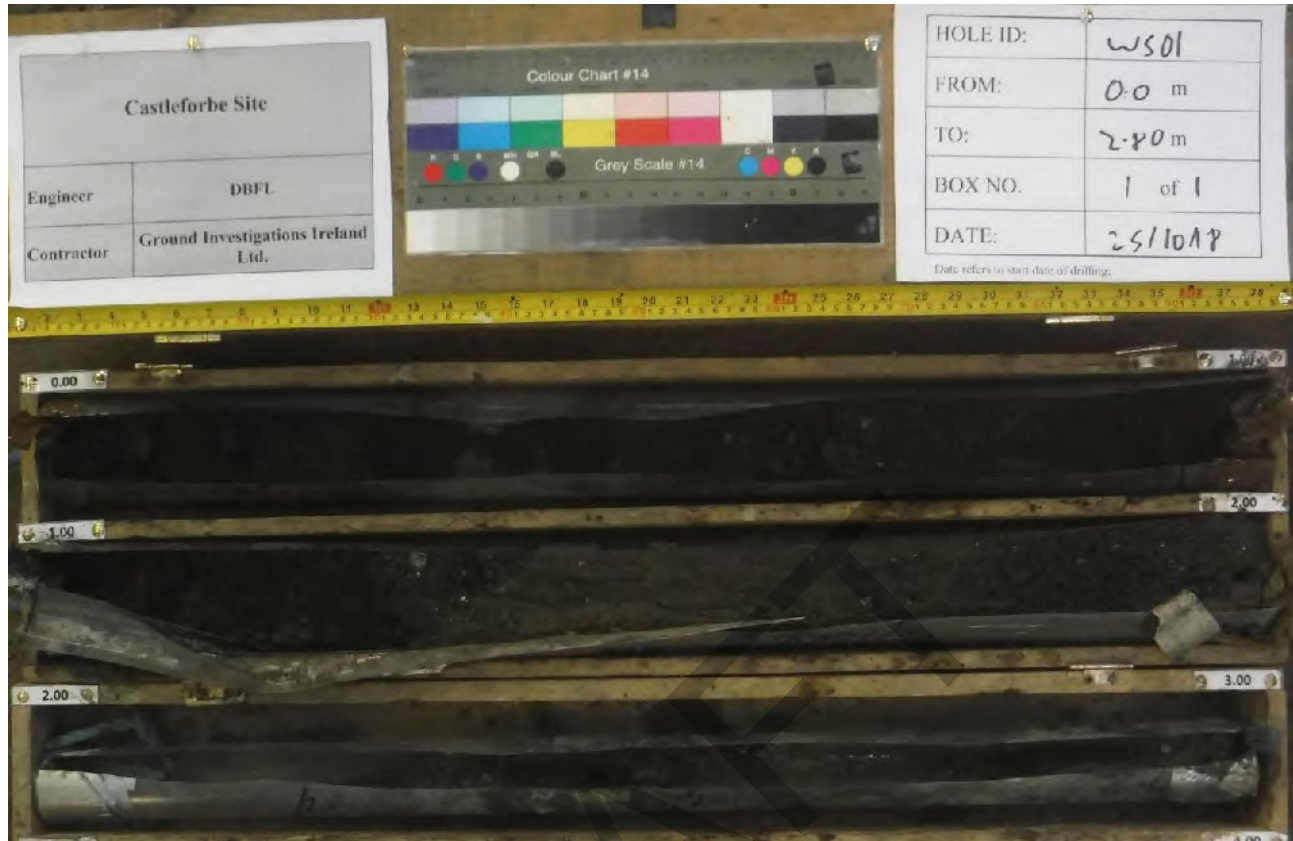
**Site**  
Castleforbe Site

**Number**  
**WS01**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 2.80m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b> Drive-in Windowless Sampler	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN					MADE GROUND: Black sandy gravelly Clay with occasional red brick and ceramic fragments		
1.00-2.00	EN				(1.10)	MADE GROUND: Brown slightly sandy gravelly Clay with occasional mortar fragments		
					1.10 (0.30)	Grey fine silty SAND		
					1.40 (0.40)	Grey slightly gravelly SAND with shelly fragments		
2.00-2.80	EN				1.80 (0.20)	Grey clayey silty SAND with shelly fragments		
					2.00 (0.80)	Refusal at 2.80m BGL		
					2.80	Complete at 2.80m		

<b>Remarks</b> 0.00 - 1.00m BGL 85% recovery Refusal at 2.80m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS01	



<b>SI Location</b>	WS01	<b>Depth</b>	0.0 – 2.8 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	25/10/18





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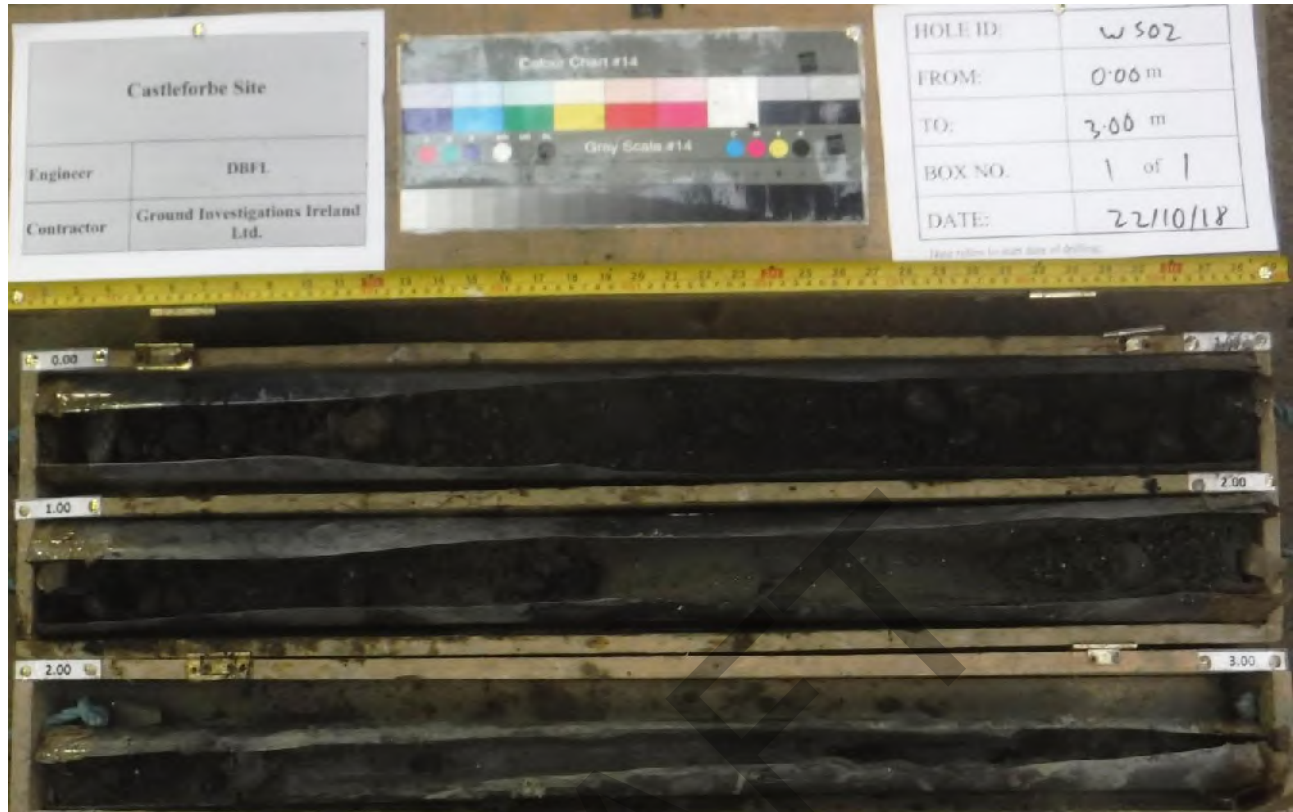
**Site**  
Castleforbe Site

**Number**  
**WS02**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.00m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b> Drive-in Windowless Sampler	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.10) 0.10	MADE GROUND: brown sandy gravel		
					(0.70)	MADE GROUND: Black gravelly Sand with some red brick fragments		
1.00-2.00	EN				0.80 (0.40)	MADE GROUND: Black slightly sandy gravelly Clay with rare plastic fragments		
					1.20	Grey fine silty SAND		
					(0.60)			
					1.80	Grey slightly gravelly SAND with shelly fragments		
2.00-3.00	EN				(0.30)			
					2.10	Firm grey sandy silty CLAY		
					(0.90)			
					3.00	Refusal at 3.00m BGL Complete at 3.00m		

<b>Remarks</b> Refusal at 3.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS02	



<b>SI Location</b>	WS02	<b>Depth</b>	0.0 – 3.0 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	22/10/18

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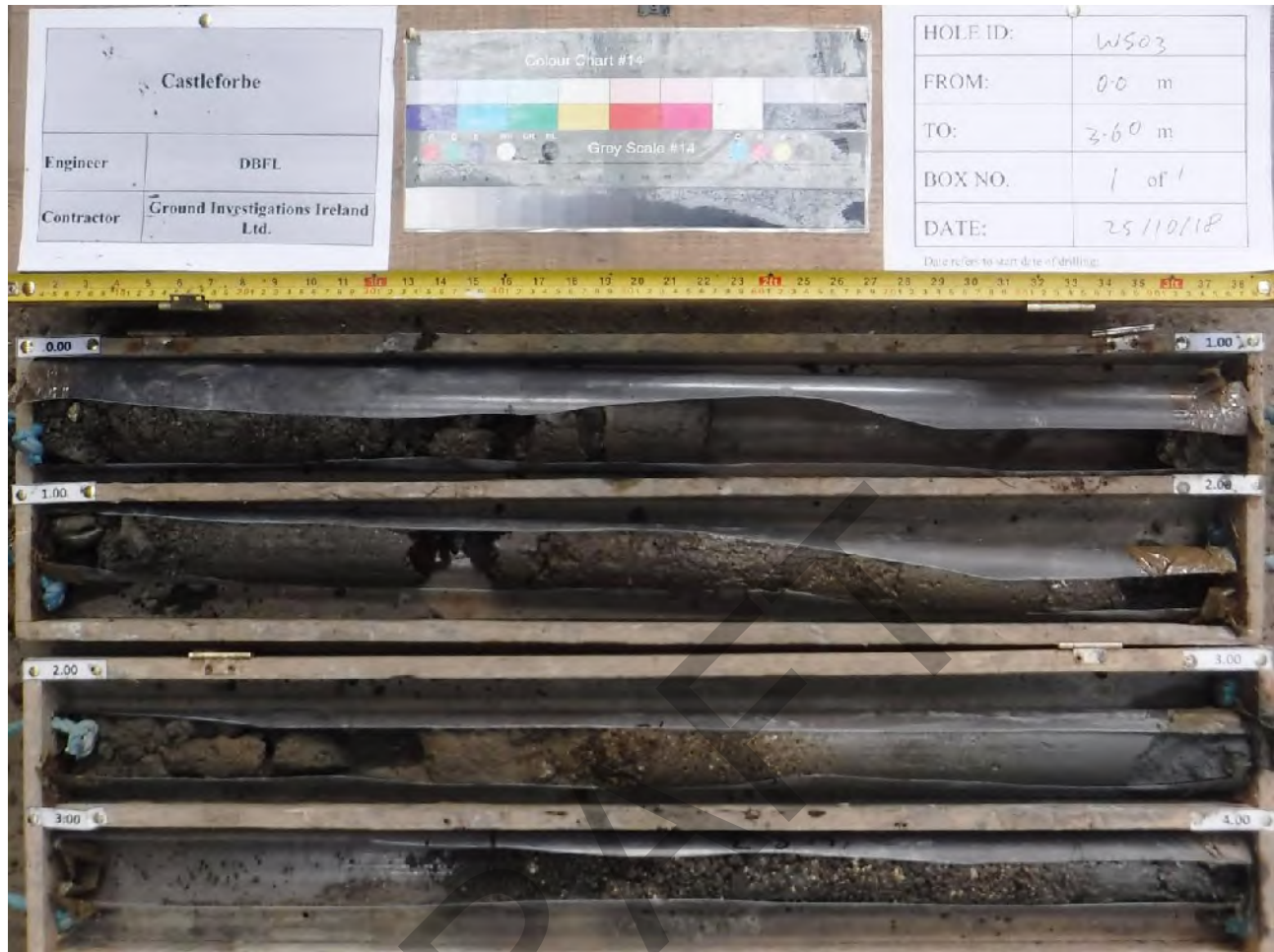
**Site**  
Castleforbe Site

**Number**  
**WS03**

<b>Machine</b> : GEOTECH 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.60m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.40)	MADE GROUND: Brown sandy gravelly Clay with occasional concrete fragments		
					0.40	MADE GROUND: Brown slightly sandy gravelly Clay		
					(0.60)			
1.00-2.00	EN				1.00	MADE GROUND: Brown sandy gravelly Clay with rare mortar fragments		
					(0.50)			
					1.50	Greyish brown fine SAND with shelly fragments		
					(0.90)			
					2.40	Brown slightly gravelly SAND		
					(0.25)			
					2.65	Grey fine silty SAND		
					(0.35)			
					3.00	Brown/grey slightly clayey slightly gravelly SAND		
					(0.60)			
					3.60	Refusal at 3.60m BGL Complete at 3.60m		

<b>Remarks</b> 0.00 - 1.00m BGL 55% recovery 1.00 - 2.00m BGL 80% recovery 2.00 - 3.00m BGL 90% recovery Refusal at 3.60m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS03	



<b>SI Location</b>	WS03	<b>Depth</b>	0.0 – 3.6 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	25/10/18



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**Site**  
Castleforbe Site

**Number**  
**WS04**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.40m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b> Drive-in Windowless Sampler	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.50)	MADE GROUND: Black slightly clayey gravelly Sand with some glass fragments		
					0.50	MADE GROUND: Brown slightly sandy gravelly Clay with rare mortar fragments		
1.00-2.00	EN				(0.90)			
					1.40	MADE GROUND: Brown clayey gravelly Sand with occasional waste ash and glass fragments		
2.00-3.00	EN				(0.70)			
					2.10	Greyish brown slightly gravelly SAND		
					(0.30)			
					2.40	Greyish brown fine silty SAND		
					(0.60)			
					3.00	Greyish brown slightly gravelly SAND with shelly fragments		
					3.15	Greyish brown fine silty SAND with shelly fragments		
					(0.15)			
					3.30	Soft to firm grey sandy slightly gravelly silty CLAY		
					(0.10)			
					3.40	Refusal at 3.40m BGL		
						Complete at 3.40m		

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<b>Remarks</b> 0.00 - 1.00m BGL 75% recovery 1.00 - 2.00m BGL 80% recovery 2.00 - 3.00m BGL 60% recovery Refusal at 3.40m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS04	





<b>SI Location</b>	WS04	<b>Depth</b>	0.0 – 3.4 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	26/10/18



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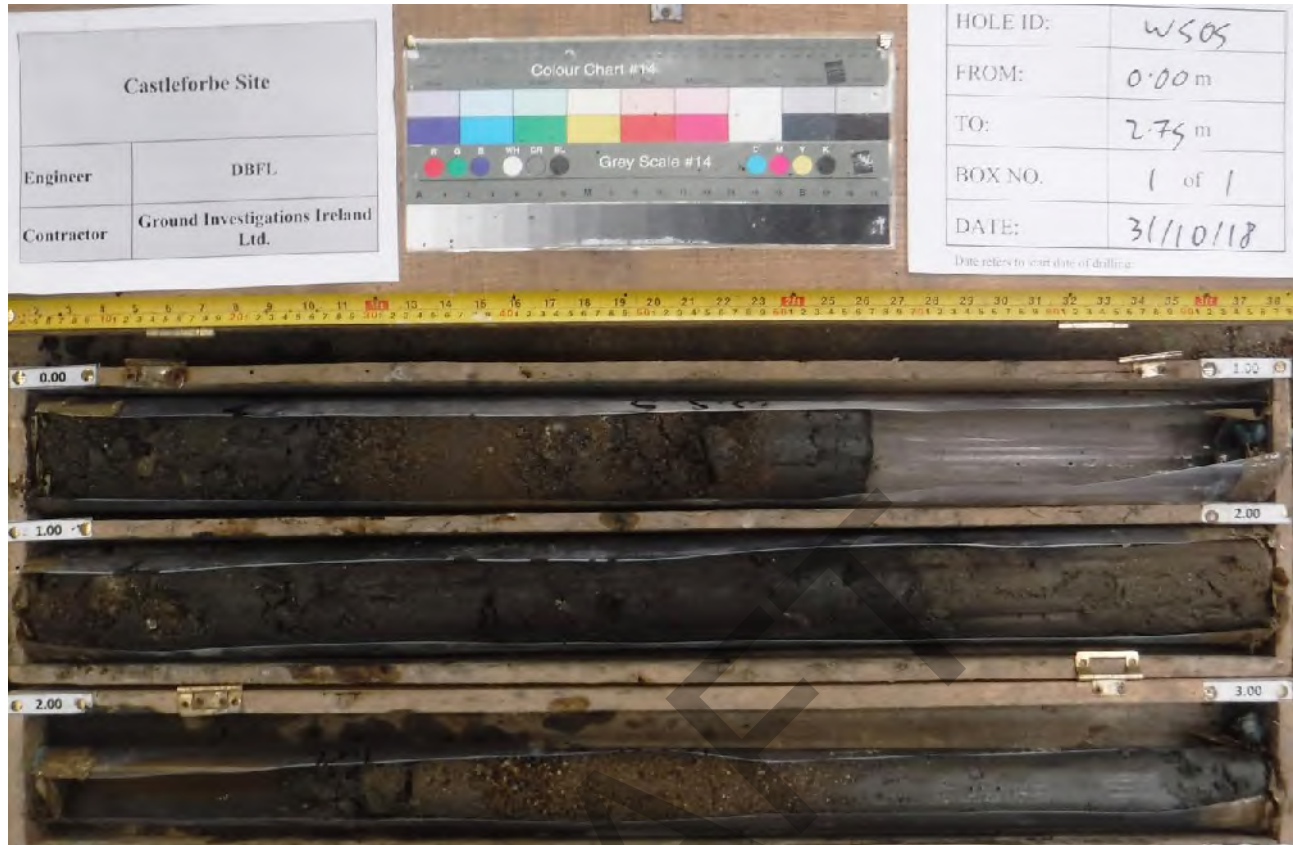
**Site**  
Castleforbe Site

**Number**  
**WS05**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 2.75m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b>	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(0.55)	MADE GROUND: Brown slightly clayey gravelly Sand		
					0.55	MADE GROUND: Dark brown sandy gravelly Clay with occasional red brick and mortar fragments		
2.00-2.75	EN				(1.15)			
					1.70	Grey fine silty SAND		
					(0.30)			
					2.00	Brown slightly gravelly SAND		
					(0.35)			
					2.35	Soft grey clayey sandy slightly gravelly SILT with shelly fragments		
					(0.40)			
					2.75	Refusal at 2.75m BGL		
						Complete at 2.75m		

<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery Refusal at 2.75m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS05	



Castleforbe Site	
Engineer	DBFL
Contractor	Ground Investigations Ireland Ltd.



HOLE ID:	WS05
FROM:	0.00 m
TO:	2.75 m
BOX NO.	1 of 1
DATE:	31/10/18

Date refers to start date of drilling

<b>SI Location</b>	WS05	<b>Depth</b>	0.0 – 2.75 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	31/10/18

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**Site**  
Castleforbe Site

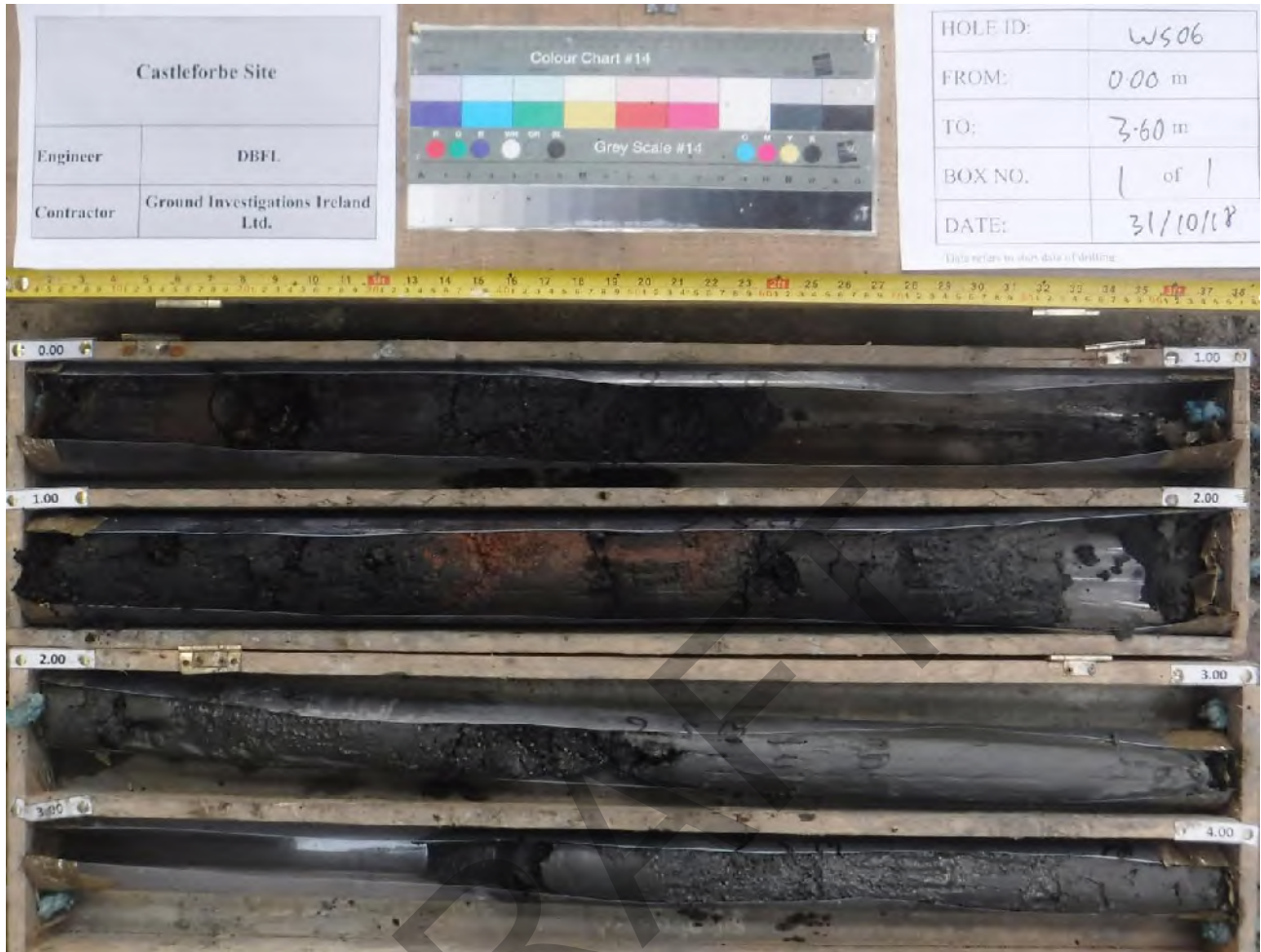
**Number**  
**WS06**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.60m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.35)	MADE GROUND: Black sandy gravelly Clay with occasional mortar fragments		
					0.35	MADE GROUND: Black gravelly Sand with occasional plastic fragments		
1.00-2.00	EN				(0.65)			
					1.00	MADE GROUND: Black clayey slightly gravelly Sand with occasional ceramic fragments		
					1.35	MADE GROUND: Dark brown slightly sandy slightly gravelly clayey Silt with occasional mortar fragments		
2.00-3.00	EN				(0.40)			
					1.75	Grey fine silty SAND		
					(0.55)			
					2.30	Grey slightly gravelly SAND with shelly fragments		
					(0.15)			
2.45	Soft grey clayey slightly gravelly SILT							
					(0.65)			
					3.10	Soft grey clayey sandy gravelly SILT		
					(0.50)			
					3.60	Refusal at 3.60m BGL		
						Complete at 3.60m		

<b>Remarks</b> 0.00 - 1.00m BGL 55% recovery 1.00 - 2.00m BGL 85% recovery 2.00 - 3.00m BGL 90% recovery Refusal at 3.60m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS06	





<b>SI Location</b>	WS06	<b>Depth</b>	0.0 – 3.6 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	31/10/18





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**Site**  
Castleforbe Site

**Number**  
**WS07**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 0.70m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b>	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						MADE GROUND: Black sandy Gravel with occasional subangular cobbles		
					(0.70)			
					0.70	Refusal at 0.70m BGL Complete at 0.70m		

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<b>Remarks</b> Refusal at 0.70m BGL	<b>Scale (approx)</b> 1:25	<b>Logged By</b> B
	<b>Figure No.</b> 8108-10-18.WS07	



<b>SI Location</b>	WS07	<b>Depth</b>	0.0 – 0.7 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	26/10/18

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**Site**  
Castleforbe Site

**Number**  
**WS08**

**Machine :** GEOTEC 10  
**Method :** Drive-in Windowless Sampler

**Dimensions**  
88mm to 1.00m

**Ground Level (mOD)**

**Client**  
DBFL

**Job Number**  
8108-10-18

**Location**  
Castleforbe

**Dates**  
23/10/2018-02/11/2018

**Engineer**

**Sheet**  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					0.15	MADE GROUND: Brown slightly clayey sandy Gravel with some red brick fragments		
					0.15	MADE GROUND: Grey slightly sandy Gravel with occasional subangular-angular cobbles		
					0.85			
					1.00	Refusal at 1.00m BGL Complete at 1.00m		

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**Remarks**  
0.00 - 1.00m BGL 30% recovery  
Refusal at 1.00m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS08



<b>SI Location</b>	WS08	<b>Depth</b>	0.0 – 1.0 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	24/10/18

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**Site**  
Castleforbe Site

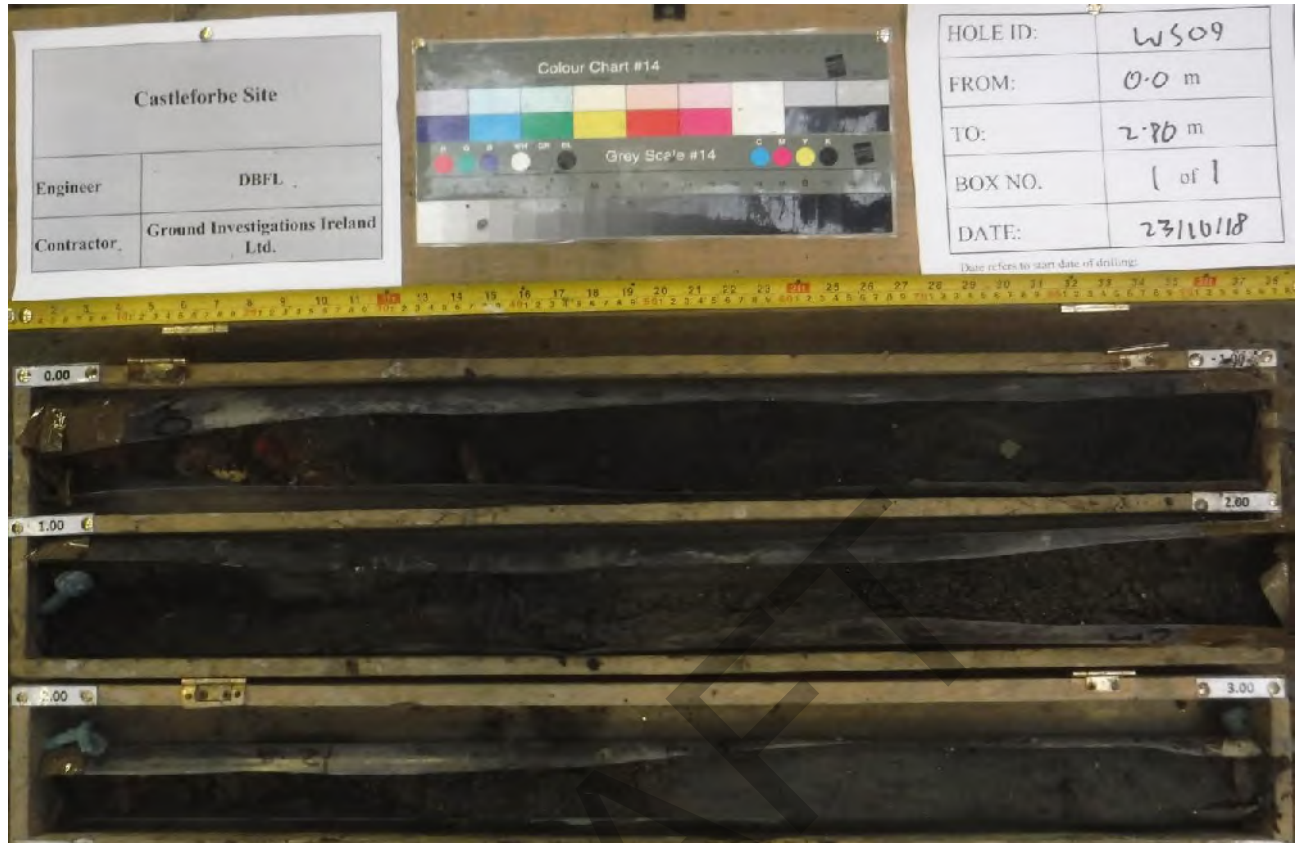
**Number**  
**WS09**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 2.80m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b> Drive-in Windowless Sampler	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.60)	MADE GROUND: Black clayey sandy Gravel with some red brick fragments		
1.00-2.00	EN				0.60 (0.55)	MADE GROUND: Black sandy gravelly Clay with occasional mortar fragments		
					1.15 (0.25)	MADE GROUND: Grey slightly sandy slightly gravelly silty Clay with occasional plastic fragments		
					1.40 (0.30)	Grey sandy silty CLAY		
2.00-2.80	EN				1.70 (0.55)	Grey slightly gravelly SAND		
					2.25 (0.55)	Grey fine silty SAND		
					2.80	Refusal at 2.80m BGL Complete at 2.80m		

<b>Remarks</b> Refusal at 2.80m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS09	





<b>SI Location</b>	WS09	<b>Depth</b>	0.0 – 2.8 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	23/10/18

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**Site**  
Castleforbe Site

**Number**  
**WS10**

**Machine :** GEOTECH 10  
**Method :** Drive-in Windowless Sampler

**Dimensions**  
88mm to 2.00m  
68mm to 3.30m

**Ground Level (mOD)**

**Client**  
DBFL

**Job Number**  
8108-10-18

**Location**  
Castleforbe

**Dates**  
23/10/2018-  
02/11/2018

**Engineer**

**Sheet**  
1/1

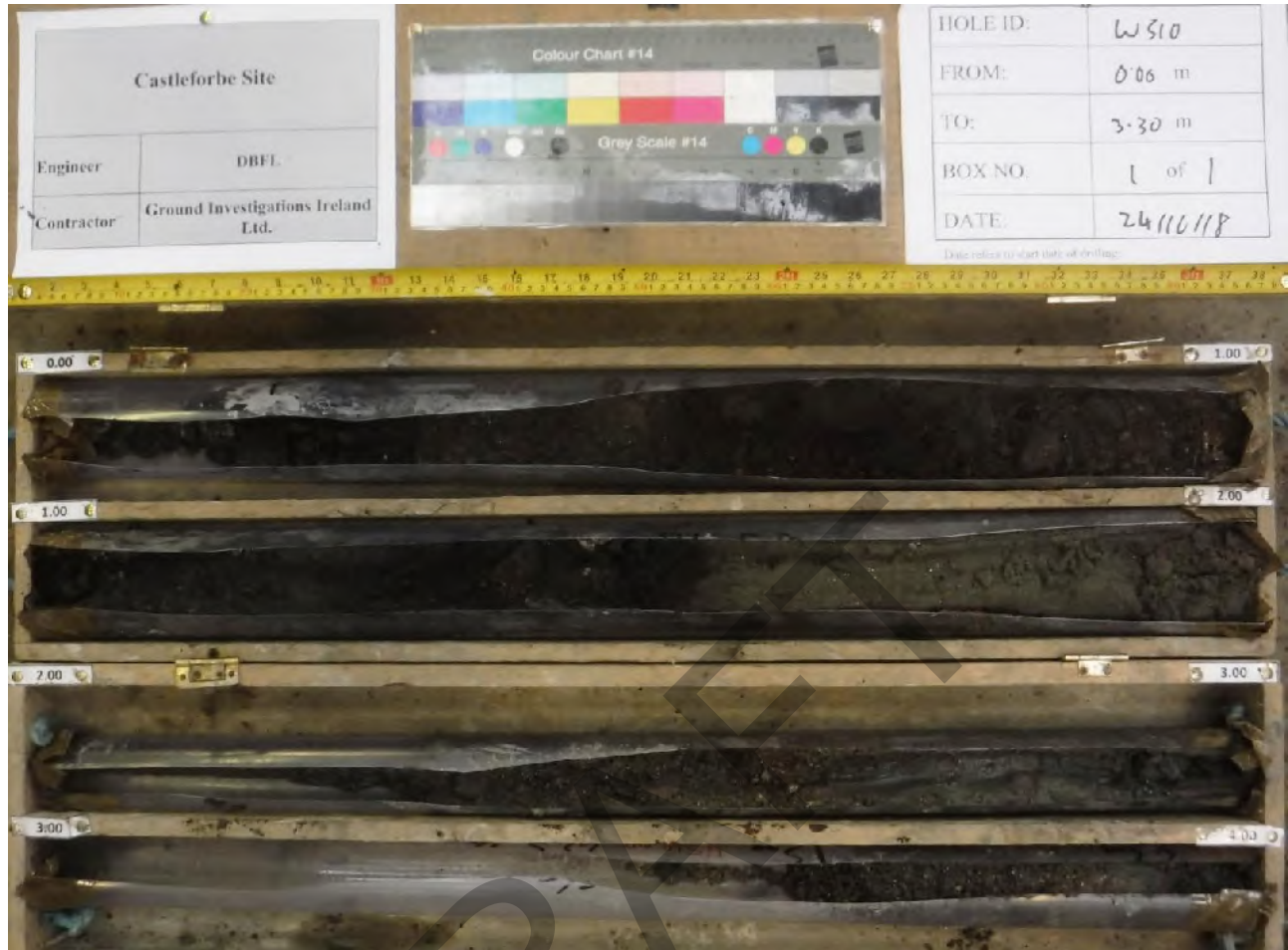
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.30)	CONCRETE core		
					0.30	MADE GROUND: Dark brown clayey gravelly Sand with some mortar fragments		
					(0.85)			
1.00-2.00	EN				1.15	MADE GROUND: Black slightly sandy slightly gravelly Clay with occasional mortar fragments. Hydrocarbon odour present		
					(0.35)			
					1.50	Grey fine silty SAND		
					(0.50)			
					2.00	Grey slightly gravelly SAND		
					(0.35)			
					2.35	Grey sandy silty CLAY		
					(0.65)			
					3.00	Grey slightly gravelly SAND with shelly fragments		
					(0.30)			
					3.30	Refusal at 3.30m BGL Complete at 3.30m		

**Remarks**  
2.00 - 3.00m 65% recovery  
Refusal at 3.30m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS10



<b>SI Location</b>	WS10	<b>Depth</b>	0.0 – 3.3 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	24/10/18



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**Site**  
Castleforbe Site

**Number**  
**WS11**

**Machine :** GEOTECH 10  
**Method :**

**Dimensions**  
88mm to 0.60m

**Ground Level (mOD)**

**Client**  
DBFL

**Job Number**  
8108-10-18

**Location**  
Castleforbe

**Dates**  
23/10/2018-  
02/11/2018

**Engineer**

**Sheet**  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	MADE GROUND: Dark brown sandy Gravel		
					0.15	MADE GROUND: Brown sandy gravelly Clay with occasional red brick and mortar fragments		
					(0.45)			
					0.60	Refusal at 0.60m BGL Complete at 0.60m		

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**Remarks**  
Refusal at 0.60m BGL

<b>Scale (approx)</b>	<b>Logged By</b>
1:25	EB

**Figure No.**  
8108-10-18.WS11



<b>SI Location</b>	WS11	<b>Depth</b>	0.0 – 0.6 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	24/10/18

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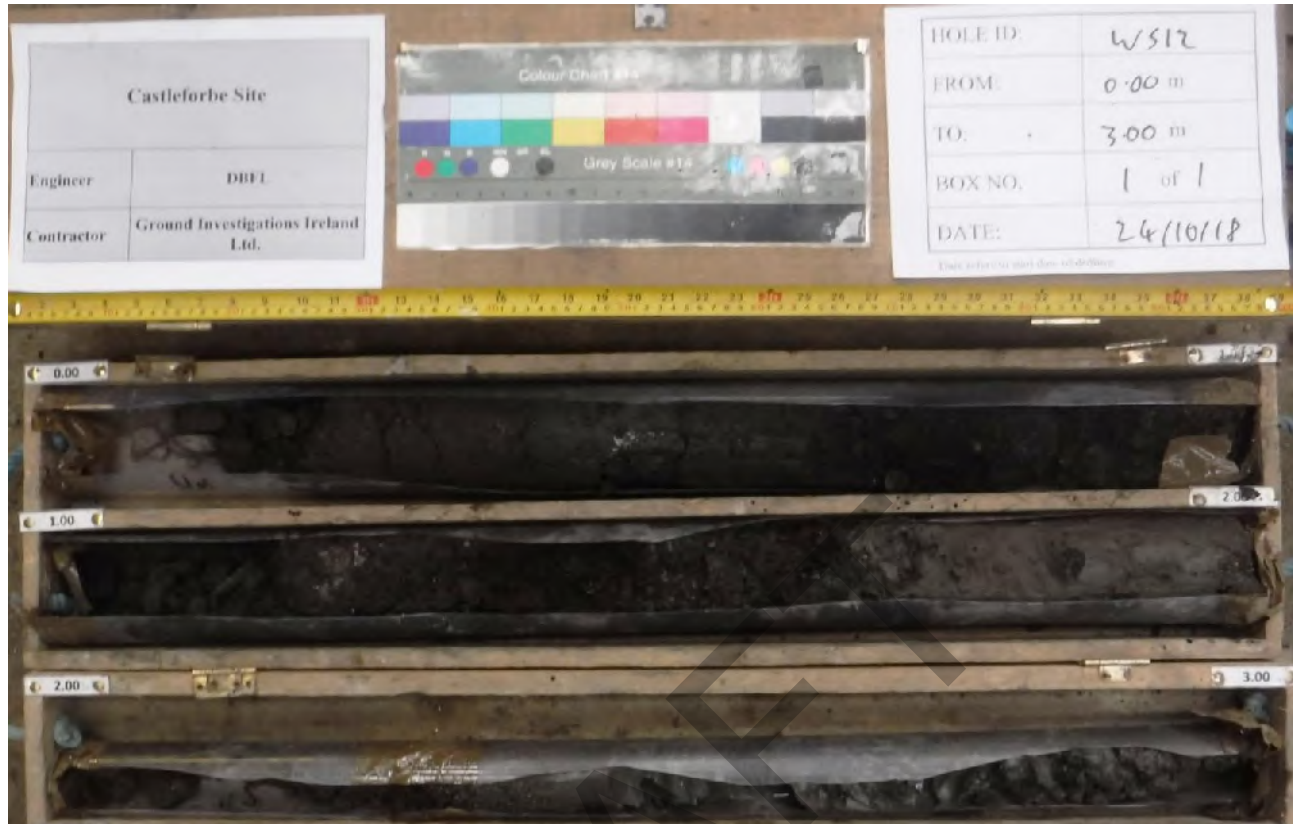
**Site**  
Castleforbe Site

**Number**  
**WS12**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.00m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b>	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.25)	MADE GROUND: Black slightly clayey gravelly Sand		
					0.25	MADE GROUND: Black clayey gravelly Sand with occasional timber fragments		
1.00-2.00	EN				(0.95)			
					1.20	MADE GROUND: Grey gravelly Sand		
					1.35	MADE GROUND: Brown sandy gravelly Clay with rare red brick fragments		
2.00-3.00	EN				(0.35)			
					1.70	Grey fine silty SAND		
					2.00	Grey slightly gravelly SAND		
					2.10	Soft to firm grey slightly sandy slightly gravelly silty CLAY with shelly fragments		
					(0.90)			
					3.00	Refusal at 3.00m BGL Complete at 3.00m		

<b>Remarks</b> 0.00 - 1.00m BGL 75% recovery 2.00 - 3.00m BGL 70% recovery Refusal at 3.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS12	



<b>SI Location</b>	WS12	<b>Depth</b>	0.0 – 3.0 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	24/10/18

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**Site**  
Castleforbe Site

**Number**  
**WS14**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.50m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b>	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.30)	MADE GROUND: Brown slightly gravelly Sand		
					0.30	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional red brick and mortar fragments		
					(0.90)			
1.00-2.00	EN				1.20	MADE GROUND: Grey sandy slightly gravelly Clay with rare plastic fragments		
					(0.80)			
2.00-3.00	EN				2.00	MADE GROUND: Black gravelly Sand		
					(0.15)			
					2.15	MADE GROUND: Dark brown sandy gravelly Silt with occasional mortar fragments		
					(0.40)			
					2.55	MADE GROUND: Grey Sand		
					(0.45)			
					3.00	MADE GROUND: Dark brown slightly gravelly Sand with occasional red brick fragments		
					(0.30)			
					3.30	MADE GROUND: Brown Sand		
					(0.30)			
					3.60	MADE GROUND: Grey sandy Silt		
					(0.40)			
					4.00	MADE GROUND: Black slightly clayey slightly gravelly Sand with occasional red brick fragments		
					(0.30)			
					4.30	Grey clayey sandy GRAVEL		
					(0.20)			
					4.50	Refusal at 4.50m BGL		
						Complete at 4.50m		

<b>Remarks</b> 0.00 - 1.00m BGL 60% recovery 1.00 - 2.00m BGL 75% recovery 2.00 - 3.00m BGL 75% recovery 3.00 - 4.00m BGL 70% recovery Refusal at 4.50m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS14	



<b>SI Location</b>	WS14	<b>Depth</b>	0.0 – 4.5 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	26/10/18



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**Site**  
Castleforbe Site

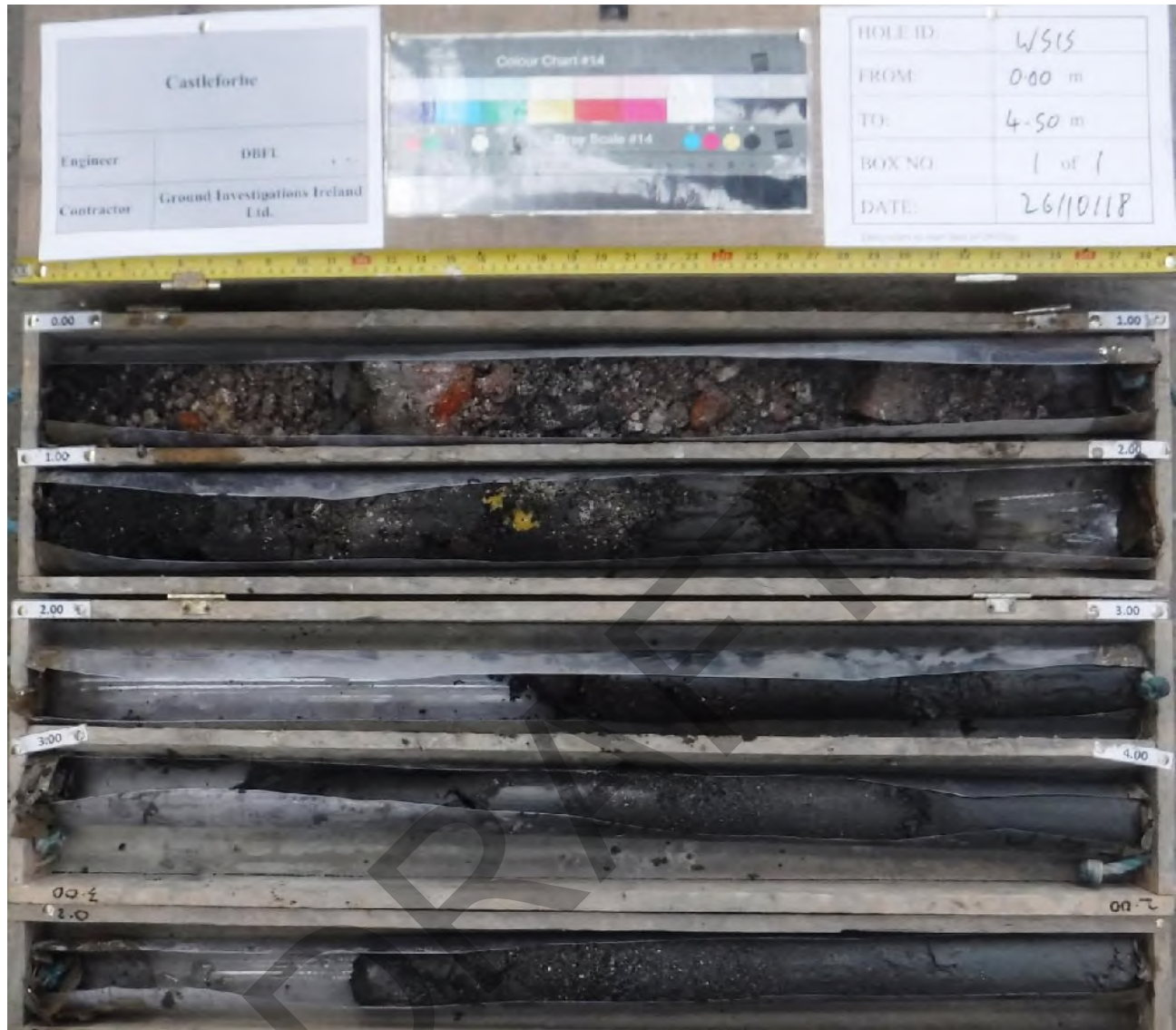
**Number**  
**WS15**

<b>Machine</b> : GEOTECH 10		<b>Dimensions</b> 88mm to 2.00m 68mm to 4.50m		<b>Ground Level (mOD)</b>		<b>Client</b> DBFL		<b>Job Number</b> 8108-10-18	
<b>Method</b> : Drive-in Windowless Sampler		<b>Location</b> Castleforbe		<b>Dates</b> 23/10/2018- 02/11/2018		<b>Engineer</b>		<b>Sheet</b> 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(1.00)	MADE GROUND: Brown/red slightly clayey sandy Gravel with many red brick fragments		
					1.00 (0.15)	MADE GROUND: Black fine Gravel		
2.00-3.00	EN				1.15	MADE GROUND: Dark brown sandy gravelly Clay with occasional mortar and red brick fragments		
					(0.85)			
3.00-4.00	EN				2.00	MADE GROUND: Dark brown sandy gravelly Silt with rare plastic fragments		
					(0.25)			
4.00-4.50	EN				2.25	POSSIBLE MADE GROUND: Grey sandy slightly gravelly clayey Silt		
					(0.90)			
					3.15	Grey slightly gravelly SAND		
					(0.25)			
					3.40	Soft to firm grey sandy slightly gravelly clayey SILT		
					(0.75)			
					4.15	Grey slightly gravelly SAND		
					(0.15)			
					4.30	Firm grey sandy slightly gravelly clayey SILT		
					(0.20)			
					4.50	Refusal at 4.50m BGL		
						Complete at 4.50m		

<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery 1.00 - 2.00m BGL 85% recovery 2.00 - 3.00m BGL 50% recovery 3.00 - 4.00m BGL 65% recovery Refusal at 4.50m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS15	





<b>SI Location</b>	WS15	<b>Depth</b>	0.0 – 4.5 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	26/10/18



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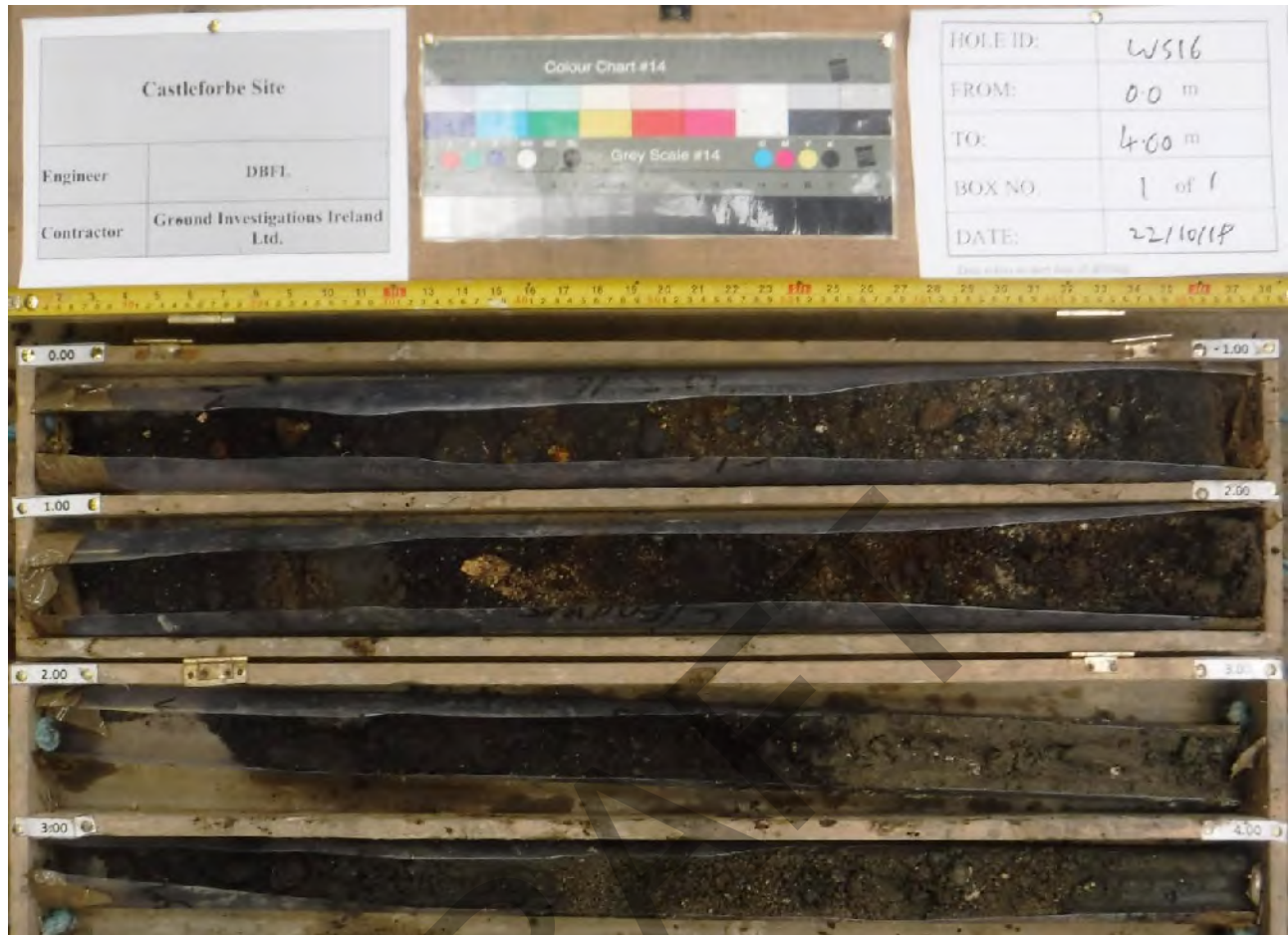
**Site**  
Castleforbe Site

**Number**  
**WS16**

<b>Machine</b> : GEOTECH 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.00m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.45)	MADE GROUND: Black slightly sandy gravelly Clay with occasional mortar fragments		
					0.45	MADE GROUND: Grey slightly clayey gravelly Sand		
					(0.75)			
1.00-2.00	EN				1.20	MADE GROUND: Brown/black slightly sandy gravelly Clay with occasional yellow brick fragments		
					(0.50)			
					1.70	MADE GROUND: brown sandy gravelly Clay with rare yellow brick fragments		
					(0.30)			
2.00-3.00	EN				2.00	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional mortar fragments		
					(0.65)			
					2.65	Grey fine silty SAND with shelly fragments		
					(0.55)			
					3.20	Grey slightly gravelly SAND with shelly fragments		
					(0.45)			
					3.65	Grey sandy silty CLAY		
					(0.35)			
					4.00	Refusal at 4.00m BGL Complete at 4.00m		

<b>Remarks</b> 0.00 - 1.00m BGL 80% recovery 1.00 - 2.00m BGL 90% recovery 2.00 - 3.00m BGL 80% recovery 3.00 - 4.00m BGL 80% recovery Refusal at 4.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS16	



<b>SI Location</b>	WS16	<b>Depth</b>	0.0 – 4.0 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	22/10/18



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**Site**  
Castleforbe Site

**Number**  
**WS17**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 0.55m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b>	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Reddish brown sandy Gravel		
					0.20 (0.15)	MADE GROUND: Brown sandy gravelly Clay with rare red brick and mortar fragments		
					0.35 (0.20)	MADE GROUND: Grey/brown sandy Gravel with some red brick fragments		
					0.55	Refusal at 0.55m BGL		
						Complete at 0.55m		

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<b>Remarks</b> Refusal at 0.55m BGL	<b>Scale (approx)</b> 1:25	<b>Logged By</b> EB
	<b>Figure No.</b> 8108-10-18.WS17	





<b>SI Location</b>	WS17	<b>Depth</b>	0.0 – 0.55 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	23/10/18

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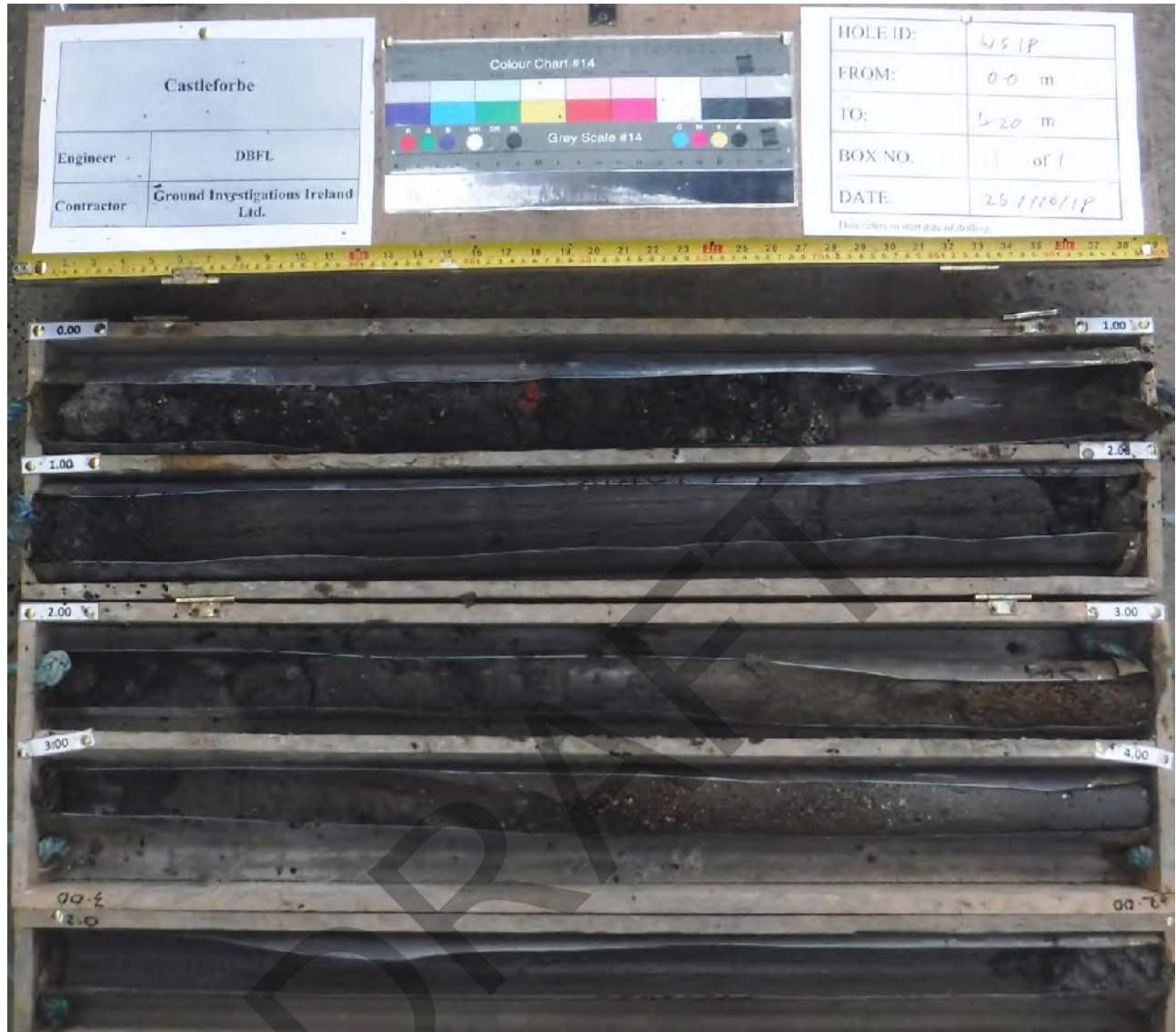
**Site**  
Castleforbe Site

**Number**  
**WS18**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.20m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(1.00)	MADE GROUND: Dark brown sandy gravelly Clay with occasional red brick and concrete fragments		
1.00-2.00	EN				1.00 (0.40) 1.40 (0.45)	MADE GROUND: Greyish brown sandy slightly gravelly Clay with rare plastic fragments		
2.00-3.00	EN				1.85 (0.40) 2.25 (0.40)	MADE GROUND: Brown slightly gravelly Clay with rare red brick fragments		
3.00-4.00	EN				2.65 (0.35)	MADE GROUND: Brown slightly clayey slightly gravelly Sand with occasional mortar fragments		
					3.00 (0.15)	Greyish brown fine SAND		
					3.15 (0.50)	Greyish brown slightly gravelly SAND		
					3.65 (0.10) 3.75	Soft to firm grey sandy SILT. Sand is fine		
					(0.45)	Grey slightly clayey sandy GRAVEL		
					4.20	Refusal at 4.20m BGL Complete at 4.20m		

<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery 2.00 - 3.00m BGL 80% recovery 3.00 - 4.00m BGL 75% recovery Refusal at 4.20m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS18	



<b>SI Location</b>	WS18	<b>Depth</b>	0.0 – 4.2 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	26/10/18



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**Site**  
Castleforbe Site

**Number**  
**WS19**

**Machine :** GEOTEC 10

**Dimensions**  
88mm to 2.00m  
68mm to 3.75m

**Ground Level (mOD)**

**Client**  
DBFL

**Job Number**  
8108-10-18

**Method :**

**Location**  
Castleforbe

**Dates**  
23/10/2018-  
02/11/2018

**Engineer**

**Sheet**  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(0.35)	CONCRETE core		
					0.35 (0.40)	MADE GROUND: Brown slightly clayey gravelly Clay with frequent yellow and red brick fragments		
					0.75 (0.50)	MADE GROUND: Black clayey gravelly Sand with many mortar fragments		
					1.25 (1.10)	MADE GROUND: Grey/brown sandy gravelly Clay with occasional ceramic and red brick fragments		
2.00-3.00	EN				2.35 (0.35)	Grey fine silty SAND		
					2.70 (0.80)	Brown/grey slightly gravelly SAND		
					3.50 (0.25)	Grey silty slightly gravelly SAND		
					3.75	Refusal at 3.75m BGL Complete at 3.75m		

**Remarks**  
2.00 - 3.00m BGL 80% recovery  
Refusal at 3.75m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS19



<b>SI Location</b>	WS19	<b>Depth</b>	0.0 – 3.75 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	01/11/18



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**Site**  
Castleforbe Site

**Number**  
**WS20**

<b>Machine :</b> GEOTECH 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.80m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b>	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(0.65)	CONCRETE core		
					0.65	MADE GROUND: grey slightly gravelly silty Sand		
					(0.50)	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional ceramic fragments		
2.00-3.00	EN				1.15	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional ceramic fragments		
					(0.85)			
3.00-3.80	EN				2.00	Grey fine silty SAND		
					(0.35)			
					2.35	Grey slightly gravelly SAND with shelly fragments		
					(0.55)			
					2.90	Grey fine silty SAND		
(0.20)								
3.10	Grey slightly gravelly SAND with shelly fragments							
(0.35)								
3.45	Soft grey sandy gravelly silty CLAY							
(0.35)								
3.80	Refusal at 3.80m BGL							
	Complete at 3.80m							

<b>Remarks</b> Refusal at 3.80m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS20	





<b>SI Location</b>	WS20	<b>Depth</b>	0.0 – 3.8 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	01/11/18



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**Site**  
Castleforbe Site

**Number**  
**WS21**

<b>Machine</b> : GEOTEC 10	<b>Dimensions</b> 88mm to 3.90m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> Castleforbe St	<b>Dates</b> 24/10/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.25-0.75	EN				(0.15)	CONCRETE core		
					0.15	MADE GROUND: Brown clayey gravelly Sand with some red brick and mortar fragments		
1.00-2.00	EN				(0.30)			
					0.45	MADE GROUND: Brown slightly gravelly silty Clay		
					(0.15)	MADE GROUND: Brown clayey gravelly Sand with some mortar fragments		
					0.60			
2.00-3.00	EN				(0.35)			
					0.95	MADE GROUND: Black sandy Gravel		
					(0.40)	MADE GROUND: Dark brown sandy gravelly Clay with frequent mortar fragments		
2.00-3.00	EN				1.35	MADE GROUND: Dark brown sandy gravelly Clay with frequent mortar fragments		
					(0.45)	MADE GROUND: Brown slightly sandy gravelly Clay with occasional red brick fragments		
3.00-3.90	EN				1.80	MADE GROUND: Brown slightly sandy gravelly Clay with occasional red brick fragments		
					(0.40)			
					2.20	Grey slightly clayey slightly gravelly SAND with articulated and disarticulated shell fragments (Strong hydrocarbon odour)		
					(0.60)			
					2.80	Grey slightly gravelly clayey SILT (Strong hydrocarbon odour)		
3.00-3.90	EN				(0.40)	Grey SAND with shelly fragments. Sand is coarse (Strong hydrocarbon odour)		
					3.20	Grey SAND with shelly fragments. Sand is coarse (Strong hydrocarbon odour)		
					(0.40)	Grey slightly gravelly clayey SILT (Strong hydrocarbon odour)		
					3.60	Grey slightly gravelly clayey SILT (Strong hydrocarbon odour)		
					(0.30)			
					3.90	Refusal at 3.90m BGL		
						Complete at 3.90m		

<b>Remarks</b> 1.00 - 2.00m BGL 90% recovery 2.00 - 3.00m BGL 80% recovery Refusal at 3.90m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS21	



<b>SI Location</b>	WS21	<b>Depth</b>	0.0 – 3.9 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	24/10/18



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**Site**  
Castleforbe Site

**Number**  
**WS22**

**Machine :** GEOTEC 10  
**Method :** Drive-in Windowless Sampler

**Dimensions**  
88mm to 0.60m

**Ground Level (mOD)**

**Client**  
DBFL

**Job Number**  
8108-10-18

**Location**  
Castleforbe St

**Dates**  
24/10/2018

**Engineer**

**Sheet**  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						MADE GROUND: Reddish brown clayey slightly gravelly Sand with many red brick fragments  Refusal at 0.60m BGL Complete at 0.60m		

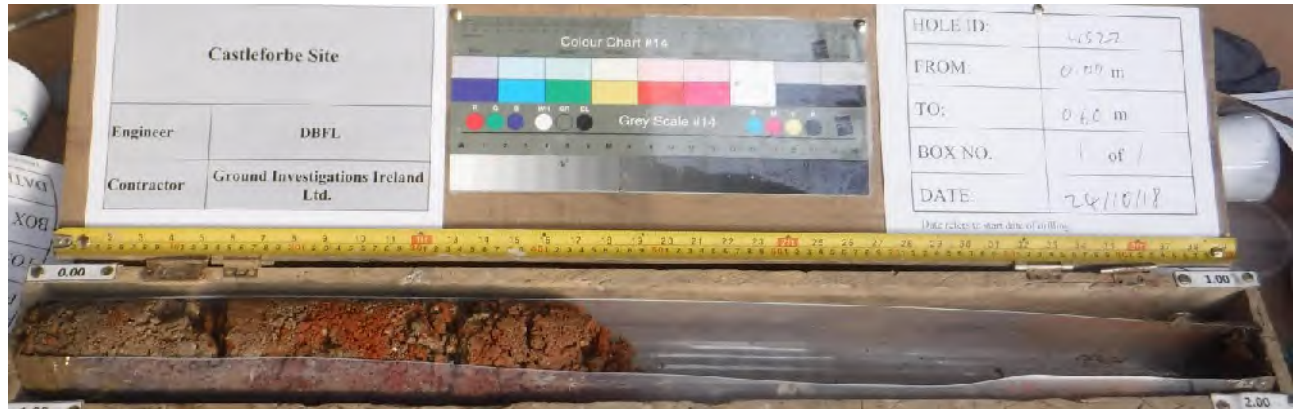
DRAFT

**Remarks**  
Refusal at 0.60m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS22



<b>SI Location</b>	WS22	<b>Depth</b>	0.0 - 0.6 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	24/10/18

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Site  
Castleforbe Site

Number  
**WS23**

Machine : GEOTECH 10  
Method : Drive-in Windowless Sampler

Dimensions  
88mm to 1.60m

Ground Level (mOD)

Client  
DBFL

Job Number  
8108-10-18

Location  
Castleforbe St

Dates  
24/10/2018

Engineer

Sheet  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.25-0.75	EN				(0.15) 0.15	MADE GROUND: Grey/black sandy Gravel		
						MADE GROUND: Dark brown sandy gravelly Clay with frequent mortar and red brick fragments		
1.00-1.60	EN				(1.15)			
					1.30 (0.30)	MADE GROUND: Black very sandy gravelly Clay with occasional waste ash fragments		
					1.60	Refusal at 1.60m BGL Complete at 1.60m		

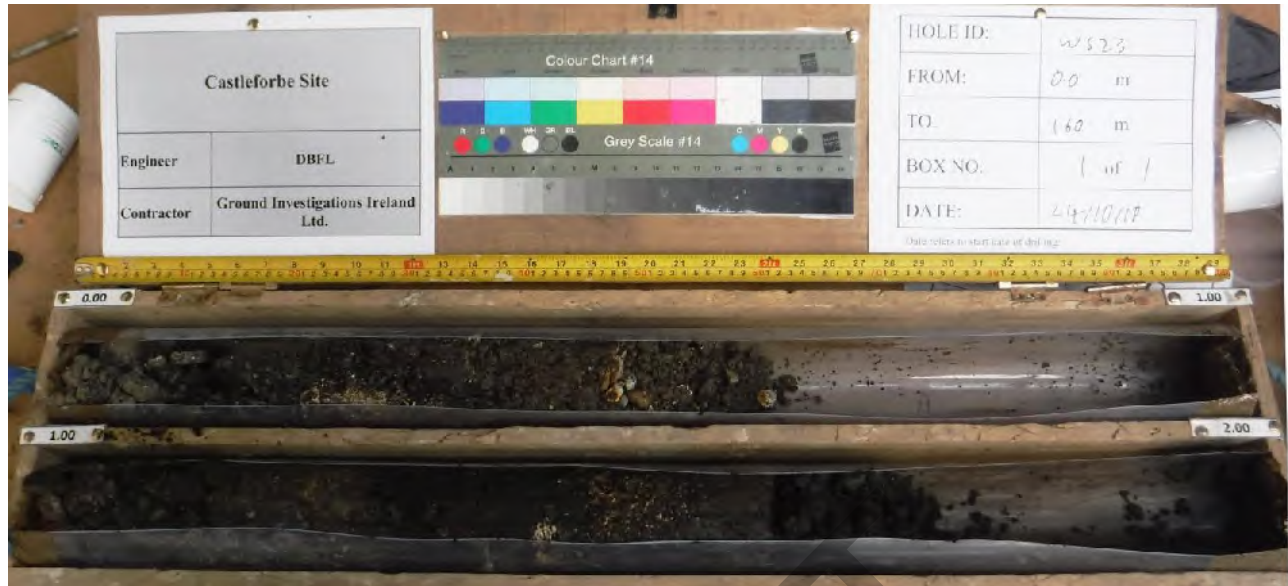
DRAFT

**Remarks**  
0.00 - 1.00m BGL 55% recovery  
Refusal at 1.60m BGL

Scale (approx)  
1:25

Logged By  
EB

Figure No.  
8108-10-18.WS23



<b>SI Location</b>	WS23	<b>Depth</b>	0.0 – 1.6 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	24/10/18



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**Site**  
Castleforbe Site

**Number**  
**WS24**

**Machine :** GEOTECH 10  
**Method :**

**Dimensions**  
68mm to 1.00m

**Ground Level (mOD)**

**Client**  
DBFL

**Job Number**  
8108-10-18

**Location**  
Castleforbe

**Dates**  
23/10/2018-  
02/11/2018

**Engineer**

**Sheet**  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN					MADE GROUND: Dark brown sandy groundred Clay with occasional mortar and red brick fragments  Refusal at 1.00m BGL Complete at 1.00m		

DRAFT

**Remarks**  
Refusal at 1.00m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS24



<b>SI Location</b>	WS24	<b>Depth</b>	0.0 – 1.0 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	25/10/18

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**Site**  
Castleforbe Site

**Number**  
**WS25**

**Machine :** GEOTECH 10

**Dimensions**  
88mm to 1.00m  
68mm to 1.20m

**Ground Level (mOD)**

**Client**  
DBFL

**Job Number**  
8108-10-18

**Method :**

**Location**  
Castleforbe

**Dates**  
23/10/2018-  
02/11/2018

**Engineer**

**Sheet**  
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						MADE GROUND: Dark brown sandy gravelly Clay with frequent red brick and mortar fragments		
					(1.20)			
					1.20	Refusal at 1.20m BGL Complete at 1.20m		

DRAFT

**Remarks**  
Refusal at 1.20m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS25





<b>SI Location</b>	WS25	<b>Depth</b>	0.0 – 1.2 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	25/10/18

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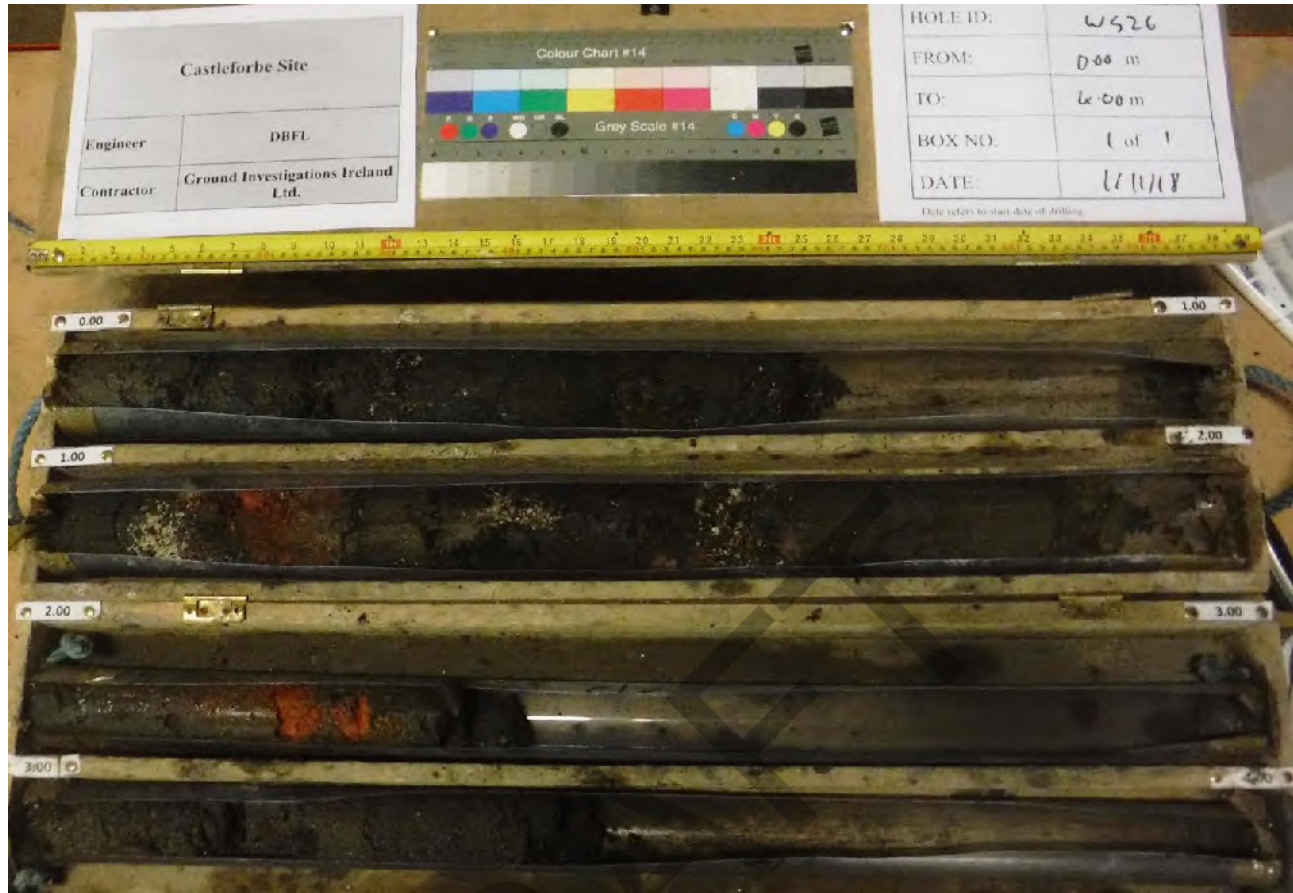
**Site**  
Castleforbe Site

**Number**  
**WS26**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.00m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b>	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(1.25)	MADE GROUND: Brown/black slightly clayey gravelly Sand with many red brick and mortar fragments		
					1.25	MADE GROUND: Brown sandy gravelly Clay with occasional mortar and glass fragments		
					(1.75)			
					3.00	MADE GROUND: brown Sand with occasional red brick fragments		
					(1.00)			
					4.00	Refusal at 4.00m BGL Complete at 4.00m		

<b>Remarks</b> 0.00 - 1.00m BGL 65% recovery 1.00 - 2.00m BGL 90% recovery 2.00 - 3.00m BGL 35% recovery 3.00 - 4.00m BGL 40% recovery Refusal at 4.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
<b>Figure No.</b> 8108-10-18.WS26		



<b>SI Location</b>	WS26	<b>Depth</b>	0.0 – 4.0 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	01/11/18



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**Site**  
Castleforbe Site

**Number**  
**WS28**

<b>Machine</b> : GEOTECH 10		<b>Dimensions</b> 88mm to 2.00m 68mm to 4.00m		<b>Ground Level (mOD)</b>		<b>Client</b> DBFL		<b>Job Number</b> 8108-10-18	
<b>Method</b> : Drive-in Windowless Sampler		<b>Location</b> Castleforbe		<b>Dates</b> 23/10/2018- 02/11/2018		<b>Engineer</b>		<b>Sheet</b> 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(1.15)	MADE GROUND: Grey slightly clayey sandy Gravel with occasional ceramic fragments		
					1.15	MADE GROUND: Brown sandy gravelly Clay with occasional glass and ceramic fragments		
2.00-3.00	EN				(0.85)			
					2.00	MADE GROUND: Brown slightly sandy slightly gravelly Clay with rare red brick fragments. Hydrocarbon odour present		
					(0.60)			
					2.60	Brown slightly gravelly SAND. (Strong hydrocarbon odour)		
					(0.90)			
					3.50	Grey fine silty SAND. (Strong hydrocarbon odour)		
					(0.10)			
					3.60	Refusal at 3.60m BGL		
						Complete at 4.00m		

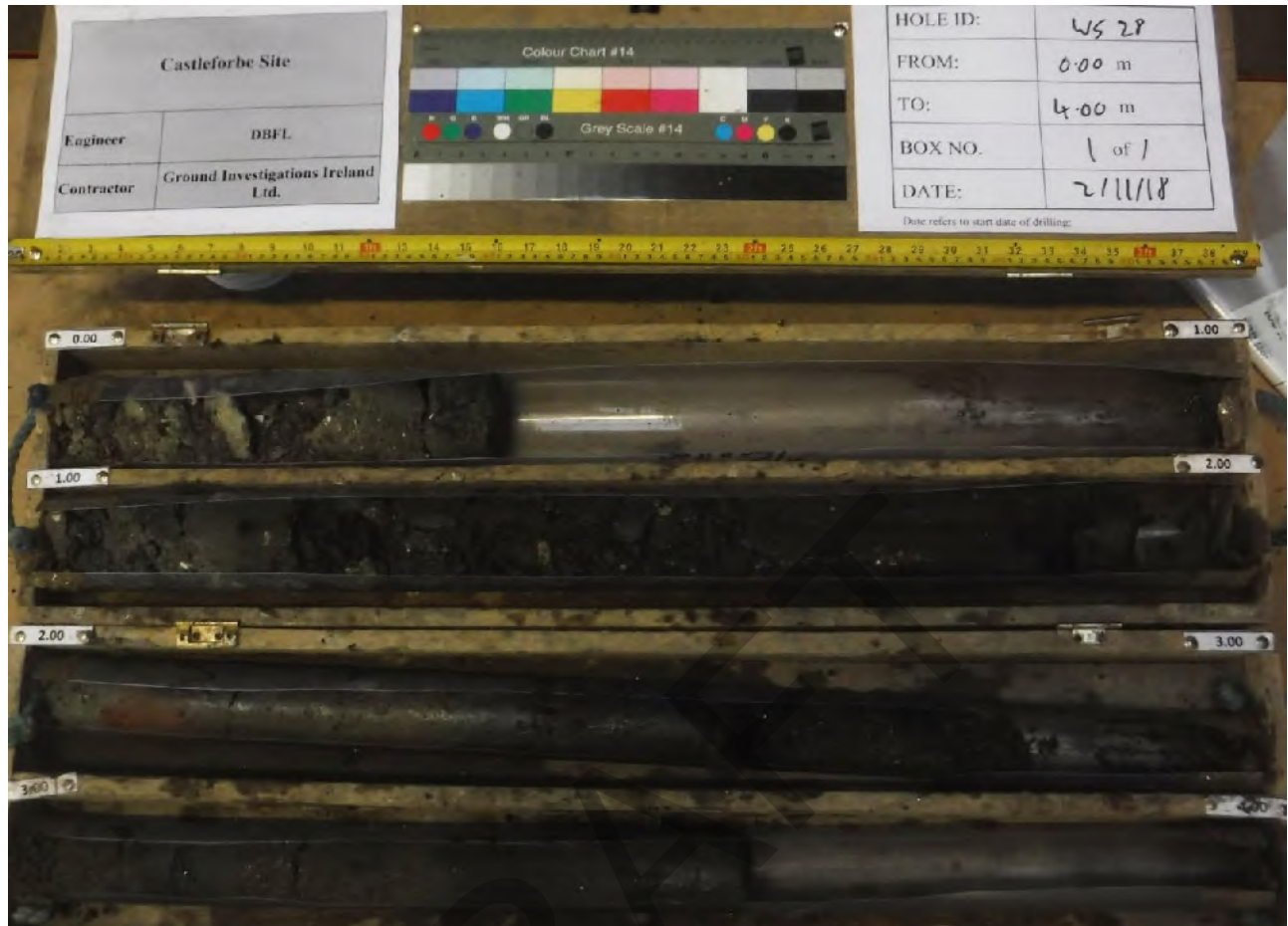
**Remarks**  
0.00 - 1.00m BGL 40% recovery  
1.00 - 2.00m BGL 90% recovery  
2.00 - 3.00m BGL 80% recovery  
3.00 - 4.00m BGL 60% recovery  
Refusal at 4.00m BGL

**Scale (approx)**  
1:25

**Logged By**  
EB

**Figure No.**  
8108-10-18.WS28





<b>SI Location</b>	WS28	<b>Depth</b>	0.0 – 4.0 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	02/11/18





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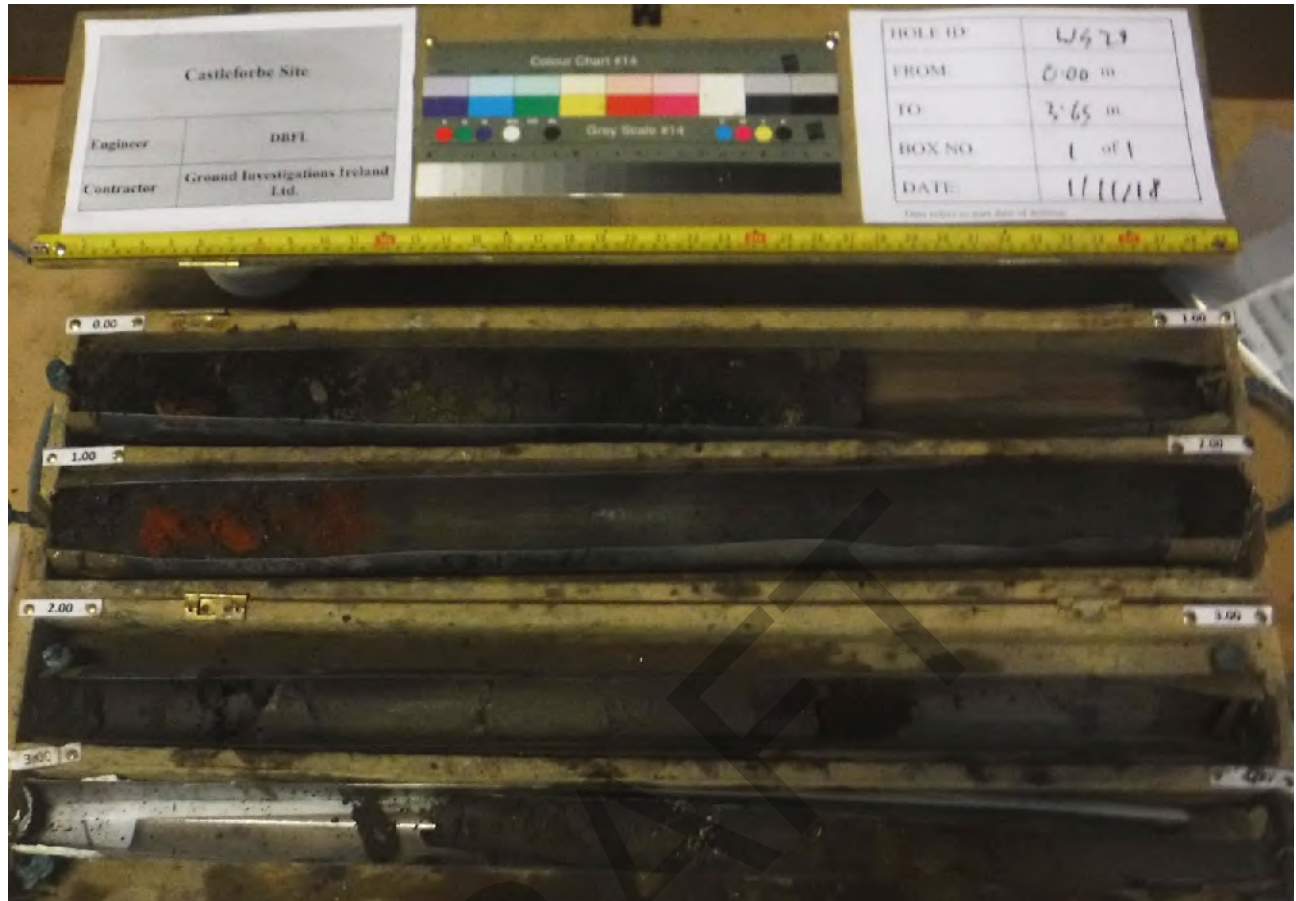
**Site**  
Castleforbe Site

**Number**  
**WS29**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 3.65m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b>	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(0.70)	MADE GROUND: Black clayey gravelly Sand with some glass fragments		
					0.70	MADE GROUND: Brown sandy gravelly Clay with frequent red brick and ceramic fragments		
					(1.50)			
					2.20	Grey silty SAND with shelly fragments		
					(1.10)			
			3.30	Brown slightly gravelly SAND				
			(0.35)					
			3.65	Refusal at 3.65m BGL Complete at 3.65m				

<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery 2.00 - 3.00m BGL 70% recovery Refusal at 3.65m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS29	



<b>SI Location</b>	WS29	<b>Depth</b>	0.0 – 3.65 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	01/11/18



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**Site**  
Castleforbe Site

**Number**  
**WS30**

<b>Machine :</b> GEOTEC 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 4.00m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method :</b>	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-2.00	EN				(2.00)	MADE GROUND: Brown sandy gravelly Clay with frequent red brick, mortar and plastic fragments		
2.00-3.00	EN				2.00 (0.60)	MADE GROUND: Black sandy gravelly Clay with rare mortar fragments		
3.00-4.00	EN				2.60 (0.40)	MADE GROUND: Light brown sandy gravelly Clay		
					3.00 (0.20)	MADE GROUND: Brown sandy gravelly Clay with occasional red brick fragments		
					3.20 (0.40)	MADE GROUND: Grey slightly sandy slightly gravelly Clay		
					3.60 (0.25)	MADE GROUND: Brown slightly sandy slightly gravelly Clay		
					3.85 (0.15) 4.00	MADE GROUND: Black slightly gravelly Clay with rare ceramic fragments Refusal at 4.00m BGL		
						Complete at 4.00m		

<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery 1.00 - 2.00m BGL 85% recovery 2.00 - 3.00m BGL 90% recovery Refusal at 4.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS30	



<b>SI Location</b>	WS30	<b>Depth</b>	0.0 – 4.0 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	26/10/18



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**Site**  
Castleforbe Site

**Number**  
**WS31**

<b>Machine</b> : GEOTECH 10	<b>Dimensions</b> 88mm to 2.00m 68mm to 6.00m	<b>Ground Level (mOD)</b>	<b>Client</b> DBFL	<b>Job Number</b> 8108-10-18
<b>Method</b> : Drive-in Windowless Sampler	<b>Location</b> Castleforbe	<b>Dates</b> 23/10/2018- 02/11/2018	<b>Engineer</b>	<b>Sheet</b> 1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN					MADE GROUND: Brown sandy gravelly Clay with frequent red brick and plastic fragments		
1.00-2.00	EN				(2.25)			
2.00-3.00	EN				2.25 (0.20) 2.45	MADE GROUND: Black sandy gravelly Clay with frequent red brick fragments		
3.00-4.00	EN				(2.05)	MADE GROUND: Brown sandy slightly gravelly Clay with occasional red brick and plastic fragments		
4.00-5.00	EN				4.50 (0.15) 4.65	Grey fine silty SAND		
					(0.55)	Grey slightly gravelly SAND with shelly fragments		

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<b>Remarks</b> 0.00 - 1.00m BGL 70% recovery 1.00 - 2.00m BGL 65% recovery 2.00 - 3.00m BGL 70% recovery 3.00 - 4.00m BGL 70% recovery 5.00 - 6.00m BGL 40% recovery Refusal at 6.00m BGL	<b>Scale (approx)</b>	<b>Logged By</b>
	1:25	EB
	<b>Figure No.</b> 8108-10-18.WS31	





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**Site**  
Castleforbe Site

**Number**  
**WS31**

**Machine :** GEOTEC 10  
**Method :** Drive-in Windowless Sampler

**Dimensions**  
88mm to 2.00m  
68mm to 6.00m

**Ground Level (mOD)**

**Client**  
DBFL

**Job Number**  
8108-10-18

**Location**  
Castleforbe

**Dates**  
23/10/2018-  
02/11/2018

**Engineer**

**Sheet**  
2/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
5.00-6.00	EN				5.20  (0.80)  6.00	Grey fine silty SAND with shelly fragments   Refusal at 6.00m BGL Complete at 6.00m		

DRAFT

**Remarks**

**Scale (approx)**  
1:25  
**Logged By**  
EB

**Figure No.**  
8108-10-18.WS31



<b>SI Location</b>	WS31	<b>Depth</b>	0.0 – 6.0 m
<b>Core Type</b>	PVC Tube	<b>Photo Plate</b>	1 of 1
<b>Project</b>	8108-10-18	<b>Date</b>	22/10/18

**Appendix 3**

**Laboratory Reports**



# Exova Jones Environmental

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

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

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

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



**Attention :** Conor Finnerty  
**Date :** 11th December, 2018  
**Your reference :** 8108-10-18  
**Our reference :** Test Report 18/17509 Batch 1  
**Location :** Castleforbes Site  
**Date samples received :** 31st October, 2018  
**Status :** Final report  
**Issue :** 2

Six samples were received for analysis on 31st October, 2018 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

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

## Compiled By:

**Phil Sommerton BSc**

Project Manager





**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site  
**Contact:** Conor Finnerty  
**JE Job No.:** 18/17509

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

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18												
	Sample ID	WS21	WS21	WS21	WS21	WS23												
Depth	0.25-0.75	1.00-2.00	2.00-3.00	3.00-3.80	0.25-0.75	1.00-1.60												
COC No / misc																		
Containers	V J T	V J T	V J T	V J T	V J T	V J T												
Sample Date	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018												
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil												
Batch Number	1	1	1	1	1	1												
Date of Receipt	31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018												
												LOD/LOR	Units	Method No.				
TPH CWG																		
<b>Aliphatics</b>																		
>C5-C6 #	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1						<0.1	mg/kg	TM36/PM12				
>C6-C8 #	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1						<0.1	mg/kg	TM36/PM12				
>C8-C10	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1						<0.1	mg/kg	TM36/PM12				
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2						<0.2	mg/kg	TMS/PM8/PM16				
>C12-C16 #	<4	<4	<4	<4	<4	<4						<4	mg/kg	TMS/PM8/PM16				
>C16-C21 #	<7	<7	<7	<7	<7	<7						<7	mg/kg	TMS/PM8/PM16				
>C21-C35 #	<7	<7	<7	<7	<7	<7						<7	mg/kg	TMS/PM8/PM16				
>C35-C40	<7	<7	<7	<7	<7	<7						<7	mg/kg	TMS/PM8/PM16				
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26						<26	mg/kg	TMS/PM8/PM16/PM12/PM15				
>C6-C10	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1						<0.1	mg/kg	TM36/PM12				
>C10-C25	<10	<10	<10	<10	<10	<10						<10	mg/kg	TMS/PM8/PM16				
>C25-C35	<10	<10	<10	<10	<10	<10						<10	mg/kg	TMS/PM8/PM16				
<b>Aromatics</b>																		
>C5-EC7 #	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1						<0.1	mg/kg	TM36/PM12				
>EC7-EC8 #	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1						<0.1	mg/kg	TM36/PM12				
>EC8-EC10 #	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1						<0.1	mg/kg	TM36/PM12				
>EC10-EC12 #	10.2	<0.2	<0.2	<0.2	<0.2	<0.2						<0.2	mg/kg	TMS/PM8/PM16				
>EC12-EC16 #	59	<4	<4	<4	<4	<4						<4	mg/kg	TMS/PM8/PM16				
>EC16-EC21 #	193	29	<7	<7	<7	27						<7	mg/kg	TMS/PM8/PM16				
>EC21-EC35 #	377	126	<7	<7	<7	115						<7	mg/kg	TMS/PM8/PM16				
>EC35-EC40	40	18	<7	<7	<7	8						<7	mg/kg	TMS/PM8/PM16				
Total aromatics C5-40	679	173	<26	<26	<26	150						<26	mg/kg	TMS/PM8/PM16/PM12/PM15				
Total aliphatics and aromatics(C5-40)	679	173	<52	<52	<52	150						<52	mg/kg	TMS/PM8/PM16/PM12/PM15				
>EC6-EC10 #	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1						<0.1	mg/kg	TM36/PM12				
>EC10-EC25	394	65	<10	<10	<10	67						<10	mg/kg	TMS/PM8/PM16				
>EC25-EC35	250	99	<10	<10	<10	86						<10	mg/kg	TMS/PM8/PM16				
MTBE #	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5						<5	ug/kg	TM31/PM12				
Benzene #	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	7 <sup>SV</sup>	<5						<5	ug/kg	TM31/PM12				
Toluene #	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5						<5	ug/kg	TM31/PM12				
Ethylbenzene #	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5						<5	ug/kg	TM31/PM12				
m/p-Xylene #	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5						<5	ug/kg	TM31/PM12				
o-Xylene #	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5						<5	ug/kg	TM31/PM12				
PCB 28 #	<5	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8				
PCB 52 #	<5	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8				
PCB 101 #	<5	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8				
PCB 118 #	<5	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8				
PCB 138 #	<5	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8				
PCB 153 #	<5	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8				
PCB 180 #	<5	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8				
Total 7 PCBs #	<35	<35	<35	<35	<35	<35						<35	ug/kg	TM17/PM8				

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site  
**Contact:** Conor Finnerty  
**JE Job No.:** 18/17509

**Report :** Solid

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

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18						
	Sample ID	WS21	WS21	WS21	WS21	WS23	WS23					
Depth	0.25-0.75	1.00-2.00	2.00-3.00	3.00-3.80	0.25-0.75	1.00-1.60						
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1						
Date of Receipt	31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018						
							LOD/LOR	Units	Method No.			
Phenol #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21			
Natural Moisture Content	21.2	28.1	48.5	37.9	20.0	21.1	<0.1	%	PM4/PM0			
Moisture Content (% Wet Weight)	17.5	21.9	32.6	27.5	16.6	17.4	<0.1	%	PM4/PM0			
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20			
Chromium III	77.9	75.6	79.5	72.9	72.8	110.6	<0.5	mg/kg	NONE/NONE			
Total Cyanide #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45			
Total Organic Carbon #	9.47	12.80	1.02	1.25	12.34	13.52	<0.02	%	TM21/PM24			
Sulphide	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM107/PM119			
Elemental Sulphur	1875	10	6	10	65	33	<1	mg/kg	TM108/PM114			
pH #	8.44	7.92	8.13	8.47	8.44	8.33	<0.01	pH units	TM73/PM11			
Mass of raw test portion	0.1179	0.1227	0.1375	0.1299	0.1042	0.1233		kg	NONE/PM17			
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09		kg	NONE/PM17			

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site  
**Contact:** Conor Finnerty  
**JE Job No.:** 18/17509

**Report :** CEN 10:1 1 Batch

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

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18									
Sample ID	WS21	WS21	WS21	WS21	WS23	WS23									
Depth	0.25-0.75	1.00-2.00	2.00-3.00	3.00-3.80	0.25-0.75	1.00-1.60									
COC No / misc															
Containers	V J T	V J T	V J T	V J T	V J T	V J T									
Sample Date	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018									
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1	1	1									
Date of Receipt	31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018									
							LOD/LOR	Units	Method No.						
Dissolved Antimony #	0.017	0.009	0.013	0.012	0.005	0.005	<0.002	mg/l	TM30/PM17						
Dissolved Antimony (A10) #	0.17	0.09	0.13	0.12	0.05	0.05	<0.02	mg/kg	TM30/PM17						
Dissolved Arsenic #	0.0074	0.0055	0.0040	0.0056	0.0224	<0.0025	<0.0025	mg/l	TM30/PM17						
Dissolved Arsenic (A10) #	0.074	0.055	0.040	0.056	0.224	<0.025	<0.025	mg/kg	TM30/PM17						
Dissolved Barium #	0.007	0.023	0.009	0.011	0.025	0.025	<0.003	mg/l	TM30/PM17						
Dissolved Barium (A10) #	0.07	0.23	0.09	0.11	0.25	0.25	<0.03	mg/kg	TM30/PM17						
Dissolved Boron #	0.090	0.202	0.169	0.170	0.036	0.028	<0.012	mg/l	TM30/PM17						
Dissolved Boron (A10) #	0.90	2.02	1.69	1.70	0.36	0.28	<0.12	mg/kg	TM30/PM17						
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17						
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17						
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17						
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17						
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17						
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17						
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17						
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17						
Dissolved Molybdenum #	0.196	0.082	0.064	0.056	0.037	0.010	<0.002	mg/l	TM30/PM17						
Dissolved Molybdenum (A10) #	1.96	0.82	0.64	0.56	0.37	0.10	<0.02	mg/kg	TM30/PM17						
Dissolved Nickel #	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17						
Dissolved Nickel (A10) #	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17						
Dissolved Selenium #	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17						
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17						
Dissolved Zinc #	<0.003	<0.003	<0.003	0.004	<0.003	<0.003	<0.003	mg/l	TM30/PM17						
Dissolved Zinc (A10) #	<0.03	<0.03	<0.03	0.04	<0.03	<0.03	<0.03	mg/kg	TM30/PM17						
Mercury Dissolved by CVA#	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0						
Mercury Dissolved by CVA#	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0						
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0						
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0						
Fluoride	<0.3	0.3	0.4	0.5	0.4	0.6	<0.3	mg/l	TM173/PM0						
Fluoride	<3	<3	4	5	4	6	<3	mg/kg	TM173/PM0						
Sulphate as SO4 #	14.84	14.16	18.68	10.09	62.70	10.59	<0.05	mg/l	TM38/PM0						
Sulphate as SO4 #	148.3	141.5	186.9	100.9	626.7	105.9	<0.5	mg/kg	TM38/PM0						
Chloride #	2.0	4.7	15.1	23.2	0.5	0.9	<0.3	mg/l	TM38/PM0						
Chloride #	20	47	151	232	5	9	<3	mg/kg	TM38/PM0						
Ammoniacal Nitrogen as N #	0.17	0.63	0.95	1.02	0.09	0.09	<0.03	mg/l	TM38/PM0						
Ammoniacal Nitrogen as N #	1.7	6.3	9.5	10.2	0.9	0.9	<0.3	mg/kg	TM38/PM0						
Dissolved Organic Carbon	5	8	9	9	<2	<2	<2	mg/l	TM60/PM0						
Dissolved Organic Carbon	50	80	90	90	<20	<20	<20	mg/kg	TM60/PM0						
Total Dissolved Solids #	117	129	169	153	164	115	<35	mg/l	TM20/PM0						
Total Dissolved Solids #	1169	1289	1691	1530	1639	1150	<350	mg/kg	TM20/PM0						

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site  
**Contact:** Conor Finnerty  
**JE Job No.:** 18/17509

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18															
Sample ID	WS21	WS21	WS21	WS21	WS23	WS23															
Depth	0.25-0.75	1.00-2.00	2.00-3.00	3.00-3.80	0.25-0.75	1.00-1.60															
COC No / misc																					
Containers	V J T	V J T	V J T	V J T	V J T	V J T															
Sample Date	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018															
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil															
Batch Number	1	1	1	1	1	1															
Date of Receipt	31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018															
												Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.				
Please see attached notes for all abbreviations and acronyms																					
<b>Solid Waste Analysis</b>																					
Total Organic Carbon #	9.47	12.80	1.02	1.25	12.34	13.52								3	5	6	<0.02	%	TM21/PM24		
Sum of BTEX	<0.025	<0.025 <sup>SV</sup>	<0.025	<0.025 <sup>SV</sup>	<0.025 <sup>SV</sup>	<0.025								6	-	-	<0.025	mg/kg	TM31/PM12		
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035								1	-	-	<0.035	mg/kg	TM17/PM8		
Mineral Oil	<30	<30	<30	<30	<30	<30								500	-	-	<30	mg/kg	TM5/PM8/PM16		
PAH Sum of 6 #	22.89	6.35	<0.22	1.68	3.63	14.05								-	-	-	<0.22	mg/kg	TM4/PM8		
PAH Sum of 17	53.97	11.98	<0.64	3.31	6.86	28.18								100	-	-	<0.64	mg/kg	TM4/PM8		
<b>CEN 10:1 Leachate</b>																					
Arsenic #	0.074	0.055	0.040	0.056	0.224	<0.025								0.5	2	25	<0.025	mg/kg	TM30/PM17		
Barium #	0.07	0.23	0.09	0.11	0.25	0.25								20	100	300	<0.03	mg/kg	TM30/PM17		
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005								0.04	1	5	<0.005	mg/kg	TM30/PM17		
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015								0.5	10	70	<0.015	mg/kg	TM30/PM17		
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07								2	50	100	<0.07	mg/kg	TM30/PM17		
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001								0.01	0.2	2	<0.0001	mg/kg	TM61/PM0		
Molybdenum #	1.96	0.82	0.64	0.56	0.37	0.10								0.5	10	30	<0.02	mg/kg	TM30/PM17		
Nickel #	0.03	<0.02	<0.02	<0.02	<0.02	<0.02								0.4	10	40	<0.02	mg/kg	TM30/PM17		
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05								0.5	10	50	<0.05	mg/kg	TM30/PM17		
Antimony #	0.17	0.09	0.13	0.12	0.05	0.05								0.06	0.7	5	<0.02	mg/kg	TM30/PM17		
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03								0.1	0.5	7	<0.03	mg/kg	TM30/PM17		
Zinc #	<0.03	<0.03	<0.03	0.04	<0.03	<0.03								4	50	200	<0.03	mg/kg	TM30/PM17		
Total Dissolved Solids #	1169	1289	1691	1530	1639	1150								4000	60000	100000	<350	mg/kg	TM20/PM0		
Dissolved Organic Carbon	50	80	90	90	<20	<20								500	800	1000	<20	mg/kg	TM60/PM0		
Dry Matter Content Ratio	76.6	73.4	65.5	69.1	86.1	73.1								-	-	-	<0.1	%	NONE/PM4		
Eluate Volume	0.65	0.7	0.88	0.85	0.62	0.85								-	-	-		l	NONE/PM17		
pH #	8.44	7.92	8.13	8.47	8.44	8.33								-	-	-	<0.01	pH units	TM73/PM11		
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1								1	-	-	<0.1	mg/kg	TM26/PM0		
Fluoride	<3	<3	4	5	4	6								-	-	-	<3	mg/kg	TM173/PM0		
Sulphate as SO4 #	148.3	141.5	186.9	100.9	626.7	105.9								1000	20000	50000	<0.5	mg/kg	TM38/PM0		
Chloride #	20	47	151	232	5	9								800	15000	25000	<3	mg/kg	TM38/PM0		





**Client Name:** Ground Investigations Ireland  
**Reference:** 18/10/8108  
**Location:** Castleforbes Site  
**Contact:** Conor Finnerty

**Note:**

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

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

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

Signed on behalf of Jones Environmental Laboratory:



Ryan Butterworth  
 Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/17509	1	WS21	0.25-0.75	2	08/11/2018	<b>General Description (Bulk Analysis)</b>	soil-stones
					08/11/2018	<b>Asbestos Fibres</b>	NAD
					08/11/2018	<b>Asbestos ACM</b>	NAD
					08/11/2018	<b>Asbestos Type</b>	NAD
					08/11/2018	<b>Asbestos Level Screen</b>	NAD
18/17509	1	WS21	1.00-2.00	5	08/11/2018	<b>General Description (Bulk Analysis)</b>	soil-stones
					08/11/2018	<b>Asbestos Fibres</b>	NAD
					08/11/2018	<b>Asbestos ACM</b>	NAD
					08/11/2018	<b>Asbestos Type</b>	NAD
					08/11/2018	<b>Asbestos Level Screen</b>	NAD
18/17509	1	WS21	2.00-3.00	8	08/11/2018	<b>General Description (Bulk Analysis)</b>	soil-stones
					08/11/2018	<b>Asbestos Fibres</b>	NAD
					08/11/2018	<b>Asbestos ACM</b>	NAD
					08/11/2018	<b>Asbestos Type</b>	NAD
					08/11/2018	<b>Asbestos Level Screen</b>	NAD
18/17509	1	WS21	3.00-3.80	11	08/11/2018	<b>General Description (Bulk Analysis)</b>	soil.stones
					08/11/2018	<b>Asbestos Fibres</b>	NAD
					08/11/2018	<b>Asbestos ACM</b>	NAD
					08/11/2018	<b>Asbestos Type</b>	NAD
					08/11/2018	<b>Asbestos Level Screen</b>	NAD
18/17509	1	WS23	0.25-0.75	14	08/11/2018	<b>General Description (Bulk Analysis)</b>	soil.stones
					08/11/2018	<b>Asbestos Fibres</b>	NAD
					08/11/2018	<b>Asbestos ACM</b>	NAD
					08/11/2018	<b>Asbestos Type</b>	NAD
					08/11/2018	<b>Asbestos Level Screen</b>	NAD
18/17509	1	WS23	1.00-1.60	17	08/11/2018	<b>General Description (Bulk Analysis)</b>	soil.stones
					08/11/2018	<b>Asbestos Fibres</b>	NAD
					08/11/2018	<b>Asbestos ACM</b>	NAD
					08/11/2018	<b>Asbestos Type</b>	NAD
					08/11/2018	<b>Asbestos Level Screen</b>	NAD

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site  
**Contact:** Conor Finnerty

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 18/17509						

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

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/17509

## SOILS

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

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

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

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

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

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

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

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

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

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

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

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

## WATERS

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

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

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

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

## DEVIATING SAMPLES

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

## SURROGATES

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

## DILUTIONS

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

## BLANKS

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

## NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

## REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

**ABBREVIATIONS and ACRONYMS USED**

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x20 Dilution

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

JE Job No.: 18/17509

Leachate tests	
10l/kg; 4mm	I.S. EN 12457-2:2002 Specified particle size; water added to L/S ratio; capped; agitated for 24 ± 0.5 hours; eluate settled and filtered over 0.45 µm membrane filter.
Eluate analysis	
As	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ba	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cd	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cr total	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cu	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Hg	I.S. EN 13370 rec. EN 1483 (CVAAS)
Mo	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ni	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Pb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Sb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Se	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Zn	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Chloride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Fluoride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Sulphate	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Phenol index	I.S. EN 13370 rec. ISO 6439 (4-Aminoantipyrine spectrometric methods after distillation)* ( BY HPLC - Jones Env)
DOC	I.S. EN 1484
TDS	I.S. EN 15216
Compositional analysis	
TOC	I.S. EN 13137 Method B: carbonates removed with acid; TOC by combustion.
BTEX	GC-FID
PCB7**	I.S. EN 15308 analysis by GC-ECD.
Mineral oil	I.S. EN 14039 C10 to C40 analysis by GC-FID.
PAH17***	I.S. EN 15527 PAH17 analysis by GC-MS
Metals	I.S. EN 13657 - Aqua regia digestion: EN ISO 11885 ( ICP-OES)
Other	
Dry matter	I.S. EN 14346 sample is dried to a constant mass in an oven at 105 ± 3 °C; Method B Water content by direct Karl-Fischer-titration and either volumetric or coulometric detection.
LOI	I.S. EN 15169 Difference in mass after heating in a furnace up to 550 ± 25 °C.
ANC	CEN/TS 15364 Determined by amounts of acid or base needed to cover the pH range
<b>Notes:</b>	
*If not suitable due to LOD, precision, etc., any other suitable method can be used, e.g. AFS, ICP-MS	
**PCB-28, PCB-52, PCB-101, PCB-118, PCB-138, PCB-153 and PCB-180	
***Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.	



JE Job No: 18/17509

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

JE Job No: 18/17509

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes

JE Job No: 18/17509

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Modified US EPA methods 245.7 and 200.7. Determination of Mercury by Cold Vapour Atomic Fluorescence.	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM119	As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis.			AR	Yes
TM108	Determination of Elemental Sulphur by Reversed Phase High Performance Liquid Chromatography with Ultra Violet spectroscopy.	PM114	End over end extraction of dried and crushed soil samples for organic analysis. The solvent mix varies depending on analysis required			AD	Yes

JE Job No: 18/17509

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AR	Yes
NONE	No Method Code	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	



# Exova Jones Environmental

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

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

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

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



<b>Attention :</b>	Antoinette Walshe
<b>Date :</b>	30th November, 2018
<b>Your reference :</b>	8108-10-18
<b>Our reference :</b>	Test Report 18/17776 Batch 1
<b>Location :</b>	Castleforbes Site Dublin Docklands
<b>Date samples received :</b>	5th November, 2018
<b>Status :</b>	Final report
<b>Issue :</b>	2

Thirty nine samples were received for analysis on 5th November, 2018 of which thirty nine were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

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

## Compiled By:

**Lucas Halliwell**  
Project Co-ordinator



**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

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

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS1	WS1	WS1	WS2	WS2	WS2	WS3	WS3	WS4	WS4			
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	0.25-0.75	1.0-2.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	25/10/2018	25/10/2018	25/10/2018	24/10/2018	24/10/2018	24/10/2018	25/10/2018	25/10/2018	22/10/2018	22/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
Antimony	4	2	<1	<1	2	3	2	3	7	5	<1	mg/kg	TM30/PM15
Arsenic #	39.2	13.9	6.0	7.0	9.7	24.0	9.0	22.7	29.0	45.3	<0.5	mg/kg	TM30/PM15
Barium #	183	119	24	20	112	106	30	135	777	160	<1	mg/kg	TM30/PM15
Cadmium #	0.6	0.3	0.1	0.2	0.2	0.5	1.4	0.7	0.8	0.9	<0.1	mg/kg	TM30/PM15
Chromium #	81.9	107.3	131.2	114.5	151.4	78.0	111.5	103.5	107.5	107.4	<0.5	mg/kg	TM30/PM15
Copper #	224	43	5	6	523 <sup>AA</sup>	74	12	68	783 <sup>AA</sup>	203	<1	mg/kg	TM30/PM15
Lead #	511	79	15	10	91	245	21	242	405	536	<5	mg/kg	TM30/PM15
Mercury #	2.0	0.3	<0.1	<0.1	<0.1	0.5	<0.1	0.6	<0.1	1.6	<0.1	mg/kg	TM30/PM15
Molybdenum #	8.5	6.1	8.9	7.3	5.9	5.2	7.9	8.0	7.4	7.4	<0.1	mg/kg	TM30/PM15
Nickel #	89.1	35.5	14.4	14.7	30.0	38.2	29.4	44.2	42.4	51.5	<0.7	mg/kg	TM30/PM15
Selenium #	2	1	<1	<1	4	1	<1	2	2	2	<1	mg/kg	TM30/PM15
Zinc #	242	151	34	33	121	128	104	112	344	266	<5	mg/kg	TM30/PM15
Antimony	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Arsenic	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Barium	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Cadmium	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Copper	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Lead	-	-	-	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
Mercury	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Molybdenum	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel	-	-	-	-	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Zinc	-	-	-	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

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

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS1	WS1	WS1	WS2	WS2	WS2	WS3	WS3	WS4	WS4			
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	0.25-0.75	1.0-2.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	25/10/2018	25/10/2018	25/10/2018	24/10/2018	24/10/2018	24/10/2018	25/10/2018	25/10/2018	22/10/2018	22/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
<b>PAH MS</b>													
Naphthalene #	3.50 <sup>++</sup>	0.11	<0.04	0.77	<0.04	<0.04	<0.04	0.13	<0.40 <sup>AB</sup>	1.80 <sup>++</sup>	<0.04	mg/kg	TM4/PM8
Acenaphthylene	7.01 <sup>++</sup>	0.15	0.04	0.72	0.07	<0.03	0.07	0.08	<0.30 <sup>AB</sup>	0.51 <sup>++</sup>	<0.03	mg/kg	TM4/PM8
Acenaphthene #	1.52 <sup>++</sup>	<0.05	<0.05	0.14	<0.05	<0.05	<0.05	0.07	<0.50 <sup>AB</sup>	2.24 <sup>++</sup>	<0.05	mg/kg	TM4/PM8
Fluorene #	5.68 <sup>++</sup>	0.09	<0.04	0.46	0.07	<0.04	<0.04	0.07	<0.40 <sup>AB</sup>	1.45 <sup>++</sup>	<0.04	mg/kg	TM4/PM8
Phenanthrene #	37.69 <sup>++</sup>	0.98	0.23	2.26	0.68	<0.03	0.68	1.46	2.79 <sup>AB</sup>	23.29 <sup>++</sup>	<0.03	mg/kg	TM4/PM8
Anthracene #	13.36 <sup>++</sup>	0.23	0.09	0.82	0.35	<0.04	0.12	0.15	<0.40 <sup>AB</sup>	3.65 <sup>++</sup>	<0.04	mg/kg	TM4/PM8
Fluoranthene #	61.98 <sup>++</sup>	1.14	0.42	5.08	1.44	<0.03	0.98	0.90	3.65 <sup>AB</sup>	33.80 <sup>++</sup>	<0.03	mg/kg	TM4/PM8
Pyrene #	54.62 <sup>++</sup>	0.97	0.40	5.03	0.92	<0.03	0.85	0.78	3.37 <sup>AB</sup>	30.85 <sup>++</sup>	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	29.98 <sup>++</sup>	0.77	0.24	2.97	0.70	<0.06	0.40	0.49	1.96 <sup>AB</sup>	18.74 <sup>++</sup>	<0.06	mg/kg	TM4/PM8
Chrysene #	31.22 <sup>++</sup>	0.63	0.20	3.42	0.62	<0.02	0.45	0.62	2.18 <sup>AB</sup>	22.21 <sup>++</sup>	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	53.61 <sup>++</sup>	0.99	0.32	8.05	1.08	<0.07	0.73	0.81	3.14 <sup>AB</sup>	40.22 <sup>++</sup>	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	30.70 <sup>++</sup>	0.55	0.19	4.15	0.56	<0.04	0.31	0.39	1.40 <sup>AB</sup>	20.84 <sup>++</sup>	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	16.22 <sup>++</sup>	0.31	0.09	2.91	0.29	<0.04	0.21	0.20	1.04 <sup>AB</sup>	13.19 <sup>++</sup>	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	4.72 <sup>++</sup>	0.07	<0.04	0.59	0.06	<0.04	0.05	0.07	<0.40 <sup>AB</sup>	3.75 <sup>++</sup>	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	17.11 <sup>++</sup>	0.34	0.09	3.15	0.30	<0.04	0.24	0.26	1.13 <sup>AB</sup>	16.49 <sup>++</sup>	<0.04	mg/kg	TM4/PM8
Coronene	2.90 <sup>++</sup>	0.07	<0.04	0.51	<0.04	<0.04	<0.04	<0.04	<0.40 <sup>AB</sup>	1.87 <sup>++</sup>	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	179.62 <sup>++</sup>	3.33	1.11	23.34	3.67	<0.22	2.47	2.56	10.36 <sup>AB</sup>	124.54 <sup>++</sup>	<0.22	mg/kg	TM4/PM8
PAH 17 Total	371.82 <sup>++</sup>	7.40	2.31	41.03	7.14	<0.64	5.09	6.48	20.66 <sup>AB</sup>	234.90 <sup>++</sup>	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	38.60 <sup>++</sup>	0.71	0.23	5.80	0.78	<0.05	0.53	0.58	2.26 <sup>AB</sup>	28.96 <sup>++</sup>	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	15.01 <sup>++</sup>	0.28	0.09	2.25	0.30	<0.02	0.20	0.23	0.88 <sup>AB</sup>	11.26 <sup>++</sup>	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	15 <sup>++</sup>	<1	<1	3	<1	<1	<1	<1	<10 <sup>AB</sup>	11 <sup>++</sup>	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	104 <sup>++</sup>	105	105	103	99	105	105	108	103 <sup>AB</sup>	103 <sup>++</sup>	<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30	121	<30	<30	<30	<30	<30	<30	<30	mg/kg	TM5/PM8/PM16
<b>TPH CWG</b>													
<b>Aliphatics</b>													
>C5-C6 #	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	20.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	40	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	49	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7	12	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	<26	121	<26	<26	<26	<26	<26	<26	<26	mg/kg	TM5/PM8/PM16
>C6-C10	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	104	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

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

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS1	WS1	WS1	WS2	WS2	WS2	WS3	WS3	WS4	WS4			
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	0.25-0.75	1.0-2.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	25/10/2018	25/10/2018	25/10/2018	24/10/2018	24/10/2018	24/10/2018	25/10/2018	25/10/2018	22/10/2018	22/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
TPH CWG													
<b>Aromatics</b>													
>C5-EC7 #	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16
>EC12-EC16 #	13	<4	<4	22	<4	<4	<4	<4	9	10	<4	mg/kg	TMS/PM8/PM16
>EC16-EC21 #	98	<7	<7	62	<7	<7	<7	<7	40	90	<7	mg/kg	TMS/PM8/PM16
>EC21-EC35 #	310	56	<7	130	<7	<7	<7	<7	158	379	<7	mg/kg	TMS/PM8/PM16
>EC35-EC40	28	<7	<7	14	<7	<7	<7	<7	19	40	<7	mg/kg	TMS/PM8/PM16
Total aromatics C5-40	449	56	<26	228	<26	<26	<26	<26	226	519	<26	mg/kg	TMS/PM8/PM16
Total aliphatics and aromatics(C5-40)	449	56	<52	349	<52	<52	<52	<52	226	519	<52	mg/kg	TMS/PM8/PM16
>EC6-EC10 #	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25	187	<10	<10	134	<10	<10	<10	<10	86	209	<10	mg/kg	TMS/PM8/PM16
>EC25-EC35	217	32	<10	90	<10	<10	<10	<10	100	268	<10	mg/kg	TMS/PM8/PM16
MTBE #	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8
Natural Moisture Content	48.8	34.3	26.2	28.6	20.1	33.4	20.9	34.8	25.1	38.3	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	32.8	25.6	20.7	22.2	16.7	25.1	17.3	25.8	20.1	27.7	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Chromium III	81.9	107.3	131.2	114.5	151.4	78.0	111.5	103.5	107.5	107.4	<0.5	mg/kg	NONE/NONE
Chromium III	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	13.26	2.52	0.61	16.96	1.96	0.89	0.49	5.91	13.27	8.07	<0.02	%	TM21/PM24
pH #	7.83	7.66	8.13	7.85	7.86	8.14	8.45	8.25	8.26	8.12	<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1176	0.1079	0.1129	0.1108	0.1064	0.1283	0.1117	0.1187	0.1111	0.1155		kg	NONE/PM17

**Exova Jones Environmental**

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**Reference:** 8108-10-18  
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**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

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

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS1	WS1	WS1	WS2	WS2	WS2	WS3	WS3	WS4	WS4			
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	0.25-0.75	1.0-2.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	25/10/2018	25/10/2018	25/10/2018	24/10/2018	24/10/2018	24/10/2018	25/10/2018	25/10/2018	22/10/2018	22/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09		kg	NONE/PM17

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

J E Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS9	WS9	WS9	WS10	WS10	WS10	WS12	WS12	WS12	WS14			
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0 CORE	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	2.0-3.0	0.25-0.75			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	26/10/2018	26/10/2018	26/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	25/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
Antimony	4	3	3	6	4	1	6	3	1	5	<1	mg/kg	TM30/PM15
Arsenic #	23.9	14.4	20.4	25.3	17.5	8.0	36.3	19.0	14.0	29.6	<0.5	mg/kg	TM30/PM15
Barium #	266	58	122	338	119	24	282	77	49	169	<1	mg/kg	TM30/PM15
Cadmium #	0.5	0.4	0.5	<0.1	0.7	0.3	1.5	0.9	0.3	1.1	<0.1	mg/kg	TM30/PM15
Chromium #	117.9	147.5	75.5	145.4	115.7	137.2	109.9	101.2	63.5	57.2	<0.5	mg/kg	TM30/PM15
Copper #	162	33	370 <sup>AA</sup>	1110 <sup>AA</sup>	104	8	416 <sup>AA</sup>	83	12	164	<1	mg/kg	TM30/PM15
Lead #	359	171	299	418	245	14	718	188	22	380	<5	mg/kg	TM30/PM15
Mercury #	1.4	0.3	<0.1	0.1	0.1	<0.1	0.4	0.6	<0.1	0.7	<0.1	mg/kg	TM30/PM15
Molybdenum #	8.1	9.3	6.0	5.8	8.9	8.4	11.5	7.3	3.3	7.6	<0.1	mg/kg	TM30/PM15
Nickel #	72.5	32.3	40.2	43.0	39.6	20.7	68.0	43.8	37.1	66.4	<0.7	mg/kg	TM30/PM15
Selenium #	2	1	2	6	1	<1	3	2	1	3	<1	mg/kg	TM30/PM15
Zinc #	191	70	1459	234	279	48	770	121	93	241	<5	mg/kg	TM30/PM15
Antimony	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Arsenic	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Barium	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Cadmium	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Copper	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Lead	-	-	-	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
Mercury	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Molybdenum	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel	-	-	-	-	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Zinc	-	-	-	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62



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

J E Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS9	WS9	WS9	WS10	WS10	WS10	WS12	WS12	WS12	WS14			
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0 CORE	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	2.0-3.0	0.25-0.75			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	26/10/2018	26/10/2018	26/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	25/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
PAH MS													
Naphthalene #	2.64 <sup>AB</sup>	0.08	<0.04	0.12	0.21	<0.04	0.64	0.70	<0.04	0.30	<0.04	mg/kg	TM4/PM8
Acenaphthylene	11.77 <sup>AB</sup>	0.04	0.09	0.08	0.16	<0.03	0.33	0.10	<0.03	0.32	<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.87 <sup>AB</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	0.39	0.22	<0.05	0.11	<0.05	mg/kg	TM4/PM8
Fluorene #	2.37 <sup>AB</sup>	0.05	<0.04	<0.04	0.35	<0.04	0.67	0.29	<0.04	0.21	<0.04	mg/kg	TM4/PM8
Phenanthrene #	35.08 <sup>AB</sup>	0.66	0.26	0.81	0.78	<0.03	5.67	2.09	<0.03	3.52	<0.03	mg/kg	TM4/PM8
Anthracene #	12.92 <sup>AB</sup>	0.08	0.10	0.08	0.10	<0.04	1.39	0.67	<0.04	0.51	<0.04	mg/kg	TM4/PM8
Fluoranthene #	85.89 <sup>AB</sup>	0.29	0.50	0.61	0.31	<0.03	7.46	4.28	<0.03	4.98	<0.03	mg/kg	TM4/PM8
Pyrene #	76.26 <sup>AB</sup>	0.24	0.46	0.61	0.35	<0.03	6.34	3.55	<0.03	4.28	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	37.44 <sup>AB</sup>	0.17	0.25	0.44	0.17	<0.06	4.37	1.85	<0.06	1.67	<0.06	mg/kg	TM4/PM8
Chrysene #	43.51 <sup>AB</sup>	0.21	0.26	0.47	0.26	<0.02	3.70	1.98	<0.02	2.47	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	76.95 <sup>AB</sup>	0.24	0.40	0.87	0.38	<0.07	6.89	3.45	<0.07	3.93	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	43.27 <sup>AB</sup>	0.12	0.21	0.47	0.14	<0.04	3.32	1.82	<0.04	1.79	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	25.41 <sup>AB</sup>	0.07	0.13	0.29	0.14	<0.04	2.31	1.08	<0.04	1.21	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	5.72 <sup>AB</sup>	<0.04	<0.04	0.07	<0.04	<0.04	0.64	0.32	<0.04	0.35	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	27.52 <sup>AB</sup>	0.11	0.13	0.38	0.18	<0.04	2.04	0.97	<0.04	1.13	<0.04	mg/kg	TM4/PM8
Coronene	4.78 <sup>AB</sup>	<0.04	<0.04	0.07	<0.04	<0.04	0.34	0.13	<0.04	0.17	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	259.04 <sup>AB</sup>	0.83	1.37	2.62	1.15	<0.22	22.02	11.60	<0.22	13.04	<0.22	mg/kg	TM4/PM8
PAH 17 Total	492.40 <sup>AB</sup>	2.36	2.79	5.37	3.53	<0.64	46.50	23.50	<0.64	26.95	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	55.40 <sup>AB</sup>	0.17	0.29	0.63	0.27	<0.05	4.96	2.48	<0.05	2.83	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	21.55 <sup>AB</sup>	0.07	0.11	0.24	0.11	<0.02	1.93	0.97	<0.02	1.10	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<10 <sup>AB</sup>	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	103 <sup>AB</sup>	114	107	113	114	114	109	111	103	111	<0	%	TM4/PM8
Mineral Oil (C10-C40)	40	<30	<30	<30	672	<30	<30	<30	<30	<30	<30	mg/kg	TM5/PM8/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	41.8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	210	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	9	<7	<7	<7	310	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	31	<7	<7	<7	110	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	40	<26	<26	<26	672	<26	<26	<26	<26	<26	<26	mg/kg	TM5/PM8/PM16
>C6-C10	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	660	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35	13	<10	<10	<10	17	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

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

J E Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS9	WS9	WS9	WS10	WS10	WS10	WS12	WS12	WS12	WS14			
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0 CORE	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	2.0-3.0	0.25-0.75			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	26/10/2018	26/10/2018	26/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	25/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
TPH CWG													
<b>Aromatics</b>													
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	8.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16
>EC12-EC16 #	21	<4	<4	<4	129	<4	13	<4	<4	<4	<4	mg/kg	TMS/PM8/PM16
>EC16-EC21 #	210	<7	<7	<7	233	<7	158	<7	<7	28	<7	mg/kg	TMS/PM8/PM16
>EC21-EC35 #	912	<7	<7	28	84	<7	403	<7	<7	119	<7	mg/kg	TMS/PM8/PM16
>EC35-EC40	93	<7	<7	<7	<7	<7	33	<7	<7	22	<7	mg/kg	TMS/PM8/PM16
Total aromatics C5-40	1236	<26	<26	28	455	<26	607	<26	<26	169	<26	mg/kg	TMS/PM8/PM16
Total aliphatics and aromatics(C5-40)	1276	<52	<52	<52	1127	<52	607	<52	<52	169	<52	mg/kg	TMS/PM8/PM16
>EC6-EC10 #	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	mg/kg	TM36/PM12
>EC10-EC25	457	<10	<10	<10	459	<10	318	<10	<10	72	<10	mg/kg	TMS/PM8/PM16
>EC25-EC35	635	<10	<10	21	14	<10	255	<10	<10	87	<10	mg/kg	TMS/PM8/PM16
MTBE #	<5	<5	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5	<5	<5	<5 <sup>SV</sup>	<5	ug/kg	TM31/PM12
PCB 28 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<350 <sup>AB</sup>	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8
Natural Moisture Content	28.6	33.9	25.3	21.0	29.9	22.7	31.3	58.4	48.0	38.0	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	22.2	25.3	20.2	17.4	23.0	18.5	23.9	36.9	32.4	27.5	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Chromium III	117.9	147.5	75.5	145.4	115.7	137.2	109.9	101.2	63.5	57.2	<0.5	mg/kg	NONE/NONE
Chromium III	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	12.82	3.82	0.63	8.53	4.58	0.41	12.94	5.39	0.80	16.11	<0.02	%	TM21/PM24
pH #	7.61	7.89	8.13	7.79	7.68	8.10	7.88	7.59	8.68	7.75	<0.01	pH units	TM73/PM11
Mass of raw test portion	0.121	0.1153	0.1076	0.1101	0.109	0.1093	0.1333	0.137	0.1325	0.1199		kg	NONE/PM17

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**JE Job No.:** 18/17776

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

J E Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS9	WS9	WS9	WS10	WS10	WS10	WS12	WS12	WS12	WS14			
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0 CORE	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	2.0-3.0	0.25-0.75			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	26/10/2018	26/10/2018	26/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	25/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018		kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09			

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

J E Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS14	WS14	WS15	WS15	WS15	WS15	WS18	WS18	WS18	WS18			
Depth	1.0-2.0	2.0-3.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-4.5	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	25/10/2018	25/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
Antimony	3	6	4	4	1	1	-	2	2	2	<1	mg/kg	TM30/PM15
Arsenic #	18.4	28.6	23.9	22.8	8.5	6.7	-	22.9	8.7	10.2	<0.5	mg/kg	TM30/PM15
Barium #	207	148	158	85	25	32	-	206	24	18	<1	mg/kg	TM30/PM15
Cadmium #	0.1	0.7	1.1	0.9	0.2	0.3	-	0.8	0.2	0.2	<0.1	mg/kg	TM30/PM15
Chromium #	91.9	66.1	94.5	121.0	139.1	119.4	-	78.3	149.9	155.7	<0.5	mg/kg	TM30/PM15
Copper #	86	104	80	73	4	5	-	82	50	8	<1	mg/kg	TM30/PM15
Lead #	344	584	289	280	10	12	-	155	51	21	<5	mg/kg	TM30/PM15
Mercury #	<0.1	1.6	1.1	0.6	<0.1	<0.1	-	0.2	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum #	9.9	6.0	6.9	9.3	8.3	10.4	-	6.2	9.5	9.9	<0.1	mg/kg	TM30/PM15
Nickel #	50.7	49.1	49.8	79.8	18.9	23.2	-	39.6	15.2	13.6	<0.7	mg/kg	TM30/PM15
Selenium #	3	1	2	2	1	<1	-	2	<1	<1	<1	mg/kg	TM30/PM15
Zinc #	148	154	221	124	45	58	-	153	47	39	<5	mg/kg	TM30/PM15
Antimony	-	-	-	-	-	-	7	-	-	-	<1	mg/kg	TM30/PM62
Arsenic	-	-	-	-	-	-	40.2	-	-	-	<0.5	mg/kg	TM30/PM62
Barium	-	-	-	-	-	-	319	-	-	-	<1	mg/kg	TM30/PM62
Cadmium	-	-	-	-	-	-	1.9	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium	-	-	-	-	-	-	23.6	-	-	-	<0.5	mg/kg	TM30/PM62
Copper	-	-	-	-	-	-	355	-	-	-	<1	mg/kg	TM30/PM62
Lead	-	-	-	-	-	-	671	-	-	-	<5	mg/kg	TM30/PM62
Mercury	-	-	-	-	-	-	0.6	-	-	-	<0.1	mg/kg	TM30/PM62
Molybdenum	-	-	-	-	-	-	4.5	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel	-	-	-	-	-	-	48.6	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium	-	-	-	-	-	-	3	-	-	-	<1	mg/kg	TM30/PM62
Zinc	-	-	-	-	-	-	812	-	-	-	<5	mg/kg	TM30/PM62

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

J E Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS14	WS14	WS15	WS15	WS15	WS15	WS18	WS18	WS18	WS18			
Depth	1.0-2.0	2.0-3.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-4.5	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	25/10/2018	25/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
PAH MS													
Naphthalene #	0.25	0.11	0.09	0.05	<0.04	<0.04	1.94	0.68	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.09	<0.03	0.11	<0.03	<0.03	<0.03	2.09	0.11	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	0.10	<0.05	<0.05	<0.05	2.19	0.06	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	0.11	<0.04	0.16	<0.04	<0.04	<0.04	1.42	0.10	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	1.02	0.70	1.67	0.41	<0.03	<0.03	17.23	1.43	0.22	0.08	<0.03	mg/kg	TM4/PM8
Anthracene #	0.16	0.10	0.33	0.07	<0.04	<0.04	4.35	0.18	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	1.17	0.19	1.81	0.17	<0.03	<0.03	26.83	1.14	0.12	0.08	<0.03	mg/kg	TM4/PM8
Pyrene #	0.90	0.13	1.50	0.16	<0.03	<0.03	25.09	1.14	0.10	0.08	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.32	0.17	0.71	0.18	<0.06	<0.06	10.88	0.66	0.09	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	0.41	0.23	0.79	0.17	<0.02	<0.02	14.79	0.87	0.08	0.06	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.45	0.27	1.16	0.20	<0.07	<0.07	26.09	1.35	0.10	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.15	0.10	0.60	0.08	<0.04	<0.04	13.46	0.69	0.05	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.06	0.08	0.34	<0.04	<0.04	<0.04	8.86	0.46	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	0.11	<0.04	<0.04	<0.04	1.99	0.14	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.06	0.13	0.35	0.08	<0.04	<0.04	8.53	0.44	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	1.41	0.06	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	1.89	0.77	4.26	0.53	<0.22	<0.22	83.77	4.08	0.27	<0.22	<0.22	mg/kg	TM4/PM8
PAH 17 Total	5.15	2.21	9.83	1.57	<0.64	<0.64	167.15	9.51	0.76	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.32	0.19	0.84	0.14	<0.05	<0.05	18.78	0.97	0.07	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.13	0.08	0.32	0.06	<0.02	<0.02	7.31	0.38	0.03	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	7	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	109	113	111	110	107	112	106	112	111	108	<0	%	TM4/PM8
Mineral Oil (C10-C40)													
	<30	<30	<30	<30	<30	<30	307	<30	<30	<30	<30	mg/kg	TM5/PM8/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7	<7	<7	<7	307	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26	307	<26	<26	<26	<26	mg/kg	TM5/PM8/PM16/PM12/PM15
>C6-C10	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	<10	<10	71	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10	<10	<10	<10	232	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16



**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

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

J E Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS14	WS14	WS15	WS15	WS15	WS15	WS18	WS18	WS18	WS18			
Depth	1.0-2.0	2.0-3.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-4.5	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	25/10/2018	25/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
TPH CWG													
<b>Aromatics</b>													
>C5-EC7 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	4.4	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4	28	9	<4	<4	<4	mg/kg	TMS/PM8/PM16
>EC16-EC21 #	<7	<7	22	<7	<7	<7	190	18	<7	<7	<7	mg/kg	TMS/PM8/PM16
>EC21-EC35 #	<7	88	75	<7	<7	<7	805	65	<7	<7	<7	mg/kg	TMS/PM8/PM16
>EC35-EC40	<7	<7	<7	<7	<7	<7	96	<7	<7	<7	<7	mg/kg	TMS/PM8/PM16
Total aromatics C5-40	<26	88	97	<26	<26	<26	1123	92	<26	<26	<26	mg/kg	TMS/PM8/PM16
Total aliphatics and aromatics(C5-40)	<52	88	97	<52	<52	<52	1430	92	<52	<52	<52	mg/kg	TMS/PM8/PM16
>EC6-EC10 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	34	<10	<10	<10	470	52	<10	<10	<10	mg/kg	TMS/PM8/PM16
>EC25-EC35	<10	82	46	<10	<10	<10	579	48	<10	<10	<10	mg/kg	TMS/PM8/PM16
MTBE #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8
Natural Moisture Content	24.4	90.5	21.7	31.1	26.4	41.8	45.0	23.1	30.5	18.4	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	19.6	47.5	17.8	23.7	20.9	29.5	31.1	18.8	23.4	15.6	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Chromium III	91.9	66.1	94.5	121.0	139.1	119.4	NDP	78.3	149.9	155.7	<0.5	mg/kg	NONE/NONE
Chromium III	-	-	-	-	-	-	23.6	-	-	-	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	7.70	10.29	3.64	3.89	0.59	1.08	NDP	11.24	1.19	0.42	<0.02	%	TM21/PM24
pH #	7.64	7.28	8.11	7.70	7.84	7.97	8.00	8.38	8.54	8.57	<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1341	0.12	0.1123	0.1824	0.1197	0.1216	0.1421	0.1105	0.1166	0.1027		kg	NONE/PM17

Client Name: Ground Investigations Ireland  
 Reference: 8108-10-18  
 Location: Castleforbes Site Dublin Docklands  
 Contact: Antoinette Walshe  
 JE Job No.: 18/17776

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

J E Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90	Please see attached notes for all abbreviations and acronyms		
<b>Sample ID</b>	WS14	WS14	WS15	WS15	WS15	WS15	WS18	WS18	WS18	WS18			
<b>Depth</b>	1.0-2.0	2.0-3.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-4.5	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0			
<b>COC No / misc</b>													
<b>Containers</b>	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
<b>Sample Date</b>	25/10/2018	25/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018			
<b>Sample Type</b>	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
<b>Batch Number</b>	1	1	1	1	1	1	1	1	1	1			
<b>Date of Receipt</b>	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09		kg	NONE/PM17

**Client Name:** Ground Investigations Ireland  
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**Report : Solid**  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117				
Sample ID	WS24	WS30	WS30	WS30	WS31	WS31	WS31	WS31	WS31				
Depth	0.0-1.0	1.0-2.0	2.0-3.0	3.0-4.0	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	26/10/2018	24/10/2018	24/10/2018	24/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018				
											LOD/LOR	Units	Method No.
Antimony	4	2	3	3	3	3	2	2	<1		<1	mg/kg	TM30/PM15
Arsenic #	27.5	14.5	23.6	12.3	21.2	18.2	21.4	22.5	12.4		<0.5	mg/kg	TM30/PM15
Barium #	247	45	122	76	179	123	123	110	26		<1	mg/kg	TM30/PM15
Cadmium #	1.0	0.9	0.7	0.7	1.0	1.0	0.7	0.6	0.3		<0.1	mg/kg	TM30/PM15
Chromium #	102.0	90.0	66.3	72.5	63.6	47.4	80.6	121.6	91.4		<0.5	mg/kg	TM30/PM15
Copper #	368AA	40	104	53	91	76	103	115	4		<1	mg/kg	TM30/PM15
Lead #	713	84	236	169	314	374	243	192	9		<5	mg/kg	TM30/PM15
Mercury #	0.7	0.3	1.0	0.5	1.1	1.5	0.3	0.4	<0.1		<0.1	mg/kg	TM30/PM15
Molybdenum #	8.7	5.3	2.5	3.9	4.7	3.8	4.9	7.9	8.4		<0.1	mg/kg	TM30/PM15
Nickel #	61.6	29.6	32.2	25.6	34.4	30.1	24.3	37.3	28.4		<0.7	mg/kg	TM30/PM15
Selenium #	2	1	1	1	1	1	1	1	<1		<1	mg/kg	TM30/PM15
Zinc #	461	321	300	124	297	289	149	105	44		<5	mg/kg	TM30/PM15
Antimony	-	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Arsenic	-	-	-	-	-	-	-	-	-		<0.5	mg/kg	TM30/PM62
Barium	-	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Cadmium	-	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Chromium	-	-	-	-	-	-	-	-	-		<0.5	mg/kg	TM30/PM62
Copper	-	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Lead	-	-	-	-	-	-	-	-	-		<5	mg/kg	TM30/PM62
Mercury	-	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Molybdenum	-	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Nickel	-	-	-	-	-	-	-	-	-		<0.7	mg/kg	TM30/PM62
Selenium	-	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Zinc	-	-	-	-	-	-	-	-	-		<5	mg/kg	TM30/PM62

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

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

J E Sample No.	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117			
Sample ID	WS24	WS30	WS30	WS30	WS31	WS31	WS31	WS31	WS31			
Depth	0.0-1.0	1.0-2.0	2.0-3.0	3.0-4.0	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0			
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	26/10/2018	24/10/2018	24/10/2018	24/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018			
										LOD/LOR	Units	Method No.
PAH MS												
Naphthalene #	3.98 <sup>AB</sup>	<0.04	1.46	0.41	0.07	0.97	0.12	<0.04	0.14	<0.04	mg/kg	TM4/PM8
Acenaphthylene	12.73 <sup>AB</sup>	<0.03	0.27	0.10	0.05	0.23	0.05	<0.03	0.04	<0.03	mg/kg	TM4/PM8
Acenaphthene #	5.37 <sup>AB</sup>	<0.05	1.37	0.22	<0.05	0.59	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	17.00 <sup>AB</sup>	<0.04	1.25	0.41	<0.04	0.59	<0.04	<0.04	0.07	<0.04	mg/kg	TM4/PM8
Phenanthrene #	117.87 <sup>AB</sup>	0.12	15.04	2.62	0.66	3.94	0.52	0.23	1.07	<0.03	mg/kg	TM4/PM8
Anthracene #	31.58 <sup>AB</sup>	<0.04	1.80	0.65	0.13	0.68	0.09	<0.04	0.15	<0.04	mg/kg	TM4/PM8
Fluoranthene #	116.79 <sup>AB</sup>	0.21	17.72	3.30	0.90	3.43	0.74	0.05	0.96	<0.03	mg/kg	TM4/PM8
Pyrene #	93.60 <sup>AB</sup>	0.17	15.55	3.00	0.75	2.96	0.66	0.04	0.80	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	41.60 <sup>AB</sup>	0.17	6.33	1.37	0.47	1.35	0.41	<0.06	0.49	<0.06	mg/kg	TM4/PM8
Chrysene #	38.54 <sup>AB</sup>	0.19	8.29	1.73	0.55	1.73	0.48	0.07	0.57	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	72.78 <sup>AB</sup>	0.28	12.55	2.52	0.94	2.62	0.81	<0.07	0.88	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	36.13 <sup>AB</sup>	0.13	5.71	1.19	0.42	1.25	0.36	<0.04	0.39	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	21.52 <sup>AB</sup>	0.08	3.65	0.76	0.30	0.79	0.28	<0.04	0.32	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	6.17 <sup>AB</sup>	<0.04	0.99	0.23	0.07	0.27	0.07	<0.04	0.09	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	16.62 <sup>AB</sup>	0.07	3.49	0.72	0.31	0.80	0.26	<0.04	0.36	<0.04	mg/kg	TM4/PM8
Coronene	1.97 <sup>AB</sup>	<0.04	0.51	0.09	0.05	0.14	<0.04	<0.04	0.05	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	263.84 <sup>AB</sup>	0.77	43.12	8.49	2.87	8.89	2.45	<0.22	2.91	<0.22	mg/kg	TM4/PM8
PAH 17 Total	634.25 <sup>AB</sup>	1.42	95.98	19.32	5.67	22.34	4.85	<0.64	6.38	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	52.40 <sup>AB</sup>	0.20	9.04	1.81	0.68	1.89	0.58	<0.05	0.63	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	20.38 <sup>AB</sup>	0.08	3.51	0.71	0.26	0.73	0.23	<0.02	0.25	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	20 <sup>AB</sup>	<1	4	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	114 <sup>AB</sup>	102	110	112	112	109	112	111	111	<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	125	<30	<30	<30	<30	<30	<30	<30	<30	mg/kg	TM5/PM8/PM16
TPH CWG												
Aliphatics												
>C5-C6 #	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	10	15	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	18	11	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	85	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	12	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	125	26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TM5/PM8/PM16
>C6-C10	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25	<10	52	27	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	70	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

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

J E Sample No.	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117			
Sample ID	WS24	WS30	WS30	WS30	WS31	WS31	WS31	WS31	WS31			
Depth	0.0-1.0	1.0-2.0	2.0-3.0	3.0-4.0	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0			
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	26/10/2018	24/10/2018	24/10/2018	24/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018			
										LOD/LOR	Units	Method No.
TPH CWG												
Aromatics												
>C5-EC7 #	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	3.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16
>EC12-EC16 #	16	<4	24	<4	<4	<4	<4	<4	<4	<4	mg/kg	TMS/PM8/PM16
>EC16-EC21 #	109	<7	81	30	<7	<7	18	<7	<7	<7	mg/kg	TMS/PM8/PM16
>EC21-EC35 #	334	<7	228	145	45	<7	82	<7	<7	<7	mg/kg	TMS/PM8/PM16
>EC35-EC40	39	<7	27	30	<7	<7	<7	<7	<7	<7	mg/kg	TMS/PM8/PM16
Total aromatics C5-40	498	<26	364	205	45	<26	100	<26	<26	<26	mg/kg	TMS/PM8/PM16
Total aliphatics and aromatics(C5-40)	498	125	390	205	<52	<52	100	<52	<52	<52	mg/kg	TMS/PM8/PM16
>EC6-EC10 #	<0.1 <sup>SV</sup>	<0.1	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25	234	<10	170	61	<10	<10	42	<10	<10	<10	mg/kg	TMS/PM8/PM16
>EC25-EC35	235	<10	180	110	35	<10	55	<10	<10	<10	mg/kg	TMS/PM8/PM16
MTBE #	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5 <sup>SV</sup>	<5	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5	<5	ug/kg	TM31/PM12
PCB 28 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<50 <sup>AB</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<350 <sup>AB</sup>	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8
Natural Moisture Content	22.5	20.8	24.1	29.3	20.5	27.4	23.1	30.1	35.0	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	18.4	17.2	19.4	22.7	17.0	21.5	18.8	23.1	25.9	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Chromium III	102.0	90.0	66.3	72.5	63.6	47.4	80.6	121.6	91.4	<0.5	mg/kg	NONE/NONE
Chromium III	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	15.62	1.04	5.52	2.54	5.16	4.44	2.68	5.09	4.43	<0.02	%	TM21/PM24
pH #	8.39	8.22	8.11	7.82	8.33	7.87	8.17	8.21	8.26	<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1024	0.1032	0.1121	0.1043	0.1057	0.1124	0.1087	0.1058	0.1189		kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms



*Exova Jones Environmental*

**Client Name:** Ground Investigations Ireland

**Report :** Solid

**Reference:** 8108-10-18

**Location:** Castleforbes Site Dublin Docklands

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

**Contact:** Antoinette Walshe

**JE Job No.:** 18/17776

J E Sample No.	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117					
<b>Sample ID</b>	WS24	WS30	WS30	WS30	WS31	WS31	WS31	WS31	WS31					
<b>Depth</b>	0.0-1.0	1.0-2.0	2.0-3.0	3.0-4.0	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0					
<b>COC No / misc</b>														
<b>Containers</b>	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
<b>Sample Date</b>	26/10/2018	24/10/2018	24/10/2018	24/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018					
<b>Sample Type</b>	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
<b>Batch Number</b>	1	1	1	1	1	1	1	1	1					
<b>Date of Receipt</b>	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018					
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09			LOD/LOR	Units	Method No.
													kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

**Report :** CEN 10:1 1 Batch  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS1	WS1	WS1	WS2	WS2	WS2	WS3	WS3	WS4	WS4			
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	0.25-0.75	1.0-2.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	25/10/2018	25/10/2018	25/10/2018	24/10/2018	24/10/2018	24/10/2018	25/10/2018	25/10/2018	22/10/2018	22/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
Dissolved Antimony #	0.017	0.004	<0.002	0.005	0.004	0.003	<0.002	<0.002	0.008	0.009	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	0.17	0.04	<0.02	0.05	0.04	0.03	<0.02	<0.02	0.08	0.09	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	0.0079	0.0055	<0.0025	0.0045	0.0030	0.0036	<0.0025	<0.0025	0.0172	0.0137	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	0.079	0.055	<0.025	0.045	0.030	0.036	<0.025	<0.025	0.172	0.137	<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.051	0.010	<0.003	0.030	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.51	0.10	<0.03	0.30	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper #	0.017	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	0.17	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.033	0.025	0.102	0.021	0.011	0.072	0.022	0.013	0.010	0.005	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.33	0.25	1.02	0.21	0.11	0.72	0.22	0.13	0.10	0.05	<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	0.006	<0.003	<0.003	0.025	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	0.06	<0.03	<0.03	0.25	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	0.6	<0.3	<0.3	0.3	<0.3	<0.3	1.0	0.8	0.3	0.7	<0.3	mg/l	TM173/PM0
Fluoride	6	<3	<3	3	<3	<3	10	8	3	7	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	11.34	45.47	13.20	13.94	25.25	16.10	19.11	8.09	1.02	2.02	<0.05	mg/l	TM38/PM0
Sulphate as SO4 #	113.4	454.9	131.9	139.4	252.4	160.9	191.1	80.9	10.2	20.2	<0.5	mg/kg	TM38/PM0
Chloride #	1.9	2.3	13.2	5.4	3.9	16.0	<0.3	1.2	1.4	1.5	<0.3	mg/l	TM38/PM0
Chloride #	19	23	132	54	39	160	<3	12	14	15	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	3	2	3	6	2	4	<2	<2	<2	2	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	30	20	30	60	<20	40	<20	<20	<20	<20	<20	mg/kg	TM60/PM0
pH	8.24	8.10	8.27	8.22	8.20	8.28	8.26	8.30	8.31	8.18	<0.01	pH units	TM73/PM0
Total Dissolved Solids #	131	166	115	182	111	140	131	113	96	102	<35	mg/l	TM20/PM0
Total Dissolved Solids #	1310	1661	1149	1820	1109	1399	1310	1130	960	1020	<350	mg/kg	TM20/PM0

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

**Report :** CEN 10:1 1 Batch  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS9	WS9	WS9	WS10	WS10	WS10	WS12	WS12	WS12	WS14			
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0 CORE	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	2.0-3.0	0.25-0.75			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	26/10/2018	26/10/2018	26/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	25/10/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.
Dissolved Antimony #	0.010	0.013	0.003	<0.002	0.015	0.004	0.006	0.005	0.015	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	0.10	0.13	0.03	<0.02	0.15	0.04	0.06	0.05	0.15	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	0.0062	0.0100	0.0031	<0.0025	0.0117	<0.0025	<0.0025	0.0066	0.0167	<0.0025	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	0.062	0.100	0.031	<0.025	0.117	<0.025	<0.025	0.066	0.167	<0.025	<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.033	0.020	<0.003	0.030	0.004	0.003	0.030	0.035	<0.003	0.021	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.33	0.20	<0.03	0.30	0.04	<0.03	0.30	0.35	<0.03	0.21	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.042	0.050	0.079	0.030	0.022	0.025	0.054	0.072	0.059	0.010	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.42	0.50	0.79	0.30	0.22	0.25	0.54	0.72	0.59	0.10	<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	0.004	<0.003	<0.003	<0.003	<0.003	<0.003	0.005	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	0.004	<0.003	<0.003	0.033	0.005	0.003	<0.003	0.005	<0.003	0.006	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	0.04	<0.03	<0.03	0.33	0.05	<0.03	<0.03	0.05	<0.03	0.06	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	0.3	<0.3	<0.3	0.5	<0.3	<0.3	0.3	0.3	0.5	<0.3	<0.3	mg/l	TM173/PM0
Fluoride	<3	<3	<3	5	<3	<3	<3	3	5	<3	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	17.68	42.43	44.24	1293.44	32.09	28.77	20.03	33.69	20.43	1098.07	<0.05	mg/l	TM38/PM0
Sulphate as SO4 #	176.8	424.5	442.2	12928.9	320.7	287.5	200.2	336.9	204.3	10982.5	<0.5	mg/kg	TM38/PM0
Chloride #	33.6	3.0	18.9	11.5	4.1	16.2	10.7	3.2	24.6	5.0	<0.3	mg/l	TM38/PM0
Chloride #	336	30	189	115	41	162	107	32	246	50	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	7	4	3	<2	4	3	7	6	11	<2	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	70	40	30	<20	40	30	70	60	110	<20	<20	mg/kg	TM60/PM0
pH	7.97	8.08	8.07	7.80	7.92	8.02	8.26	8.05	8.03	7.68	<0.01	pH units	TM73/PM0
Total Dissolved Solids #	195	208	189	1922	149	179	130	188	186	1849	<35	mg/l	TM20/PM0
Total Dissolved Solids #	1950	2081	1889	19212	1489	1789	1299	1880	1860	18493	<350	mg/kg	TM20/PM0

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

**Report :** CEN 10:1 1 Batch  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90	Please see attached notes for all abbreviations and acronyms			
Sample ID	WS14	WS14	WS15	WS15	WS15	WS15	WS18	WS18	WS18	WS18				
Depth	1.0-2.0	2.0-3.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-4.5	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0				
COC No / misc														
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	25/10/2018	25/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1	1				
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	LOD/LOR	Units	Method No.	
Dissolved Antimony #	0.004	0.019	0.015	0.058	<0.002	<0.002	0.006	<0.002	0.003	0.002	<0.002	mg/l	TM30/PM17	
Dissolved Antimony (A10) #	0.04	0.19	0.15	0.58	<0.02	<0.02	0.06	<0.02	0.03	0.02	<0.02	mg/kg	TM30/PM17	
Dissolved Arsenic #	<0.0025	0.0060	<0.0025	0.0050	<0.0025	<0.0025	0.0049	0.0054	0.0044	<0.0025	<0.0025	mg/l	TM30/PM17	
Dissolved Arsenic (A10) #	<0.025	0.060	<0.025	0.050	<0.025	<0.025	0.049	0.054	0.044	<0.025	<0.025	mg/kg	TM30/PM17	
Dissolved Barium #	0.030	0.016	0.023	0.026	<0.003	<0.003	0.012	0.005	<0.003	<0.003	<0.003	mg/l	TM30/PM17	
Dissolved Barium (A10) #	0.30	0.16	0.23	0.26	<0.03	<0.03	0.12	0.05	<0.03	<0.03	<0.03	mg/kg	TM30/PM17	
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17	
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17	
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17	
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17	
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	0.009	<0.007	0.008	<0.007	<0.007	mg/l	TM30/PM17	
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.09	<0.07	0.08	<0.07	<0.07	mg/kg	TM30/PM17	
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17	
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17	
Dissolved Molybdenum #	0.020	0.108	0.007	0.126	0.049	0.102	0.009	0.010	0.022	0.019	<0.002	mg/l	TM30/PM17	
Dissolved Molybdenum (A10) #	0.20	1.08	0.07	1.26	0.49	1.02	0.09	0.10	0.22	0.19	<0.02	mg/kg	TM30/PM17	
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17	
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17	
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17	
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17	
Dissolved Zinc #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.007	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17	
Dissolved Zinc (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.07	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17	
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	<0.00001	0.00001	<0.00001	<0.00001	mg/l	TM61/PM0	
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0	
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0	
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0	
Fluoride	0.4	0.4	0.5	0.4	<0.3	<0.3	0.8	0.3	<0.3	<0.3	<0.3	mg/l	TM173/PM0	
Fluoride	4	4	5	4	<3	<3	8	<3	<3	<3	<3	mg/kg	TM173/PM0	
Sulphate as SO4 #	109.27	38.77	43.50	100.56	21.87	16.28	26.07	2.38	6.75	8.17	<0.05	mg/l	TM38/PM0	
Sulphate as SO4 #	1092.3	387.6	435.1	1006.1	218.7	162.8	260.8	23.8	67.5	81.7	<0.5	mg/kg	TM38/PM0	
Chloride #	1.3	1.3	6.8	11.1	36.9	34.4	1.5	1.0	1.4	5.8	<0.3	mg/l	TM38/PM0	
Chloride #	13	13	68	111	369	344	15	10	14	58	<3	mg/kg	TM38/PM0	
Dissolved Organic Carbon	2	5	<2	6	3	4	5	<2	6	3	<2	mg/l	TM60/PM0	
Dissolved Organic Carbon	<20	50	<20	60	30	40	50	<20	60	30	<20	mg/kg	TM60/PM0	
pH	8.03	8.17	8.10	8.05	8.28	8.18	8.19	8.23	8.28	8.16	<0.01	pH units	TM73/PM0	
Total Dissolved Solids #	278	199	190	303	193	165	191	104	127	111	<35	mg/l	TM20/PM0	
Total Dissolved Solids #	2779	1990	1900	3031	1930	1650	1911	1039	1270	1111	<350	mg/kg	TM20/PM0	

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

**Report :** CEN 10:1 1 Batch  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117				
Sample ID	WS24	WS30	WS30	WS30	WS31	WS31	WS31	WS31	WS31				
Depth	0.0-1.0	1.0-2.0	2.0-3.0	3.0-4.0	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	26/10/2018	24/10/2018	24/10/2018	24/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018				
											LOD/LOR	Units	Method No.
Dissolved Antimony #	0.003	<0.002	<0.002	<0.002	0.006	<0.002	<0.002	0.004	0.002		<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	0.03	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	0.04	0.02		<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	0.0085	<0.0025	<0.0025	<0.0025	0.0033	0.0047	0.0026	0.0035	0.0037		<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	0.085	<0.025	<0.025	<0.025	0.033	0.047	0.026	0.035	0.037		<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.011	<0.003	0.013	0.017	0.012	0.016	0.021	<0.003	0.004		<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.11	<0.03	0.13	0.17	0.12	0.16	0.21	<0.03	0.04		<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	0.0066	<0.0015	<0.0015	<0.0015		<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	0.066	<0.015	<0.015	<0.015		<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.005	0.006	0.007	0.049	0.011	0.010	0.015	0.010	0.016		<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.05	0.06	0.07	0.49	0.11	0.10	0.15	0.10	0.16		<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003		<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	0.006	<0.003	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003		<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	0.06	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	0.00008	<0.00001	<0.00001	<0.00001	0.00002	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	0.0008	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM26/PM0
Fluoride	0.3	0.4	0.8	<0.3	<0.3	<0.3	0.4	0.4	0.3		<0.3	mg/l	TM173/PM0
Fluoride	<3	4	8	<3	<3	<3	4	4	3		<3	mg/kg	TM173/PM0
Sulphate as SO4 #	10.90	36.51	37.80	9.60	14.16	428.91	189.20	31.90	28.04		<0.05	mg/l	TM38/PM0
Sulphate as SO4 #	109.0	365.2	377.9	96.0	141.7	4287.1	1891.6	318.9	280.5		<0.5	mg/kg	TM38/PM0
Chloride #	0.6	2.4	2.8	3.3	<0.3	0.3	<0.3	0.9	0.6		<0.3	mg/l	TM38/PM0
Chloride #	6	24	28	33	<3	<3	<3	9	6		<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	2	2	2	5	<2	3	<2	<2	3		<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	20	<20	50	<20	30	<20	<20	30		<20	mg/kg	TM60/PM0
pH	8.42	8.12	8.15	8.28	8.19	7.81	7.95	8.20	8.23		<0.01	pH units	TM73/PM0
Total Dissolved Solids #	132	128	173	210	95	746	342	158	152		<35	mg/l	TM20/PM0
Total Dissolved Solids #	1320	1280	1729	2100	950	7457	3419	1580	1521		<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
<b>Sample ID</b>	WS1	WS1	WS1	WS2	WS2	WS2	WS3	WS3	WS4	WS4						
<b>Depth</b>	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	0.25-0.75	1.0-2.0						
<b>COC No / misc</b>																
<b>Containers</b>	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
<b>Sample Date</b>	25/10/2018	25/10/2018	25/10/2018	24/10/2018	24/10/2018	24/10/2018	25/10/2018	25/10/2018	22/10/2018	22/10/2018						
<b>Sample Type</b>	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
<b>Batch Number</b>	1	1	1	1	1	1	1	1	1	1						
<b>Date of Receipt</b>	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018						
<b>Solid Waste Analysis</b>																
Total Organic Carbon #	13.26	2.52	0.61	16.96	1.96	0.89	0.49	5.91	13.27	8.07	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025 <sup>SV</sup>	<0.025	<0.025	<0.025 <sup>SV</sup>	<0.025	<0.025	<0.025	<0.025 <sup>SV</sup>	<0.025	<0.025	6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	121	<30	<30	<30	<30	<30	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	179.62**	3.33	1.11	23.34	3.67	<0.22	2.47	2.56	10.36 <sup>BA</sup>	124.54**	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	371.82**	7.40	2.31	41.03	7.14	<0.64	5.09	6.48	20.66 <sup>BA</sup>	234.90**	100	-	-	<0.64	mg/kg	TM4/PM8
<b>CEN 10:1 Leachate</b>																
Arsenic #	0.079	0.055	<0.025	0.045	0.030	0.036	<0.025	<0.025	0.172	0.137	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.51	0.10	<0.03	0.30	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	0.17	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.01	0.2	2	<0.0001	mg/kg	TM61/PM10
Molybdenum #	0.33	0.25	1.02	0.21	0.11	0.72	0.22	0.13	0.10	0.05	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	0.17	0.04	<0.02	0.05	0.04	0.03	<0.02	<0.02	0.08	0.09	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	0.06	<0.03	<0.03	0.25	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	1310	1661	1149	1820	1109	1399	1310	1130	960	1020	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	30	20	30	60	<20	40	<20	<20	<20	<20	500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1176	0.1079	0.1129	0.1108	0.1064	0.1283	0.1117	0.1187	0.1111	0.1155	-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	76.5	83.8	79.9	81.0	84.5	70.5	80.2	75.5	80.9	77.7	-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.872	0.883	0.877	0.879	0.883	0.862	0.878	0.871	0.879	0.874	-	-	-		l	NONE/PM17
Elate Volume	0.8	0.79	0.85	0.83	0.81	0.82	0.8	0.78	0.79	0.8	-	-	-		l	NONE/PM17
pH #	7.83	7.66	8.13	7.85	7.86	8.14	8.45	8.25	8.26	8.12	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	6	<3	<3	3	<3	<3	10	8	3	7	-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	113.4	454.9	131.9	139.4	252.4	160.9	191.1	80.9	10.2	20.2	1000	20000	50000	<0.5	mg/kg	TM38/PM0
Chloride #	19	23	132	54	39	160	<3	12	14	15	800	15000	25000	<3	mg/kg	TM38/PM0

Please see attached notes for all abbreviations and acronyms



**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60						
Sample ID	WS9	WS9	WS9	WS10	WS10	WS10	WS12	WS12	WS12	WS14						
Depth	0.0-1.0	1.0-2.0	2.0-2.8	0.0-1.0 CORE	1.0-2.0	2.0-3.0	0.25-0.75	1.0-2.0	2.0-3.0	0.25-0.75						
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	26/10/2018	26/10/2018	26/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	25/10/2018						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1	1	1	1	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018						
<b>Solid Waste Analysis</b>																
Total Organic Carbon #	12.82	3.82	0.63	8.53	4.58	0.41	12.94	5.39	0.80	16.11	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025	<0.025 <sup>SV</sup>	<0.025	<0.025 <sup>SV</sup>	<0.025	<0.025	<0.025	<0.025 <sup>SV</sup>	6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.350 <sup>BA</sup>	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	40	<30	<30	<30	672	<30	<30	<30	<30	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	259.04 <sup>BA</sup>	0.83	1.37	2.62	1.15	<0.22	22.02	11.60	<0.22	13.04	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	492.40 <sup>BA</sup>	2.36	2.79	5.37	3.53	<0.64	46.50	23.50	<0.64	26.95	100	-	-	<0.64	mg/kg	TM4/PM8
<b>CEN 10:1 Leachate</b>																
Arsenic #	0.062	0.100	0.031	<0.025	0.117	<0.025	<0.025	0.066	0.167	<0.025	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.33	0.20	<0.03	0.30	0.04	<0.03	0.30	0.35	<0.03	0.21	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.42	0.50	0.79	0.30	0.22	0.25	0.54	0.72	0.59	0.10	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	0.10	0.13	0.03	<0.02	0.15	0.04	0.06	0.05	0.15	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	0.04	<0.03	<0.03	0.33	0.05	<0.03	<0.03	0.05	<0.03	0.06	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	1950	2081	1889	19212	1489	1789	1299	1880	1860	18493	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	70	40	30	<20	40	30	70	60	110	<20	500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.121	0.1153	0.1076	0.1101	0.109	0.1093	0.1333	0.137	0.1325	0.1199	-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	74.5	77.9	83.6	82.1	82.9	82.2	67.4	65.7	68.1	74.9	-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.869	0.875	0.882	0.88	0.881	0.88	0.856	0.853	0.858	0.87	-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.8	0.8	0.85	0.85	0.8	0.87	0.85	0.9	0.84	-	-	-		l	NONE/PM17
pH #	7.61	7.89	8.13	7.79	7.68	8.10	7.88	7.59	8.68	7.75	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	<3	<3	<3	5	<3	<3	<3	3	5	<3	-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	176.8	424.5	442.2	12928.9	320.7	287.5	200.2	336.9	204.3	10982.5	1000	20000	50000	<0.5	mg/kg	TM38/PM0
Chloride #	336	30	189	115	41	162	107	32	246	50	800	15000	25000	<3	mg/kg	TM38/PM0

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90						
Sample ID	WS14	WS14	WS15	WS15	WS15	WS15	WS18	WS18	WS18	WS18						
Depth	1.0-2.0	2.0-3.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-4.5	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0						
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	25/10/2018	25/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018	26/10/2018						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1	1	1	1						
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
<b>Solid Waste Analysis</b>																
Total Organic Carbon #	7.70	10.29	3.64	3.89	0.59	1.08	NDP	11.24	1.19	0.42	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025 <sup>SV</sup>	<0.025 <sup>SV</sup>	<0.025 <sup>SV</sup>	<0.025 <sup>SV</sup>	<0.025	<0.025	<0.025 <sup>SV</sup>	<0.025 <sup>SV</sup>	<0.025	<0.025	6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	<30	<30	307	<30	<30	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	1.89	0.77	4.26	0.53	<0.22	<0.22	83.77	4.08	0.27	<0.22	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	5.15	2.21	9.83	1.57	<0.64	<0.64	167.15	9.51	0.76	<0.64	100	-	-	<0.64	mg/kg	TM4/PM8
<b>CEN 10:1 Leachate</b>																
Arsenic #	<0.025	0.060	<0.025	0.050	<0.025	<0.025	0.049	0.054	0.044	<0.025	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.30	0.16	0.23	0.26	<0.03	<0.03	0.12	0.05	<0.03	<0.03	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.09	<0.07	0.08	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM10
Molybdenum #	0.20	1.08	0.07	1.26	0.49	1.02	0.09	0.10	0.22	0.19	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	0.04	0.19	0.15	0.58	<0.02	<0.02	0.06	<0.02	0.03	0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.07	<0.03	<0.03	<0.03	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	2779	1990	1900	3031	1930	1650	1911	1039	1270	1111	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	<20	50	<20	60	30	40	50	<20	60	30	500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1341	0.12	0.1123	0.1824	0.1197	0.1216	0.1421	0.1105	0.1166	0.1027	-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	67.3	75.1	80.2	49.3	75.5	74.2	63.3	81.5	77.4	87.9	-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.856	0.87	0.878	0.808	0.871	0.869	0.848	0.879	0.874	0.888	-	-	-		l	NONE/PM17
Eluate Volume	0.78	0.91	0.81	0.7	0.77	0.77	0.85	0.85	0.75	0.8	-	-	-		l	NONE/PM17
pH #	7.64	7.28	8.11	7.70	7.84	7.97	8.00	8.38	8.54	8.57	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	4	4	5	4	<3	<3	8	<3	<3	<3	-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	1092.3	387.6	435.1	1006.1	218.7	162.8	260.8	23.8	67.5	81.7	1000	20000	50000	<0.5	mg/kg	TM38/PM0
Chloride #	13	13	68	111	369	344	15	10	14	58	800	15000	25000	<3	mg/kg	TM38/PM0

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17776

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117							
Sample ID	WS24	WS30	WS30	WS30	WS31	WS31	WS31	WS31	WS31							
Depth	0.0-1.0	1.0-2.0	2.0-3.0	3.0-4.0	0.25-0.75	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0							
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	26/10/2018	24/10/2018	24/10/2018	24/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1	1	1	1							
Date of Receipt	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018	05/11/2018							
										Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.	
<b>Solid Waste Analysis</b>																
Total Organic Carbon #	15.62	1.04	5.52	2.54	5.16	4.44	2.68	5.09	4.43	3	5	6	<0.02	%	TM21/PM24	
Sum of BTEX	<0.025 <sup>SV</sup>	<0.025	<0.025 <sup>SV</sup>	<0.025 <sup>SV</sup>	<0.025 <sup>SV</sup>	<0.025 <sup>SV</sup>	<0.025 <sup>SV</sup>	<0.025	<0.025	6	-	-	<0.025	mg/kg	TM31/PM12	
Sum of 7 PCBs #	<0.350 <sup>BA</sup>	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8	
Mineral Oil	<30	125	<30	<30	<30	<30	<30	<30	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16	
PAH Sum of 6 #	263.84 <sup>BA</sup>	0.77	43.12	8.49	2.87	8.89	2.45	<0.22	2.91	-	-	-	<0.22	mg/kg	TM4/PM8	
PAH Sum of 17	634.25 <sup>BA</sup>	1.42	95.98	19.32	5.67	22.34	4.85	<0.64	6.38	100	-	-	<0.64	mg/kg	TM4/PM8	
<b>CEN 10:1 Leachate</b>																
Arsenic #	0.085	<0.025	<0.025	<0.025	0.033	0.047	0.026	0.035	0.037	0.5	2	25	<0.025	mg/kg	TM30/PM17	
Barium #	0.11	<0.03	0.13	0.17	0.12	0.16	0.21	<0.03	0.04	20	100	300	<0.03	mg/kg	TM30/PM17	
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17	
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	0.066	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17	
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17	
Mercury #	0.0008	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0	
Molybdenum #	0.05	0.06	0.07	0.49	0.11	0.10	0.15	0.10	0.16	0.5	10	30	<0.02	mg/kg	TM30/PM17	
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17	
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17	
Antimony #	0.03	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	0.04	0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17	
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17	
Zinc #	0.06	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4	50	200	<0.03	mg/kg	TM30/PM17	
Total Dissolved Solids #	1320	1280	1729	2100	950	7457	3419	1580	1521	4000	60000	100000	<350	mg/kg	TM20/PM0	
Dissolved Organic Carbon	<20	20	<20	50	<20	30	<20	<20	30	500	800	1000	<20	mg/kg	TM60/PM0	
Mass of raw test portion	0.1024	0.1032	0.1121	0.1043	0.1057	0.1124	0.1087	0.1058	0.1189	-	-	-		kg	NONE/PM17	
Dry Matter Content Ratio	87.6	87.2	80.6	86.5	85.4	80.0	82.7	85.0	75.4	-	-	-	<0.1	%	NONE/PM4	
Leachant Volume	0.887	0.887	0.878	0.886	0.885	0.877	0.881	0.884	0.871	-	-	-		l	NONE/PM17	
Eluate Volume	0.77	0.75	0.82	0.85	0.85	0.8	0.82	0.82	0.8	-	-	-		l	NONE/PM17	
pH #	8.39	8.22	8.11	7.82	8.33	7.87	8.17	8.21	8.26	-	-	-	<0.01	pH units	TM73/PM11	
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0	
Fluoride	<3	4	8	<3	<3	<3	4	4	3	-	-	-	<3	mg/kg	TM173/PM0	
Sulphate as SO4 #	109.0	365.2	377.9	96.0	141.7	4287.1	1891.6	318.9	280.5	1000	20000	50000	<0.5	mg/kg	TM38/PM0	
Chloride #	6	24	28	33	<3	<3	<3	9	6	800	15000	25000	<3	mg/kg	TM38/PM0	

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe

**Matrix : Solid**

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
18/17776	1	WS1	0.0-1.0	1-3	PAH's
18/17776	1	WS1	1.0-2.0	4-6	Possible PAH's
18/17776	1	WS1	2.0-2.8	7-9	No interpretation possible
18/17776	1	WS2	0.0-1.0	10-12	PAH's & Degraded diesel
18/17776	1	WS2	1.0-2.0	13-15	No interpretation possible
18/17776	1	WS2	2.0-3.0	16-18	No interpretation possible
18/17776	1	WS3	0.25-0.75	19-21	No interpretation possible
18/17776	1	WS3	1.0-2.0	22-24	No interpretation possible
18/17776	1	WS4	0.25-0.75	25-27	PAH's
18/17776	1	WS4	1.0-2.0	28-30	PAH's
18/17776	1	WS9	0.0-1.0	31-33	PAH's & Possible lubricating oil
18/17776	1	WS9	1.0-2.0	34-36	No interpretation possible
18/17776	1	WS9	2.0-2.8	37-39	No interpretation possible
18/17776	1	WS10	0.0-1.0 CORE	40-42	No interpretation possible
18/17776	1	WS10	1.0-2.0	43-45	Degraded diesel
18/17776	1	WS10	2.0-3.0	46-48	No interpretation possible
18/17776	1	WS12	0.25-0.75	49-51	PAH's
18/17776	1	WS12	1.0-2.0	52-54	No interpretation possible
18/17776	1	WS12	2.0-3.0	55-57	No interpretation possible
18/17776	1	WS14	0.25-0.75	58-60	PAH's
18/17776	1	WS14	1.0-2.0	61-63	No interpretation possible
18/17776	1	WS14	2.0-3.0	64-66	Possible naturally occurring compounds
18/17776	1	WS15	1.0-2.0	67-69	PAH's
18/17776	1	WS15	2.0-3.0	70-72	No interpretation possible
18/17776	1	WS15	3.0-4.0	73-75	No interpretation possible
18/17776	1	WS15	4.0-4.5	76-78	No interpretation possible
18/17776	1	WS18	0.25-0.75	79-81	PAH's & Lubricating oil
18/17776	1	WS18	1.0-2.0	82-84	PAH's
18/17776	1	WS18	2.0-3.0	85-87	No interpretation possible
18/17776	1	WS18	3.0-4.0	88-90	No interpretation possible
18/17776	1	WS24	0.0-1.0	91-93	PAH's
18/17776	1	WS30	1.0-2.0	94-96	Possible tarmac/bitumen

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**Matrix : Solid**

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
18/17776	1	WS30	2.0-3.0	97-99	PAH's
18/17776	1	WS30	3.0-4.0	100-102	PAH's
18/17776	1	WS31	0.25-0.75	103-105	No interpretation possible
18/17776	1	WS31	1.0-2.0	106-108	No interpretation possible
18/17776	1	WS31	2.0-3.0	109-111	PAH's
18/17776	1	WS31	3.0-4.0	112-114	No interpretation possible
18/17776	1	WS31	4.0-5.0	115-117	No interpretation possible

**Client Name:** Ground Investigations Ireland  
**Reference:** 18/10/8108  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe

**Note:**

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

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

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

Signed on behalf of Jones Environmental Laboratory:



Ryan Butterworth  
 Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/17776	1	WS1	0.0-1.0	2	13/11/2018	General Description (Bulk Analysis)	Soil/Stone
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS1	1.0-2.0	5	13/11/2018	General Description (Bulk Analysis)	Soil/Stone
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS1	2.0-2.8	8	13/11/2018	General Description (Bulk Analysis)	Soil/Stone
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS2	0.0-1.0	11	13/11/2018	General Description (Bulk Analysis)	soil-stones
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS2	1.0-2.0	14	13/11/2018	General Description (Bulk Analysis)	soil-stones
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS2	2.0-3.0	17	13/11/2018	General Description (Bulk Analysis)	soil-stones
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS3	0.25-0.75	20	14/11/2018	General Description (Bulk Analysis)	soil-stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD



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J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/17776	1	WS3	0.25-0.75	20	14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS3	1.0-2.0	23	14/11/2018	General Description (Bulk Analysis)	soil-stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS4	0.25-0.75	26	14/11/2018	General Description (Bulk Analysis)	soil-stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS4	1.0-2.0	29	14/11/2018	General Description (Bulk Analysis)	soil.stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS9	0.0-1.0	32	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS9	1.0-2.0	35	14/11/2018	General Description (Bulk Analysis)	soil-stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS9	2.0-2.8	38	13/11/2018	General Description (Bulk Analysis)	soil.stones
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS10	0.0-1.0 CORE	41	13/11/2018	General Description (Bulk Analysis)	soil.stones
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS10	1.0-2.0	44	13/11/2018	General Description (Bulk Analysis)	soil.stones
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS10	2.0-3.0	47	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD

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J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/17776	1	WS10	2.0-3.0	47	14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS12	0.25-0.75	50	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS12	1.0-2.0	53	14/11/2018	General Description (Bulk Analysis)	soil-stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS12	2.0-3.0	56	13/11/2018	General Description (Bulk Analysis)	soil-stones
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS14	0.25-0.75	59	13/11/2018	General Description (Bulk Analysis)	Soil/Stone
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS14	1.0-2.0	62	13/11/2018	General Description (Bulk Analysis)	Soil/Stone
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS14	2.0-3.0	65	13/11/2018	General Description (Bulk Analysis)	soil-stones
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS15	1.0-2.0	68	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS15	2.0-3.0	71	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD

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J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/17776	1	WS15	3.0-4.0	74	14/11/2018	General Description (Bulk Analysis)	soil-stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS15	4.0-4.5	77	14/11/2018	General Description (Bulk Analysis)	soil-stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS18	0.25-0.75	80	14/11/2018	General Description (Bulk Analysis)	soil-stones
					14/11/2018	Asbestos Fibres	Fibre Bundles
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	Crocidolite
					14/11/2018	Asbestos Level Screen	less than 0.1%
					30/11/2018	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					30/11/2018	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
30/11/2018	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)					
18/17776	1	WS18	1.0-2.0	83	14/11/2018	General Description (Bulk Analysis)	soil-stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS18	2.0-3.0	86	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS18	3.0-4.0	89	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS24	0.0-1.0	92	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS30	1.0-2.0	95	14/11/2018	General Description (Bulk Analysis)	soil.stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS30	2.0-3.0	98	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD

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J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/17776	1	WS30	2.0-3.0	98	14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS30	3.0-4.0	101	14/11/2018	General Description (Bulk Analysis)	soil.stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS31	0.25-0.75	104	14/11/2018	General Description (Bulk Analysis)	soil.stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS31	1.0-2.0	107	13/11/2018	General Description (Bulk Analysis)	soil-stones
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS31	2.0-3.0	110	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS31	3.0-4.0	113	14/11/2018	General Description (Bulk Analysis)	Soil/Stones
					14/11/2018	Asbestos Fibres	NAD
					14/11/2018	Asbestos ACM	NAD
					14/11/2018	Asbestos Type	NAD
					14/11/2018	Asbestos Level Screen	NAD
18/17776	1	WS31	4.0-5.0	116	13/11/2018	General Description (Bulk Analysis)	soil-stones
					13/11/2018	Asbestos Fibres	NAD
					13/11/2018	Asbestos ACM	NAD
					13/11/2018	Asbestos Type	NAD
					13/11/2018	Asbestos Level Screen	NAD



**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe

**Matrix : Solid**

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
18/17776	1	WS1	0.0-1.0	1-3	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS1	1.0-2.0	4-6	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS1	2.0-2.8	7-9	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS2	0.0-1.0	10-12	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS2	1.0-2.0	13-15	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS2	2.0-3.0	16-18	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS3	0.25-0.75	19-21	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS3	1.0-2.0	22-24	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS4	0.25-0.75	25-27	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS4	1.0-2.0	28-30	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS9	0.0-1.0	31-33	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS9	1.0-2.0	34-36	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS9	2.0-2.8	37-39	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS10	0.0-1.0 CORE	40-42	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS10	1.0-2.0	43-45	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS10	2.0-3.0	46-48	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS12	0.25-0.75	49-51	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS12	1.0-2.0	52-54	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS12	2.0-3.0	55-57	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS14	0.25-0.75	58-60	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS14	1.0-2.0	61-63	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS14	2.0-3.0	64-66	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS15	1.0-2.0	67-69	GRO, PAH, PCB	Sample holding time exceeded

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



**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site Dublin Docklands  
**Contact:** Antoinette Walshe

**Matrix : Solid**

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
18/17776	1	WS15	2.0-3.0	70-72	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS15	3.0-4.0	73-75	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS15	4.0-4.5	76-78	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS18	0.25-0.75	79-81	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS18	1.0-2.0	82-84	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS18	2.0-3.0	85-87	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS18	3.0-4.0	88-90	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS24	0.0-1.0	91-93	GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS30	1.0-2.0	94-96	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS30	2.0-3.0	97-99	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS30	3.0-4.0	100-102	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS31	0.25-0.75	103-105	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS31	1.0-2.0	106-108	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS31	2.0-3.0	109-111	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS31	3.0-4.0	112-114	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17776	1	WS31	4.0-5.0	115-117	EPH, GRO, PAH, PCB	Sample holding time exceeded

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

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/17776

### SOILS

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

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

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

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

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

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

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

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

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

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

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

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

### WATERS

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

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

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

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

### DEVIATING SAMPLES

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

### SURROGATES

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

### DILUTIONS

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

### BLANKS

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

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

**ABBREVIATIONS and ACRONYMS USED**

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution
AB	x10 Dilution
BA	x10 Dilution

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

JE Job No.: 18/17776

Leachate tests	
10l/kg; 4mm	I.S. EN 12457-2:2002 Specified particle size; water added to L/S ratio; capped; agitated for 24 ± 0.5 hours; eluate settled and filtered over 0.45 µm membrane filter.
Eluate analysis	
As	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ba	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cd	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cr total	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cu	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Hg	I.S. EN 13370 rec. EN 1483 (CVAAS)
Mo	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ni	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Pb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Sb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Se	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Zn	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Chloride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Fluoride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Sulphate	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Phenol index	I.S. EN 13370 rec. ISO 6439 (4-Aminoantipyrine spectrometric methods after distillation)* ( BY HPLC - Jones Env)
DOC	I.S. EN 1484
TDS	I.S. EN 15216
Compositional analysis	
TOC	I.S. EN 13137 Method B: carbonates removed with acid; TOC by combustion.
BTEX	GC-FID
PCB7**	I.S. EN 15308 analysis by GC-ECD.
Mineral oil	I.S. EN 14039 C10 to C40 analysis by GC-FID.
PAH17***	I.S. EN 15527 PAH17 analysis by GC-MS
Metals	I.S. EN 13657 - Aqua regia digestion: EN ISO 11885 ( ICP-OES)
Other	
Dry matter	I.S. EN 14346 sample is dried to a constant mass in an oven at 105 ± 3 °C; Method B Water content by direct Karl-Fischer-titration and either volumetric or coulometric detection.
LOI	I.S. EN 15169 Difference in mass after heating in a furnace up to 550 ± 25 °C.
ANC	CEN/TS 15364 Determined by amounts of acid or base needed to cover the pH range
<p><b>Notes:</b></p> <p>*If not suitable due to LOD, precision, etc., any other suitable method can be used, e.g. AFS, ICP-MS</p> <p>**PCB-28, PCB-52, PCB-101, PCB-118, PCB-138, PCB-153 and PCB-180</p> <p>***Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.</p>	

JE Job No: 18/17776

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

JE Job No: 18/17776

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes



JE Job No: 18/17776

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Modified US EPA methods 245.7 and 200.7. Determination of Mercury by Cold Vapour Atomic Fluorescence.	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM131	Quantification of Asbestos Fibres and ACM, based on HSG248 and SCA method.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AR	Yes
NONE	No Method Code	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				

JE Job No: 18/17776

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	



# Exova Jones Environmental

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

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

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

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



**Attention :** Antoinette Walshe  
**Date :** 19th November, 2018  
**Your reference :** 8108-10-18  
**Our reference :** Test Report 18/17836 Batch 1  
**Location :** Castleforbes Site, Dublin  
**Date samples received :** 6th November, 2018  
**Status :** Final report  
**Issue :** 1

Four samples were received for analysis on 6th November, 2018 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

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

## Compiled By:

**Bruce Leslie**  
Project Co-ordinator

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site, Dublin  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17836

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

J E Sample No.	Sample ID				Depth	COC No / misc	Containers	Sample Date	Sample Type	Batch Number	Date of Receipt	LOD/LOR	Units	Method No.
	1-3	4-6	7-9	10-12										
	WS16	WS16	WS16	WS16										
	0.00-1.00	1.00-2.00	2.00-3.00	3.00-4.00										
	V J T	V J T	V J T	V J T										
	24/10/2018	24/10/2018	24/10/2018	24/10/2018										
	Soil	Soil	Soil	Soil										
	1	1	1	1										
	06/11/2018	06/11/2018	06/11/2018	06/11/2018										
Please see attached notes for all abbreviations and acronyms														
Antimony	4	47 <sup>AA</sup>	3	2								<1	mg/kg	TM30/PM15
Arsenic #	27.2	31.3	20.2	9.3								<0.5	mg/kg	TM30/PM15
Barium #	292	198	61	15								<1	mg/kg	TM30/PM15
Cadmium #	0.8	1.9	0.5	0.3								<0.1	mg/kg	TM30/PM15
Chromium #	70.6	59.9	69.3	106.7								<0.5	mg/kg	TM30/PM15
Copper #	238	277 <sup>AA</sup>	60	8								<1	mg/kg	TM30/PM15
Lead #	2000	697	218	22								<5	mg/kg	TM30/PM15
Mercury #	0.9	1.4	1.4	<0.1								<0.1	mg/kg	TM30/PM15
Molybdenum #	6.1	6.1	4.3	3.5								<0.1	mg/kg	TM30/PM15
Nickel #	65.8	74.3	34.0	14.9								<0.7	mg/kg	TM30/PM15
Selenium #	2	2	<1	<1								<1	mg/kg	TM30/PM15
Zinc #	302	442	121	34								<5	mg/kg	TM30/PM15
<b>PAH MS</b>														
Naphthalene #	0.14	0.12	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.13	0.12	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.11	<0.05	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Fluorene #	0.07	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Phenanthrene #	1.25	0.88	0.05	<0.03								<0.03	mg/kg	TM4/PM8
Anthracene #	0.27	0.23	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Fluoranthene #	2.23	0.86	0.04	<0.03								<0.03	mg/kg	TM4/PM8
Pyrene #	2.17	0.88	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	1.13	0.59	<0.06	<0.06								<0.06	mg/kg	TM4/PM8
Chrysene #	1.17	0.58	<0.02	<0.02								<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	2.39	1.07	<0.07	<0.07								<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	1.12	0.54	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.84	0.37	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.11	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.99	0.46	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Coronene	0.30	0.12	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
PAH 6 Total #	7.57	3.30	<0.22	<0.22								<0.22	mg/kg	TM4/PM8
PAH 17 Total	14.42	6.82	<0.64	<0.64								<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	1.72	0.77	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.67	0.30	<0.02	<0.02								<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1								<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	113	111	113	115								<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30	<30								<30	mg/kg	TM5/PM8/PM16

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site, Dublin  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17836

**Report : Solid**

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

J E Sample No.	1-3	4-6	7-9	10-12															
Sample ID	WS16	WS16	WS16	WS16															
Depth	0.00-1.00	1.00-2.00	2.00-3.00	3.00-4.00															
COC No / misc																			
Containers	V J T	V J T	V J T	V J T															
Sample Date	24/10/2018	24/10/2018	24/10/2018	24/10/2018															
Sample Type	Soil	Soil	Soil	Soil															
Batch Number	1	1	1	1															
Date of Receipt	06/11/2018	06/11/2018	06/11/2018	06/11/2018															
														LOD/LOR	Units	Method No.			
TPH CWG																			
<b>Aliphatics</b>																			
>C5-C6 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1										<0.1	mg/kg	TM36/PM12			
>C6-C8 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1										<0.1	mg/kg	TM36/PM12			
>C8-C10	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1										<0.1	mg/kg	TM36/PM12			
>C10-C12 #	<0.2	<0.2	<0.2	<0.2										<0.2	mg/kg	TMS/PM8/PM16			
>C12-C16 #	<4	<4	<4	<4										<4	mg/kg	TMS/PM8/PM16			
>C16-C21 #	<7	<7	<7	<7										<7	mg/kg	TMS/PM8/PM16			
>C21-C35 #	<7	<7	<7	<7										<7	mg/kg	TMS/PM8/PM16			
>C35-C40	<7	<7	<7	<7										<7	mg/kg	TMS/PM8/PM16			
Total aliphatics C5-40	<26	<26	<26	<26										<26	mg/kg	TMS/PM8/PM16			
>C6-C10	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1										<0.1	mg/kg	TM36/PM12			
>C10-C25	<10	<10	<10	<10										<10	mg/kg	TMS/PM8/PM16			
>C25-C35	<10	<10	<10	<10										<10	mg/kg	TMS/PM8/PM16			
<b>Aromatics</b>																			
>C5-EC7 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1										<0.1	mg/kg	TM36/PM12			
>EC7-EC8 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1										<0.1	mg/kg	TM36/PM12			
>EC8-EC10 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1										<0.1	mg/kg	TM36/PM12			
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2										<0.2	mg/kg	TMS/PM8/PM16			
>EC12-EC16 #	<4	<4	<4	<4										<4	mg/kg	TMS/PM8/PM16			
>EC16-EC21 #	<7	21	<7	<7										<7	mg/kg	TMS/PM8/PM16			
>EC21-EC35 #	<7	89	<7	<7										<7	mg/kg	TMS/PM8/PM16			
>EC35-EC40	<7	<7	<7	<7										<7	mg/kg	TMS/PM8/PM16			
Total aromatics C5-40	<26	110	<26	<26										<26	mg/kg	TMS/PM8/PM16			
Total aliphatics and aromatics(C5-40)	<52	110	<52	<52										<52	mg/kg	TMS/PM8/PM16			
>EC6-EC10 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1										<0.1	mg/kg	TM36/PM12			
>EC10-EC25	<10	34	<10	<10										<10	mg/kg	TMS/PM8/PM16			
>EC25-EC35	<10	75	<10	<10										<10	mg/kg	TMS/PM8/PM16			
MTBE #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5										<5	ug/kg	TM31/PM12			
Benzene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5										<5	ug/kg	TM31/PM12			
Toluene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5										<5	ug/kg	TM31/PM12			
Ethylbenzene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5										<5	ug/kg	TM31/PM12			
m/p-Xylene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5										<5	ug/kg	TM31/PM12			
o-Xylene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5										<5	ug/kg	TM31/PM12			
PCB 28 #	<5	<5	<5	<5										<5	ug/kg	TM17/PM8			
PCB 52 #	<5	<5	<5	<5										<5	ug/kg	TM17/PM8			
PCB 101 #	<5	<5	<5	<5										<5	ug/kg	TM17/PM8			
PCB 118 #	<5	<5	<5	<5										<5	ug/kg	TM17/PM8			
PCB 138 #	<5	<5	<5	<5										<5	ug/kg	TM17/PM8			
PCB 153 #	<5	<5	<5	<5										<5	ug/kg	TM17/PM8			
PCB 180 #	<5	<5	<5	<5										<5	ug/kg	TM17/PM8			
Total 7 PCBs #	<35	<35	<35	<35										<35	ug/kg	TM17/PM8			

Please see attached notes for all abbreviations and acronyms

**Exova Jones Environmental**

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site, Dublin  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17836

**Report : Solid**

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

J E Sample No.	1-3	4-6	7-9	10-12																																																					
<b>Sample ID</b>	WS16	WS16	WS16	WS16																																																					
<b>Depth</b>	0.00-1.00	1.00-2.00	2.00-3.00	3.00-4.00																																																					
<b>COC No / misc</b>																																																									
<b>Containers</b>	V J T	V J T	V J T	V J T																																																					
<b>Sample Date</b>	24/10/2018	24/10/2018	24/10/2018	24/10/2018																																																					
<b>Sample Type</b>	Soil	Soil	Soil	Soil																																																					
<b>Batch Number</b>	1	1	1	1																																																					
<b>Date of Receipt</b>	06/11/2018	06/11/2018	06/11/2018	06/11/2018																																																					
Natural Moisture Content	18.2	29.0	26.1	23.9																																																					
Moisture Content (% Wet Weight)	15.4	22.5	20.7	19.3																																																					
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3																																																					
Chromium III	70.6	59.9	69.3	106.7																																																					
Total Organic Carbon #	8.59	9.53	5.40	0.51																																																					
pH #	7.82	7.79	7.81	8.59																																																					
Mass of raw test portion	0.1028	0.104	0.1236	0.1061																																																					
Mass of dried test portion	0.09	0.09	0.09	0.09																																																					

Please see attached notes for all abbreviations and acronyms



**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site, Dublin  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17836

**Report :** CEN 10:1 1 Batch

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

J E Sample No.	1-3	4-6	7-9	10-12								LOD/LOR	Units	Method No.
Sample ID	WS16	WS16	WS16	WS16										
Depth	0.00-1.00	1.00-2.00	2.00-3.00	3.00-4.00										
COC No / misc														
Containers	V J T	V J T	V J T	V J T										
Sample Date	24/10/2018	24/10/2018	24/10/2018	24/10/2018										
Sample Type	Soil	Soil	Soil	Soil										
Batch Number	1	1	1	1										
Date of Receipt	06/11/2018	06/11/2018	06/11/2018	06/11/2018										
Dissolved Antimony <sup>#</sup>	<0.002	0.005	0.010	<0.002								<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) <sup>#</sup>	<0.02	0.05	0.10	<0.02								<0.02	mg/kg	TM30/PM17
Dissolved Arsenic <sup>#</sup>	<0.0025	<0.0025	0.0102	<0.0025								<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) <sup>#</sup>	<0.025	<0.025	0.102	<0.025								<0.025	mg/kg	TM30/PM17
Dissolved Barium <sup>#</sup>	0.031	0.025	0.010	<0.003								<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) <sup>#</sup>	0.31	0.25	0.10	<0.03								<0.03	mg/kg	TM30/PM17
Dissolved Cadmium <sup>#</sup>	<0.0005	<0.0005	<0.0005	<0.0005								<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) <sup>#</sup>	<0.005	<0.005	<0.005	<0.005								<0.005	mg/kg	TM30/PM17
Dissolved Chromium <sup>#</sup>	<0.0015	<0.0015	<0.0015	<0.0015								<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) <sup>#</sup>	<0.015	<0.015	<0.015	<0.015								<0.015	mg/kg	TM30/PM17
Dissolved Copper <sup>#</sup>	<0.007	<0.007	<0.007	<0.007								<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) <sup>#</sup>	<0.07	<0.07	<0.07	<0.07								<0.07	mg/kg	TM30/PM17
Dissolved Lead <sup>#</sup>	<0.005	<0.005	<0.005	<0.005								<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) <sup>#</sup>	<0.05	<0.05	<0.05	<0.05								<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum <sup>#</sup>	0.009	0.022	0.092	0.010								<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) <sup>#</sup>	0.09	0.22	0.92	0.10								<0.02	mg/kg	TM30/PM17
Dissolved Nickel <sup>#</sup>	<0.002	<0.002	0.002	<0.002								<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) <sup>#</sup>	<0.02	<0.02	0.02	<0.02								<0.02	mg/kg	TM30/PM17
Dissolved Selenium <sup>#</sup>	<0.003	<0.003	<0.003	<0.003								<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) <sup>#</sup>	<0.03	<0.03	<0.03	<0.03								<0.03	mg/kg	TM30/PM17
Dissolved Zinc <sup>#</sup>	<0.003	0.006	0.005	<0.003								<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) <sup>#</sup>	<0.03	0.06	0.05	<0.03								<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF <sup>#</sup>	<0.00001	<0.00001	0.00001	<0.00001								<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF <sup>#</sup>	<0.0001	<0.0001	0.0001	<0.0001								<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01								<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1								<0.1	mg/kg	TM26/PM0
Fluoride	<0.3	<0.3	<0.3	<0.3								<0.3	mg/l	TM173/PM0
Fluoride	<3	<3	<3	<3								<3	mg/kg	TM173/PM0
Sulphate as SO4 <sup>#</sup>	201.61	366.91	49.44	23.44								<0.05	mg/l	TM38/PM0
Sulphate as SO4 <sup>#</sup>	2015.4	3668.2	494.4	234.5								<0.5	mg/kg	TM38/PM0
Chloride <sup>#</sup>	3.3	1.7	5.4	9.1								<0.3	mg/l	TM38/PM0
Chloride <sup>#</sup>	33	17	54	91								<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	<2	<2	6	<2								<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	<20	60	<20								<20	mg/kg	TM60/PM0
pH	8.10	8.00	8.15	8.10								<0.01	pH units	TM73/PM0
Total Dissolved Solids <sup>#</sup>	348	684	190	169								<35	mg/l	TM20/PM0
Total Dissolved Solids <sup>#</sup>	3479	6838	1900	1691								<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site, Dublin  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/17836

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12													
Sample ID	WS16	WS16	WS16	WS16													
Depth	0.00-1.00	1.00-2.00	2.00-3.00	3.00-4.00													
COC No / misc																	
Containers	V J T	V J T	V J T	V J T													
Sample Date	24/10/2018	24/10/2018	24/10/2018	24/10/2018													
Sample Type	Soil	Soil	Soil	Soil													
Batch Number	1	1	1	1													
Date of Receipt	06/11/2018	06/11/2018	06/11/2018	06/11/2018													
Please see attached notes for all abbreviations and acronyms												Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
<b>Solid Waste Analysis</b>																	
Total Organic Carbon #	8.59	9.53	5.40	0.51								3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025 <sup>SV</sup>	<0.025 <sup>SV</sup>	<0.025	<0.025								6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035								1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30								500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	7.57	3.30	<0.22	<0.22								-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	14.42	6.82	<0.64	<0.64								100	-	-	<0.64	mg/kg	TM4/PM8
<b>CEN 10:1 Leachate</b>																	
Arsenic #	<0.025	<0.025	0.102	<0.025								0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.31	0.25	0.10	<0.03								20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005								0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015								0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07								2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	0.0001	<0.0001								0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.09	0.22	0.92	0.10								0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	0.02	<0.02								0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05								0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	0.05	0.10	<0.02								0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03								0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	0.06	0.05	<0.03								4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	3479	6838	1900	1691								4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	<20	<20	60	<20								500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1028	0.104	0.1236	0.1061								-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	87.6	86.7	72.6	84.5								-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.887	0.886	0.866	0.884								-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.8	0.85	0.85								-	-	-		l	NONE/PM17
pH #	7.82	7.79	7.81	8.59								-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1								1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	<3	<3	<3	<3								-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	2015.4	3668.2	494.4	234.5								1000	20000	50000	<0.5	mg/kg	TM38/PM0
Chloride #	33	17	54	91								800	15000	25000	<3	mg/kg	TM38/PM0

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site, Dublin  
**Contact:** Antoinette Walshe

**Matrix : Solid**

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
18/17836	1	WS16	0.00-1.00	1-3	No interpretation possible
18/17836	1	WS16	1.00-2.00	4-6	PAH's
18/17836	1	WS16	2.00-3.00	7-9	No interpretation possible
18/17836	1	WS16	3.00-4.00	10-12	No interpretation possible

**Client Name:** Ground Investigations Ireland  
**Reference:** 18/10/8108  
**Location:** Castleforbes Site, Dublin  
**Contact:** Antoinette Walshe

**Note:**

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

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

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

Signed on behalf of Jones Environmental Laboratory:



Ryan Butterworth  
 Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/17836	1	WS16	0.00-1.00	2	14/11/2018	<b>General Description (Bulk Analysis)</b>	soil.stones
					14/11/2018	<b>Asbestos Fibres</b>	NAD
					14/11/2018	<b>Asbestos ACM</b>	NAD
					14/11/2018	<b>Asbestos Type</b>	NAD
					14/11/2018	<b>Asbestos Level Screen</b>	NAD
18/17836	1	WS16	1.00-2.00	5	14/11/2018	<b>General Description (Bulk Analysis)</b>	soil.stones
					14/11/2018	<b>Asbestos Fibres</b>	NAD
					14/11/2018	<b>Asbestos ACM</b>	NAD
					14/11/2018	<b>Asbestos Type</b>	NAD
					14/11/2018	<b>Asbestos Level Screen</b>	NAD
18/17836	1	WS16	2.00-3.00	8	14/11/2018	<b>General Description (Bulk Analysis)</b>	soil.stones
					14/11/2018	<b>Asbestos Fibres</b>	NAD
					14/11/2018	<b>Asbestos ACM</b>	NAD
					14/11/2018	<b>Asbestos Type</b>	NAD
					14/11/2018	<b>Asbestos Level Screen</b>	NAD
18/17836	1	WS16	3.00-4.00	11	14/11/2018	<b>General Description (Bulk Analysis)</b>	soil.stones
					14/11/2018	<b>Asbestos Fibres</b>	NAD
					14/11/2018	<b>Asbestos ACM</b>	NAD
					14/11/2018	<b>Asbestos Type</b>	NAD
					14/11/2018	<b>Asbestos Level Screen</b>	NAD

**Client Name:** Ground Investigations Ireland  
**Reference:** 8108-10-18  
**Location:** Castleforbes Site, Dublin  
**Contact:** Antoinette Walshe

**Matrix : Solid**

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
18/17836	1	WS16	0.00-1.00	1-3	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17836	1	WS16	1.00-2.00	4-6	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17836	1	WS16	2.00-3.00	7-9	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/17836	1	WS16	3.00-4.00	10-12	EPH, GRO, PAH, PCB	Sample holding time exceeded

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

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/17836

### SOILS

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

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

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

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

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

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

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

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

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

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

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

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

### WATERS

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

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

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

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

### DEVIATING SAMPLES

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

### SURROGATES

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

### DILUTIONS

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

### BLANKS

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

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.



**ABBREVIATIONS and ACRONYMS USED**

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

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

JE Job No.: 18/17836

Leachate tests	
10l/kg; 4mm	I.S. EN 12457-2:2002 Specified particle size; water added to L/S ratio; capped; agitated for 24 ± 0.5 hours; eluate settled and filtered over 0.45 µm membrane filter.
Eluate analysis	
As	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ba	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cd	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cr total	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cu	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Hg	I.S. EN 13370 rec. EN 1483 (CVAAS)
Mo	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ni	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Pb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Sb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Se	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Zn	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Chloride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Fluoride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Sulphate	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Phenol index	I.S. EN 13370 rec. ISO 6439 (4-Aminoantipyrine spectrometric methods after distillation)* ( BY HPLC - Jones Env)
DOC	I.S. EN 1484
TDS	I.S. EN 15216
Compositional analysis	
TOC	I.S. EN 13137 Method B: carbonates removed with acid; TOC by combustion.
BTEX	GC-FID
PCB7**	I.S. EN 15308 analysis by GC-ECD.
Mineral oil	I.S. EN 14039 C10 to C40 analysis by GC-FID.
PAH17***	I.S. EN 15527 PAH17 analysis by GC-MS
Metals	I.S. EN 13657 - Aqua regia digestion: EN ISO 11885 ( ICP-OES)
Other	
Dry matter	I.S. EN 14346 sample is dried to a constant mass in an oven at 105 ± 3 °C; Method B Water content by direct Karl-Fischer-titration and either volumetric or coulometric detection.
LOI	I.S. EN 15169 Difference in mass after heating in a furnace up to 550 ± 25 °C.
ANC	CEN/TS 15364 Determined by amounts of acid or base needed to cover the pH range
<p><b>Notes:</b></p> <p>*If not suitable due to LOD, precision, etc., any other suitable method can be used, e.g. AFS, ICP-MS</p> <p>**PCB-28, PCB-52, PCB-101, PCB-118, PCB-138, PCB-153 and PCB-180</p> <p>***Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.</p>	

JE Job No: 18/17836

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

JE Job No: 18/17836

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

JE Job No: 18/17836

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



# Exova Jones Environmental

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

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

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

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



**Attention :** Antoinette Walshe  
**Date :** 29th November, 2018  
**Your reference :**  
**Our reference :** Test Report 18/18012 Batch 1  
**Location :** Castleforbes  
**Date samples received :** 8th November, 2018  
**Status :** Final report  
**Issue :** 1

Fourteen samples were received for analysis on 8th November, 2018 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

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

## Compiled By:

**Lucas Halliwell**  
Project Co-ordinator



**Client Name:** Ground Investigations Ireland  
**Reference:**  
**Location:** Castleforbes  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/18012

**Report :** Solid

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

J E Sample No.	1-3	4-6	34-36	37-39	40-42																		
Sample ID	WS05	WS05	WS28	WS28	WS29																		
Depth	1.0-2.0	2.0-2.6	1.0-2.0	2.0-3.0	1.0-2.0																		
COC No / misc																							
Containers	V J T	V J T	V J T	V J T	V J T																		
Sample Date	31/10/2018	31/10/2018	02/11/2018	02/11/2018	01/11/2018																		
Sample Type	Soil	Soil	Soil	Soil	Soil																		
Batch Number	1	1	1	1	1																		
Date of Receipt	08/11/2018	08/11/2018	08/11/2018	08/11/2018	08/11/2018																		
																					LOD/LOR	Units	Method No.
Antimony	3	1	3	3	2																<1	mg/kg	TM30/PM15
Arsenic #	28.6	8.5	33.2	32.4	33.4																<0.5	mg/kg	TM30/PM15
Barium #	30	17	84	83	74																<1	mg/kg	TM30/PM15
Cadmium #	0.3	0.2	0.6	0.5	0.3																<0.1	mg/kg	TM30/PM15
Chromium #	38.2	61.7	41.0	31.6	36.5																<0.5	mg/kg	TM30/PM15
Copper #	33	6	67	56	52																<1	mg/kg	TM30/PM15
Lead #	85	11	255	464	149																<5	mg/kg	TM30/PM15
Mercury #	0.4	<0.1	2.6	16.2	0.5																<0.1	mg/kg	TM30/PM15
Molybdenum #	2.3	3.5	6.2	7.4	2.7																<0.1	mg/kg	TM30/PM15
Nickel #	22.6	23.6	50.7	66.3	25.3																<0.7	mg/kg	TM30/PM15
Selenium #	1	<1	1	2	1																<1	mg/kg	TM30/PM15
Zinc #	63	58	116	86	107																<5	mg/kg	TM30/PM15
PAH MS																							
Naphthalene #	<0.04	<0.04	2.25	1.79	43.88 <sup>++</sup>																<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	0.08	0.07	0.62																<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	8.50																<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	0.11	0.10	8.78																<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	0.58	0.88	30.62 <sup>++</sup>																<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	0.07	5.76																<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	0.19	0.17	24.24																<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	0.20	0.14	21.51																<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	0.18	0.17	11.14																<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	0.16	0.21	10.86																<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	0.25	0.17	16.37																<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	0.10	0.07	8.74																<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	0.08	<0.04	4.51																<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	1.77																<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	0.10	0.11	5.20																<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	0.87																<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22	0.72	0.52	59.06																<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	4.28	3.95	203.37																<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	0.18	0.12	11.79																<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	0.07	0.05	4.58																<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	4																<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	103	100	99	102	101																<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	5375	2626	140																<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms



Client Name: Ground Investigations Ireland
Reference:
Location: Castleforbes
Contact: Antoinette Walshe
JE Job No.: 18/18012

Report : Solid

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

Table with columns: J E Sample No., Sample ID, Depth, COC No / misc, Containers, Sample Date, Sample Type, Batch Number, Date of Receipt, LOD/LOR, Units, Method No., and analysis results for parameters like Natural Moisture Content, Hexavalent Chromium, etc.

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland

Report : CEN 10:1 1 Batch

Reference:

Location: Castleforbes

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

Contact: Antoinette Walshe

JE Job No.: 18/18012

J E Sample No.	1-3	4-6	34-36	37-39	40-42						Please see attached notes for all abbreviations and acronyms					
Sample ID	WS05	WS05	WS28	WS28	WS29											
Depth	1.0-2.0	2.0-2.6	1.0-2.0	2.0-3.0	1.0-2.0											
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T											
Sample Date	31/10/2018	31/10/2018	02/11/2018	02/11/2018	01/11/2018											
Sample Type	Soil	Soil	Soil	Soil	Soil											
Batch Number	1	1	1	1	1											
Date of Receipt	08/11/2018	08/11/2018	08/11/2018	08/11/2018	08/11/2018											
											LOD/LOR	Units	Method No.			
Dissolved Antimony #	0.007	0.015	0.006	0.009	0.025						<0.002	mg/l	TM30/PM17			
Dissolved Antimony (A10) #	0.07	0.15	0.06	0.09	0.25						<0.02	mg/kg	TM30/PM17			
Dissolved Arsenic #	0.0049	<0.0025	0.0093	<0.0025	0.0239						<0.0025	mg/l	TM30/PM17			
Dissolved Arsenic (A10) #	0.049	<0.025	0.093	<0.025	0.239						<0.025	mg/kg	TM30/PM17			
Dissolved Barium #	0.009	<0.003	0.005	0.005	<0.003						<0.003	mg/l	TM30/PM17			
Dissolved Barium (A10) #	0.09	<0.03	0.05	0.05	<0.03						<0.03	mg/kg	TM30/PM17			
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005						<0.0005	mg/l	TM30/PM17			
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005						<0.005	mg/kg	TM30/PM17			
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015						<0.0015	mg/l	TM30/PM17			
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015						<0.015	mg/kg	TM30/PM17			
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007						<0.007	mg/l	TM30/PM17			
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07						<0.07	mg/kg	TM30/PM17			
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005						<0.005	mg/l	TM30/PM17			
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05						<0.05	mg/kg	TM30/PM17			
Dissolved Molybdenum #	0.024	0.026	0.084	0.160	0.098						<0.002	mg/l	TM30/PM17			
Dissolved Molybdenum (A10) #	0.24	0.26	0.84	1.60	0.98						<0.02	mg/kg	TM30/PM17			
Dissolved Nickel #	<0.002	0.003	0.005	0.002	0.004						<0.002	mg/l	TM30/PM17			
Dissolved Nickel (A10) #	<0.02	0.03	0.05	<0.02	0.04						<0.02	mg/kg	TM30/PM17			
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003						<0.003	mg/l	TM30/PM17			
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03						<0.03	mg/kg	TM30/PM17			
Dissolved Zinc #	<0.003	<0.003	<0.003	<0.003	<0.003						<0.003	mg/l	TM30/PM17			
Dissolved Zinc (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03						<0.03	mg/kg	TM30/PM17			
Mercury Dissolved by CVA#	<0.00001	<0.00001	<0.00001	<0.00001	0.00001						<0.00001	mg/l	TM61/PM0			
Mercury Dissolved by CVA#	<0.0001	<0.0001	<0.0001	<0.0001	0.0001						<0.0001	mg/kg	TM61/PM0			
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01						<0.01	mg/l	TM26/PM0			
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	mg/kg	TM26/PM0			
Fluoride	0.3	<0.3	<0.3	<0.3	<0.3						<0.3	mg/l	TM173/PM0			
Fluoride	3	<3	<3	<3	<3						<3	mg/kg	TM173/PM0			
Sulphate as SO4 #	20.54	9.15	19.16	6.01	16.78						<0.05	mg/l	TM38/PM0			
Sulphate as SO4 #	205.5	91.5	191.7	60.1	167.8						<0.5	mg/kg	TM38/PM0			
Chloride #	0.7	10.6	16.8	19.3	4.4						<0.3	mg/l	TM38/PM0			
Chloride #	7	106	168	193	44						<3	mg/kg	TM38/PM0			
Dissolved Organic Carbon	<2	3	21	6	11						<2	mg/l	TM60/PM0			
Dissolved Organic Carbon	<20	30	210	60	110						<20	mg/kg	TM60/PM0			
pH	8.19	8.13	8.24	8.32	8.14						<0.01	pH units	TM73/PM0			
Total Dissolved Solids #	146	98	206	189	109						<35	mg/l	TM20/PM0			
Total Dissolved Solids #	1460	980	2061	1889	1090						<350	mg/kg	TM20/PM0			

**Client Name:** Ground Investigations Ireland  
**Reference:**  
**Location:** Castleforbes  
**Contact:** Antoinette Walshe  
**JE Job No.:** 18/18012

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	34-36	37-39	40-42													
Sample ID	WS05	WS05	WS28	WS28	WS29													
Depth	1.0-2.0	2.0-2.6	1.0-2.0	2.0-3.0	1.0-2.0													
COC No / misc																		
Containers	V J T	V J T	V J T	V J T	V J T													
Sample Date	31/10/2018	31/10/2018	02/11/2018	02/11/2018	01/11/2018													
Sample Type	Soil	Soil	Soil	Soil	Soil													
Batch Number	1	1	1	1	1													
Date of Receipt	08/11/2018	08/11/2018	08/11/2018	08/11/2018	08/11/2018													
											Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.		
<b>Solid Waste Analysis</b>																		
Total Organic Carbon #	2.83	0.49	8.49	13.14	4.10						3	5	6	<0.02	%	TM21/PM24		
Sum of BTEX	<0.025 <sup>SV</sup>	<0.025	2.373	10.378 <sup>SV</sup>	0.124 <sup>SV</sup>						6	-	-	<0.025	mg/kg	TM31/PM12		
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035						1	-	-	<0.035	mg/kg	TM17/PM8		
Mineral Oil	<30	<30	5375	2626	140						500	-	-	<30	mg/kg	TM5/PM8/PM16		
PAH Sum of 6 #	<0.22	<0.22	0.72	0.52	59.06						-	-	-	<0.22	mg/kg	TM4/PM8		
PAH Sum of 17	<0.64	<0.64	4.28	3.95	203.37						100	-	-	<0.64	mg/kg	TM4/PM8		
<b>CEN 10:1 Leachate</b>																		
Arsenic #	0.049	<0.025	0.093	<0.025	0.239						0.5	2	25	<0.025	mg/kg	TM30/PM17		
Barium #	0.09	<0.03	0.05	0.05	<0.03						20	100	300	<0.03	mg/kg	TM30/PM17		
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005						0.04	1	5	<0.005	mg/kg	TM30/PM17		
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015						0.5	10	70	<0.015	mg/kg	TM30/PM17		
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07						2	50	100	<0.07	mg/kg	TM30/PM17		
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	0.0001						0.01	0.2	2	<0.0001	mg/kg	TM61/PM0		
Molybdenum #	0.24	0.26	0.84	1.60	0.98						0.5	10	30	<0.02	mg/kg	TM30/PM17		
Nickel #	<0.02	0.03	0.05	<0.02	0.04						0.4	10	40	<0.02	mg/kg	TM30/PM17		
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05						0.5	10	50	<0.05	mg/kg	TM30/PM17		
Antimony #	0.07	0.15	0.06	0.09	0.25						0.06	0.7	5	<0.02	mg/kg	TM30/PM17		
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03						0.1	0.5	7	<0.03	mg/kg	TM30/PM17		
Zinc #	<0.03	<0.03	<0.03	<0.03	<0.03						4	50	200	<0.03	mg/kg	TM30/PM17		
Total Dissolved Solids #	1460	980	2061	1889	1090						4000	60000	100000	<350	mg/kg	TM20/PM0		
Dissolved Organic Carbon	<20	30	210	60	110						500	800	1000	<20	mg/kg	TM60/PM0		
Mass of raw test portion	0.1276	0.1068	0.1165	0.1216	0.1038						-	-	-		kg	NONE/PM17		
Dry Matter Content Ratio	70.7	84.0	77.4	74.0	86.5						-	-	-	<0.1	%	NONE/PM4		
Leachant Volume	0.863	0.883	0.874	0.868	0.886						-	-	-		l	NONE/PM17		
Eluate Volume	0.8	0.8	0.8	0.8	0.8						-	-	-		l	NONE/PM17		
pH #	7.93	8.15	7.71	8.06	7.96						-	-	-	<0.01	pH units	TM73/PM11		
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1						1	-	-	<0.1	mg/kg	TM26/PM0		
Fluoride	3	<3	<3	<3	<3						-	-	-	<3	mg/kg	TM173/PM0		
Sulphate as SO4 #	205.5	91.5	191.7	60.1	167.8						1000	20000	50000	<0.5	mg/kg	TM38/PM0		
Chloride #	7	106	168	193	44						800	15000	25000	<3	mg/kg	TM38/PM0		

Please see attached notes for all abbreviations and acronyms





**Client Name:** Ground Investigations Ireland  
**Reference:**  
**Location:** Castleforbes  
**Contact:** Antoinette Walshe

**Note:**

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

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

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

Signed on behalf of Jones Environmental Laboratory:



Ryan Butterworth  
 Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/18012	1	WS05	1.0-2.0	2	19/11/2018	<b>General Description (Bulk Analysis)</b>	soil-stones
					19/11/2018	<b>Asbestos Fibres</b>	NAD
					19/11/2018	<b>Asbestos ACM</b>	NAD
					19/11/2018	<b>Asbestos Type</b>	NAD
					19/11/2018	<b>Asbestos Level Screen</b>	NAD
18/18012	1	WS05	2.0-2.6	5	19/11/2018	<b>General Description (Bulk Analysis)</b>	soil-stones
					19/11/2018	<b>Asbestos Fibres</b>	NAD
					19/11/2018	<b>Asbestos ACM</b>	NAD
					19/11/2018	<b>Asbestos Type</b>	NAD
					19/11/2018	<b>Asbestos Level Screen</b>	NAD
18/18012	1	WS28	1.0-2.0	35	19/11/2018	<b>General Description (Bulk Analysis)</b>	soil-stones
					19/11/2018	<b>Asbestos Fibres</b>	NAD
					19/11/2018	<b>Asbestos ACM</b>	NAD
					19/11/2018	<b>Asbestos Type</b>	NAD
					19/11/2018	<b>Asbestos Level Screen</b>	NAD
18/18012	1	WS28	2.0-3.0	38	19/11/2018	<b>General Description (Bulk Analysis)</b>	soil-stones
					19/11/2018	<b>Asbestos Fibres</b>	NAD
					19/11/2018	<b>Asbestos ACM</b>	NAD
					19/11/2018	<b>Asbestos Type</b>	NAD
					19/11/2018	<b>Asbestos Level Screen</b>	NAD
18/18012	1	WS29	1.0-2.0	41	19/11/2018	<b>General Description (Bulk Analysis)</b>	soil-stones
					19/11/2018	<b>Asbestos Fibres</b>	NAD
					19/11/2018	<b>Asbestos ACM</b>	NAD
					19/11/2018	<b>Asbestos Type</b>	NAD
					19/11/2018	<b>Asbestos Level Screen</b>	NAD

**Client Name:** Ground Investigations Ireland

**Matrix :** Solid

**Reference:**

**Location:** Castleforbes

**Contact:** Antoinette Walshe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
18/18012	1	WS05	1.0-2.0	1-3	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/18012	1	WS05	2.0-2.6	4-6	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/18012	1	WS28	1.0-2.0	34-36	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/18012	1	WS28	2.0-3.0	37-39	EPH, GRO, PAH, PCB	Sample holding time exceeded
18/18012	1	WS29	1.0-2.0	40-42	EPH, GRO, PAH, PCB	Sample holding time exceeded

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

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/18012

### SOILS

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

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

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

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

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

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

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

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

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

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

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

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

### WATERS

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

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

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

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

### DEVIATING SAMPLES

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

### SURROGATES

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

### DILUTIONS

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

### BLANKS

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

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

**ABBREVIATIONS and ACRONYMS USED**

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

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

JE Job No.: 18/18012

Leachate tests	
10l/kg; 4mm	I.S. EN 12457-2:2002 Specified particle size; water added to L/S ratio; capped; agitated for 24 ± 0.5 hours; eluate settled and filtered over 0.45 µm membrane filter.
Eluate analysis	
As	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ba	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cd	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cr total	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cu	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Hg	I.S. EN 13370 rec. EN 1483 (CVAAS)
Mo	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ni	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Pb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Sb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Se	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Zn	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Chloride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Fluoride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Sulphate	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Phenol index	I.S. EN 13370 rec. ISO 6439 (4-Aminoantipyrine spectrometric methods after distillation)* ( BY HPLC - Jones Env)
DOC	I.S. EN 1484
TDS	I.S. EN 15216
Compositional analysis	
TOC	I.S. EN 13137 Method B: carbonates removed with acid; TOC by combustion.
BTEX	GC-FID
PCB7**	I.S. EN 15308 analysis by GC-ECD.
Mineral oil	I.S. EN 14039 C10 to C40 analysis by GC-FID.
PAH17***	I.S. EN 15527 PAH17 analysis by GC-MS
Metals	I.S. EN 13657 - Aqua regia digestion: EN ISO 11885 ( ICP-OES)
Other	
Dry matter	I.S. EN 14346 sample is dried to a constant mass in an oven at 105 ± 3 °C; Method B Water content by direct Karl-Fischer-titration and either volumetric or coulometric detection.
LOI	I.S. EN 15169 Difference in mass after heating in a furnace up to 550 ± 25 °C.
ANC	CEN/TS 15364 Determined by amounts of acid or base needed to cover the pH range
<p><b>Notes:</b></p> <p>*If not suitable due to LOD, precision, etc., any other suitable method can be used, e.g. AFS, ICP-MS</p> <p>**PCB-28, PCB-52, PCB-101, PCB-118, PCB-138, PCB-153 and PCB-180</p> <p>***Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.</p>	

JE Job No: 18/18012

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



JE Job No: 18/18012

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

JE Job No: 18/18012

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



# Exova Jones Environmental

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

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

O'Callaghan Moran & Associates  
Unit 15  
Melbourne Business Park  
Model Farm  
Cork  
Ireland

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



**Attention :** Conor McGrath  
**Date :** 27th February, 2019  
**Your reference :**  
**Our reference :** Test Report 19/2288 Batch 1  
**Location :** Castleforbes  
**Date samples received :** 13th February, 2019  
**Status :** Final report  
**Issue :** 1

Four samples were received for analysis on 13th February, 2019 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

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

**Compiled By:**

**Phil Sommerton BSc**

Project Manager

Client Name: O'Callaghan Moran & Associates  
 Reference:  
 Location: Castleforbes  
 Contact: Conor McGrath  
 JE Job No.: 19/2288

Report : Solid

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

J E Sample No.	1-3	4-6	7-9	10														
Sample ID	WS-201	WS-202	WS-203	WS-204														
Depth	2.00-3.00		0.00-1.00	0.00-0.50														
COC No / misc																		
Containers	V J T	V J T	V J T	J														
Sample Date	08/02/2019	08/02/2019	08/02/2019	08/02/2019														
Sample Type	Soil	Soil	Soil	Soil														
Batch Number	1	1	1	1														
Date of Receipt	13/02/2019	13/02/2019	13/02/2019	13/02/2019														
Antimony	4	-	-	-														
Arsenic #	35.6	-	-	-														
Barium #	392	-	-	-														
Cadmium #	1.5	-	-	-														
Chromium #	118.1	-	-	-														
Copper #	221	-	-	-														
Lead #	394	-	-	-														
Mercury #	0.3	-	-	-														
Molybdenum #	12.1	-	-	-														
Nickel #	146.7	-	-	-														
Selenium #	2	-	-	-														
Total Sulphate as SO4 #	700	-	-	-														
Water Soluble Boron #	1.6	-	-	-														
Zinc #	955	-	-	-														
Antimony	-	-	5	-														
Arsenic	-	-	23.4	-														
Barium	-	-	195	-														
Cadmium	-	-	1.3	-														
Chromium	-	-	20.2	-														
Copper	-	-	232	-														
Lead	-	-	640	-														
Mercury	-	-	2.7	-														
Molybdenum	-	-	2.8	-														
Nickel	-	-	40.8	-														
Selenium	-	-	1	-														
Total Sulphate as SO4	-	-	1919	-														
Water Soluble Boron	-	-	1.1	-														
Zinc	-	-	484	-														

Please see attached notes for all abbreviations and acronyms

Exova Jones Environmental

Client Name: O'Callaghan Moran & Associates  
 Reference:  
 Location: Castleforbes  
 Contact: Conor McGrath  
 JE Job No.: 19/2288

Report : Solid

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

J E Sample No.	1-3	4-6	7-9	10															
Sample ID	WS-201	WS-202	WS-203	WS-204															
Depth	2.00-3.00		0.00-1.00	0.00-0.50															
COC No / misc																			
Containers	V J T	V J T	V J T	J															
Sample Date	08/02/2019	08/02/2019	08/02/2019	08/02/2019															
Sample Type	Soil	Soil	Soil	Soil															
Batch Number	1	1	1	1															
Date of Receipt	13/02/2019	13/02/2019	13/02/2019	13/02/2019															
														LOD/LOR	Units	Method No.			
PAH MS																			
Naphthalene #	2.65 <sup>AA</sup>	-	0.49	-															
Acenaphthylene	0.61 <sup>AA</sup>	-	0.16	-															
Acenaphthene #	6.93 <sup>AA</sup>	-	1.88	-															
Fluorene #	4.71 <sup>AA</sup>	-	1.26	-															
Phenanthrene #	70.01 <sup>AA</sup>	-	12.09	-															
Anthracene #	17.69 <sup>AA</sup>	-	2.18	-															
Fluoranthene #	97.22 <sup>AA</sup>	-	11.38	-															
Pyrene #	76.69 <sup>AA</sup>	-	9.65	-															
Benzo(a)anthracene #	46.01 <sup>AA</sup>	-	6.05	-															
Chrysene #	48.40 <sup>AA</sup>	-	5.85	-															
Benzo(bk)fluoranthene #	82.86 <sup>AA</sup>	-	9.00	-															
Benzo(a)pyrene #	43.82 <sup>AA</sup>	-	4.80	-															
Indeno(123cd)pyrene #	28.07 <sup>AA</sup>	-	3.01	-															
Dibenzo(ah)anthracene #	5.23 <sup>AA</sup>	-	0.66	-															
Benzo(ghi)perylene #	26.74 <sup>AA</sup>	-	2.90	-															
Coronene	4.09 <sup>AA</sup>	-	0.49	-															
PAH 6 Total #	278.71 <sup>AA</sup>	-	31.09	-															
PAH 17 Total	561.73 <sup>AA</sup>	-	71.85	-															
Benzo(b)fluoranthene	59.66 <sup>AA</sup>	-	6.48	-															
Benzo(k)fluoranthene	23.20 <sup>AA</sup>	-	2.52	-															
Benzo(j)fluoranthene	23 <sup>AA</sup>	-	2	-															
PAH Surrogate % Recovery	97 <sup>AA</sup>	-	97	-															
Mineral Oil (C10-C40)	<30	-	68	-															
TPH CWG																			
Aliphatics																			
>C5-C6 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1															
>C6-C8 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1															
>C8-C10	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1															
>C10-C12 #	<0.2	<0.2	6.5	7.1															
>C12-C16 #	<4	<4	14	17															
>C16-C21 #	<7	<7	19	35															
>C21-C35 #	20	<7	28	79															
>C35-C40	<7	<7	<7	<7															
Total aliphatics C5-40	<26	<26	68	138															
>C6-C10	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1															
>C10-C25	<10	<10	62	93															
>C25-C35	29	<10	42	61															

Please see attached notes for all abbreviations and acronyms

**Exova Jones Environmental**

Client Name: O'Callaghan Moran & Associates  
 Reference:  
 Location: Castleforbes  
 Contact: Conor McGrath  
 JE Job No.: 19/2288

Report : **Solid**

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

J E Sample No.	1-3	4-6	7-9	10							LOD/LOR	Units	Method No.
Sample ID	WS-201	WS-202	WS-203	WS-204									
Depth	2.00-3.00		0.00-1.00	0.00-0.50									
COC No / misc													
Containers	V J T	V J T	V J T	J									
Sample Date	08/02/2019	08/02/2019	08/02/2019	08/02/2019									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	13/02/2019	13/02/2019	13/02/2019	13/02/2019									
TPH CWG													
<b>Aromatics</b>													
>C5-EC7 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	3.5	<0.2							<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	19	<4	12	8							<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	170	17	62	92							<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	551	101	277	371							<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	53	12	44	50							<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	793	130	399	521							<26	mg/kg	TM5/PM8/PM16/PM12/PM15
Total aliphatics and aromatics(C5-40)	793	130	467	659							<52	mg/kg	TM5/PM8/PM16/PM12/PM15
>EC6-EC10 #	<0.1 <sup>SV</sup>	<0.1 <sup>SV</sup>	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC10-EC25	344	43	158	222							<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	349	90	195	268							<10	mg/kg	TM5/PM8/PM16
MTBE #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5							<5	ug/kg	TM31/PM12
Benzene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5							<5	ug/kg	TM31/PM12
Toluene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5							<5	ug/kg	TM31/PM12
Ethylbenzene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5							<5	ug/kg	TM31/PM12
m/p-Xylene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5							<5	ug/kg	TM31/PM12
o-Xylene #	<5 <sup>SV</sup>	<5 <sup>SV</sup>	<5	<5							<5	ug/kg	TM31/PM12
PCB 28 #	<5	-	<5	-							<5	ug/kg	TM17/PM8
PCB 52 #	<5	-	<5	-							<5	ug/kg	TM17/PM8
PCB 101 #	<5	-	<5	-							<5	ug/kg	TM17/PM8
PCB 118 #	<5	-	<5	-							<5	ug/kg	TM17/PM8
PCB 138 #	<5	-	<5	-							<5	ug/kg	TM17/PM8
PCB 153 #	<5	-	<5	-							<5	ug/kg	TM17/PM8
PCB 180 #	<5	-	<5	-							<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	-	<35	-							<35	ug/kg	TM17/PM8
Phenol #	<0.01	-	<0.01	-							<0.01	mg/kg	TM26/PM21
Natural Moisture Content	32.7	31.1	17.7	8.5							<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	24.6	-	15.0	-							<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	-	<0.3	-							<0.3	mg/kg	TM38/PM20
Chromium III	118.1	-	NDP	-							<0.5	mg/kg	NONE/NONE
Chromium III	-	-	20.2	-							<0.5	mg/kg	NONE/NONE
Total Cyanide #	<0.5	-	<0.5	-							<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	21.33	-	NDP	-							<0.02	%	TM21/PM24

Please see attached notes for all abbreviations and acronyms



**Client Name:** O'Callaghan Moran & Associates  
**Reference:**  
**Location:** Castleforbes  
**Contact:** Conor McGrath  
**JE Job No.:** 19/2288

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

J E Sample No.	1-3	4-6	7-9	10							Please see attached notes for all abbreviations and acronyms		
Sample ID	WS-201	WS-202	WS-203	WS-204							LOD/LOR	Units	Method No.
Depth	2.00-3.00		0.00-1.00	0.00-0.50									
COC No / misc													
Containers	V J T	V J T	V J T	J									
Sample Date	08/02/2019	08/02/2019	08/02/2019	08/02/2019									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	13/02/2019	13/02/2019	13/02/2019	13/02/2019									
Sulphide	<10	-	<10	-							<10	mg/kg	TM107/PM119
Elemental Sulphur	28	-	-	-							<1	mg/kg	TM108/PM114
Elemental Sulphur	-	-	13	-							<1	mg/kg	TM108/PM8
pH <sup>#</sup>	8.41	-	8.59	-							<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1183	-	0.1039	-								kg	NONE/PM17
Mass of dried test portion	0.09	-	0.09	-								kg	NONE/PM17

**Client Name:** O'Callaghan Moran & Associates  
**Reference:**  
**Location:** Castleforbes  
**Contact:** Conor McGrath  
**JE Job No.:** 19/2288

**Report :** CEN 10:1 1 Batch  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	7-9												
<b>Sample ID</b>	WS-201	WS-203												
<b>Depth</b>	2.00-3.00	0.00-1.00												
<b>COC No / misc</b>														
<b>Containers</b>	V J T	V J T												
<b>Sample Date</b>	08/02/2019	08/02/2019												
<b>Sample Type</b>	Soil	Soil												
<b>Batch Number</b>	1	1												
<b>Date of Receipt</b>	13/02/2019	13/02/2019												
Dissolved Antimony #	0.005	<0.002										<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	0.05	<0.02										<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	0.0037	0.0069										<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	0.037	0.069										<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.030	0.013										<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.30	0.13										<0.03	mg/kg	TM30/PM17
Dissolved Boron #	0.060	0.034										<0.012	mg/l	TM30/PM17
Dissolved Boron (A10) #	0.60	0.34										<0.12	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005										<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005										<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	0.0022										<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	0.022										<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007										<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07										<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005										<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05										<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.035	0.007										<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.35	0.07										<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002										<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02										<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003										<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03										<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	<0.003										<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	<0.03										<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	0.00003										<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	0.0003										<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01										<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1										<0.1	mg/kg	TM26/PM0
Fluoride	0.3	<0.3										<0.3	mg/l	TM173/PM0
Fluoride	<3	<3										<3	mg/kg	TM173/PM0
Sulphate as SO4 #	25.2	24.8										<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	252	248										<5	mg/kg	TM38/PM0
Chloride #	2.1	3.0										<0.3	mg/l	TM38/PM0
Chloride #	21	30										<3	mg/kg	TM38/PM0
Ammoniacal Nitrogen as N #	0.22	0.05										<0.03	mg/l	TM38/PM0
Ammoniacal Nitrogen as N #	2.2	0.5										<0.3	mg/kg	TM38/PM0
Dissolved Organic Carbon	3	<2										<2	mg/l	TM60/PM0
Dissolved Organic Carbon	30	<20										<20	mg/kg	TM60/PM0
Total Dissolved Solids #	124	157										<35	mg/l	TM20/PM0
Total Dissolved Solids #	1240	1569										<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

Mass of sample taken (kg)	-	Dry Matter Content Ratio (%) =	76.3
Mass of dry sample (kg) =	0.09	Leachant Volume (l)	-
Particle Size <4mm =	>95%	Eluate Volume (l)	0.8

<b>JEFL Job No</b>	<b>19/2288</b>	<b>Landfill Waste Acceptance Criteria Limits</b>		
<b>Sample No</b>	<b>3</b>	<b>Inert</b>	<b>Stable Non-reactive</b>	<b>Hazardous</b>
<b>Client Sample No</b>	<b>WS-201</b>			
<b>Depth/Other</b>	<b>2.00-3.00</b>			
<b>Sample Date</b>	<b>08/02/2019</b>			
<b>Batch No</b>	<b>1</b>			

<b>Solid Waste Analysis</b>				
Total Organic Carbon (%)	21.33	3	5	6
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 6 (mg/kg)	278.71	-	-	-
PAH Sum of 17 (mg/kg)	561.73	100	-	-

<b>Eluate Analysis</b>	<b>10:1 concn leached</b>	<b>Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg</b>		
	<b>A10 mg/kg</b>	<b>mg/kg</b>		
Arsenic	0.037	0.5	2	25
Barium	0.30	20	100	300
Cadmium	<0.005	0.04	1	5
Chromium	<0.015	0.5	10	70
Copper	<0.07	2	50	100
Mercury	<0.0001	0.01	0.2	2
Molybdenum	0.35	0.5	10	30
Nickel	<0.02	0.4	10	40
Lead	<0.05	0.5	10	50
Antimony	0.05	0.06	0.7	5
Selenium	<0.03	0.1	0.5	7
Zinc	<0.03	4	50	200
Chloride	21	800	15000	25000
Fluoride	<3	10	150	500
Sulphate as SO4	252	1000	20000	50000
Total Dissolved Solids	1240	4000	60000	100000
Phenol	<0.1	1	-	-
Dissolved Organic Carbon	30	500	800	1000

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Mass of sample taken (kg)	-	Dry Matter Content Ratio (%) =	86.8
Mass of dry sample (kg) =	0.09	Leachant Volume (l)	-
Particle Size <4mm =	>95%	Eluate Volume (l)	0.8

<b>JEFL Job No</b>	<b>19/2288</b>	<b>Landfill Waste Acceptance Criteria Limits</b>		
<b>Sample No</b>	<b>9</b>	<b>Inert</b>	<b>Stable Non-reactive</b>	<b>Hazardous</b>
<b>Client Sample No</b>	<b>WS-203</b>			
<b>Depth/Other</b>	<b>0.00-1.00</b>			
<b>Sample Date</b>	<b>08/02/2019</b>			
<b>Batch No</b>	<b>1</b>			

<b>Solid Waste Analysis</b>				
Total Organic Carbon (%)	NDP	3	5	6
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	68	500	-	-
PAH Sum of 6 (mg/kg)	31.09	-	-	-
PAH Sum of 17 (mg/kg)	71.85	100	-	-

<b>Eluate Analysis</b>	<b>10:1 concn leached</b>	<b>Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg</b>		
	<b>A10 mg/kg</b>	<b>mg/kg</b>		
Arsenic	0.069	0.5	2	25
Barium	0.13	20	100	300
Cadmium	<0.005	0.04	1	5
Chromium	0.022	0.5	10	70
Copper	<0.07	2	50	100
Mercury	0.0003	0.01	0.2	2
Molybdenum	0.07	0.5	10	30
Nickel	<0.02	0.4	10	40
Lead	<0.05	0.5	10	50
Antimony	<0.02	0.06	0.7	5
Selenium	<0.03	0.1	0.5	7
Zinc	<0.03	4	50	200
Chloride	30	800	15000	25000
Fluoride	<3	10	150	500
Sulphate as SO4	248	1000	20000	50000
Total Dissolved Solids	1569	4000	60000	100000
Phenol	<0.1	1	-	-
Dissolved Organic Carbon	<20	500	800	1000

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**Client Name:** O'Callaghan Moran & Associates  
**Reference:**  
**Location:** Castleforbes  
**Contact:** Conor McGrath

**Note:**

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

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

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

Signed on behalf of Jones Environmental Laboratory:



Ryan Butterworth  
 Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
19/2288	1	WS-201	2.00-3.00	2	18/02/2019	<b>General Description (Bulk Analysis)</b>	soil.stones
					18/02/2019	<b>Asbestos Fibres</b>	NAD
					18/02/2019	<b>Asbestos ACM</b>	NAD
					18/02/2019	<b>Asbestos Type</b>	NAD
					18/02/2019	<b>Asbestos Level Screen</b>	NAD
19/2288	1	WS-203	0.00-1.00	8	18/02/2019	<b>General Description (Bulk Analysis)</b>	soil.stones
					18/02/2019	<b>Asbestos Fibres</b>	Fibre Bundles
					18/02/2019	<b>Asbestos ACM</b>	NAD
					18/02/2019	<b>Asbestos Type</b>	Chrysotile
					18/02/2019	<b>Asbestos Level Screen</b>	less than 0.1%
					27/02/2019	<b>Total ACM Gravimetric Quantification (% Asb)</b>	<0.001 (mass %)
					27/02/2019	<b>Total Detailed Gravimetric Quantification (% Asb)</b>	<0.001 (mass %)
					27/02/2019	<b>Total Gravimetric Quantification (ACM + Detailed) (% Asb)</b>	<0.001 (mass %)
					27/02/2019	<b>Asbestos PCOM Quantification (Fibres)</b>	<0.001 (mass %)
					27/02/2019	<b>Asbestos Gravimetric &amp; PCOM Total</b>	<0.001 (mass %)





**Client Name:** O'Callaghan Moran & Associates

**Reference:**

**Location:** Castleforbes

**Contact:** Conor McGrath

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 19/2288						

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

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/2288

### SOILS

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

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

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

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

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

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

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

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

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

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

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

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

### WATERS

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

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

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

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

### DEVIATING SAMPLES

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

### SURROGATES

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

### DILUTIONS

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

### BLANKS

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

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

**ABBREVIATIONS and ACRONYMS USED**

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x10 Dilution

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

JE Job No.: 19/2288

Leachate tests	
10l/kg; 4mm	I.S. EN 12457-2:2002 Specified particle size; water added to L/S ratio; capped; agitated for 24 ± 0.5 hours; eluate settled and filtered over 0.45 µm membrane filter.
Eluate analysis	
As	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ba	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cd	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cr total	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cu	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Hg	I.S. EN 13370 rec. EN 1483 (CVAAS)
Mo	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ni	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Pb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Sb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Se	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Zn	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Chloride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Fluoride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Sulphate	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Phenol index	I.S. EN 13370 rec. ISO 6439 (4-Aminoantipyrine spectrometric methods after distillation)* ( BY HPLC - Jones Env)
DOC	I.S. EN 1484
TDS	I.S. EN 15216
Compositional analysis	
TOC	I.S. EN 13137 Method B: carbonates removed with acid; TOC by combustion.
BTEX	GC-FID
PCB7**	I.S. EN 15308 analysis by GC-ECD.
Mineral oil	I.S. EN 14039 C10 to C40 analysis by GC-FID.
PAH17***	I.S. EN 15527 PAH17 analysis by GC-MS
Metals	I.S. EN 13657 - Aqua regia digestion: EN ISO 11885 ( ICP-OES)
Other	
Dry matter	I.S. EN 14346 sample is dried to a constant mass in an oven at 105 ± 3 °C; Method B Water content by direct Karl-Fischer-titration and either volumetric or coulometric detection.
LOI	I.S. EN 15169 Difference in mass after heating in a furnace up to 550 ± 25 °C.
ANC	CEN/TS 15364 Determined by amounts of acid or base needed to cover the pH range
<p><b>Notes:</b></p> <p>*If not suitable due to LOD, precision, etc., any other suitable method can be used, e.g. AFS, ICP-MS</p> <p>**PCB-28, PCB-52, PCB-101, PCB-118, PCB-138, PCB-153 and PCB-180</p> <p>***Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.</p>	

JE Job No: 19/2288

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



JE Job No: 19/2288

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes

JE Job No: 19/2288

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.			AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Modified US EPA methods 245.7 and 200.7. Determination of Mercury by Cold Vapour Atomic Fluorescence.	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM61	As received solid samples are extracted with hot water in a 20:1 ratio of water to soil ready for analysis by ICP.			AR	Yes

JE Job No: 19/2288

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM119	As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis.			AR	Yes
TM108	Determination of Elemental Sulphur by Reversed Phase High Performance Liquid Chromatography with Ultra Violet spectroscopy.	PM114	End over end extraction of dried and crushed soil samples for organic analysis. The solvent mix varies depending on analysis required			AD	Yes
TM108	Determination of Elemental Sulphur by Reversed Phase High Performance Liquid Chromatography with Ultra Violet spectroscopy.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM131	Quantification of Asbestos Fibres and ACM, based on HSG248 and SCA method.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AR	Yes
NONE	No Method Code	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	



# Exova Jones Environmental

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

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

O'Callaghan Moran & Associates  
Unit 15  
Melbourne Business Park  
Model Farm  
Cork  
Ireland

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



**Attention :** Conor McGrath  
**Date :** 5th March, 2019  
**Your reference :** CF  
**Our reference :** Test Report 19/3105  
**Location :** CF  
**Date samples received :** 26th February, 2019  
**Status :** Final report  
**Issue :** 1

Twelve samples were received for analysis on 26th February, 2019 of which twelve were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

## Compiled By:

**Lucas Halliwell**  
Project Co-ordinator

Client Name: O'Callaghan Moran & Associates  
Reference: CF  
Location: CF  
Contact: Conor McGrath  
JE Job No.: 19/3105

Report : Solid

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

J E Sample No.	1	2	3	4	5	6	7	8	9	10			
Sample ID	ST1	ST1	ST1	ST2A	ST2A	ST2A	ST2B	ST2B	ST2B	ST2C			
Depth	0.10	1.20	2.30	0.10	1.20	2.30	0.10	1.20	2.30	0.10			
COC No / misc													
Containers	V	V	V	V	V	V	V	V	V	V			
Sample Date	25/02/2019	25/02/2019	25/02/2019	25/02/2019	25/02/2019	25/02/2019	25/02/2019	25/02/2019	25/02/2019	25/02/2019			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	26/02/2019	26/02/2019	26/02/2019	26/02/2019	26/02/2019	26/02/2019	26/02/2019	26/02/2019	26/02/2019	26/02/2019			
EPH (C8-C40) #	67691 <sup>AC</sup>	15393 <sup>AB</sup>	20476 <sup>AB</sup>	1633	1853	1572	2233	1775 <sup>AA</sup>	<30	2022	<30	mg/kg	TM5/PM8
Natural Moisture Content	26.8	42.9	44.7	23.6	54.9	41.5	15.8	20.1	35.9	31.1	<0.1	%	PM4/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: O'Callaghan Moran & Associates  
 Reference: CF  
 Location: CF  
 Contact: Conor McGrath  
 JE Job No.: 19/3105

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

J E Sample No.	11	12											
Sample ID	ST2C	ST2C											
Depth	1.20	2.30											
COC No / misc													
Containers	V	V											
Sample Date	25/02/2019	25/02/2019											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	26/02/2019	26/02/2019											
											LOD/LOR	Units	Method No.
EPH (C8-C40) #	1405	2781									<30	mg/kg	TM5/PM8
Natural Moisture Content	28.2	26.8									<0.1	%	PM4/PM0

Please see attached notes for all abbreviations and acronyms



**Client Name:** O'Callaghan Moran & Associates  
**Reference:** CF  
**Location:** CF  
**Contact:** Conor McGrath

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 19/3105						

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

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/3105

### SOILS

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

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

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

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

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

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

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

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

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

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

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

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

### WATERS

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

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

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

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

### DEVIATING SAMPLES

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

### SURROGATES

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

### DILUTIONS

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

### BLANKS

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

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

**ABBREVIATIONS and ACRONYMS USED**

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x2 Dilution
AB	x5 Dilution
AC	x10 Dilution

JE Job No: 19/3105

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

**Appendix 4**

**Waste Classification Reports**

# Waste Classification Report



GDDBG-2XXTY-VRWEH

## Job name

18-234-32 (17-05-04)

## Description/Comments

## Project

18-234-32

## Site

Castleforbes

## Related Documents

#	Name	Description
None		

## Waste Stream Template

O'Callaghan Moran Waste Stream

## Classified by

Name:  
**Austin Hynes**  
 Date:  
**10 Dec 2018 14:24 GMT**  
 Telephone:  
**021 4345366**

Company:  
**O'Callaghan Moran and Associates**  
**Unit 15 Melbourne Business Park**  
**Model Farm Road**  
**Cork**

## Report

Created by: Austin Hynes  
 Created date: 10 Dec 2018 14:24 GMT

## Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	WS1	1.0-2.0	Non Hazardous		3
2	WS1[1]	2.0-2.8	Non Hazardous		6
3	WS2	0.0-1.0	Non Hazardous		8
4	WS2[1]	1.0-2.0	Non Hazardous		11
5	WS2[2]	2.0-3.0	Non Hazardous		13
6	WS3	1.0-2.0	Non Hazardous		15
7	WS4	0.25-0.75	Non Hazardous		17
8	WS4[1]	1.0-2.0	Non Hazardous		20
9	WS05	1.0-2.0	Non Hazardous		23
10	WS05[1]	2.0-2.6	Non Hazardous		25
11	WS9	1.0-2.0	Non Hazardous		27
12	WS9[1]	2.0-2.8	Non Hazardous		29





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#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
13	WS10	2.0-3.0	Non Hazardous		31
14	WS12	0.25-0.75	Non Hazardous		33
15	WS12[1]	1.0-2.0	Non Hazardous		36
16	WS12[2]	2.0-3.0	Non Hazardous		38
17	WS14	1.0-2.0	Non Hazardous		40
18	WS14[1]	2.0-3.0	Non Hazardous		42
19	WS15	2.0-3.0	Non Hazardous		45
20	WS15[1]	3.0-4.0	Non Hazardous		47
21	WS15[2]	4.0-4.5	Non Hazardous		49
22	WS16	2.00-3.00	Non Hazardous		51
23	WS16[1]	3.00-4.00	Non Hazardous		53
24	WS18	1.0-2.0	Non Hazardous		55
25	WS18[1]	2.0-3.0	Non Hazardous		58
26	WS18[2]	3.0-4.0	Non Hazardous		60
27	WS30	2.0-3.0	Non Hazardous		62
28	WS30[1]	3.0-4.0	Non Hazardous		65
29	WS31	2.0-3.0	Non Hazardous		68
30	WS31[1]	3.0-4.0	Non Hazardous		71
31	WS31[2]	4.0-5.0	Non Hazardous		73

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	75
Appendix B: Rationale for selection of metal species	76
Appendix C: Version	77

## Classification of sample: WS1

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

Sample Name:	LoW Code:	
<b>WS1</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>1.0-2.0 m</b>		
Moisture content:		
<b>34.3%</b>		
(no correction)		

## Hazard properties

None identified

## Determinands

Moisture content: 34.3% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				13.9 mg/kg	1.32	18.353 mg/kg	0.00184 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				107.3 mg/kg	1.462	156.825 mg/kg	0.0157 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				43 mg/kg	1.126	48.413 mg/kg	0.00484 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	79 mg/kg	1.56	123.225 mg/kg	0.0079 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				0.3 mg/kg	1.353	0.406 mg/kg	0.0000406 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				6.1 mg/kg	1.5	9.151 mg/kg	0.000915 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				35.5 mg/kg	2.976	105.657 mg/kg	0.0106 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				151 mg/kg	1.245	187.952 mg/kg	0.0188 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				56 mg/kg		56 mg/kg	0.0056 %		
			TPH							



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.66 pH		7.66 pH	7.66 pH		
			PH							
20	naphthalene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.15 mg/kg		0.15 mg/kg	0.000015 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
		201-695-5	86-73-7							
24	phenanthrene				0.98 mg/kg		0.98 mg/kg	0.000098 %		
		201-581-5	85-01-8							
25	anthracene				0.23 mg/kg		0.23 mg/kg	0.000023 %		
		204-371-1	120-12-7							
26	fluoranthene				1.14 mg/kg		1.14 mg/kg	0.000114 %		
		205-912-4	206-44-0							
27	pyrene				0.97 mg/kg		0.97 mg/kg	0.000097 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.77 mg/kg		0.77 mg/kg	0.000077 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.63 mg/kg		0.63 mg/kg	0.000063 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.71 mg/kg		0.71 mg/kg	0.000071 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.28 mg/kg		0.28 mg/kg	0.000028 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.55 mg/kg		0.55 mg/kg	0.000055 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.31 mg/kg		0.31 mg/kg	0.000031 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.34 mg/kg		0.34 mg/kg	0.000034 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0675 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



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## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

---

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

---

TPH (C6 to C40) petroleum group: (conc.: 0.0056%)

Classification of sample: WS1[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name: <b>WS1[1]</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>2.0-2.8 m</b>	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content: <b>26.2%</b> (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 26.2% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				6	mg/kg	1.32	7.922	mg/kg	0.000792 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.1	mg/kg	1.142	0.114	mg/kg	0.0000114 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				131.2	mg/kg	1.462	191.756	mg/kg	0.0192 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				5	mg/kg	1.126	5.629	mg/kg	0.000563 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	15	mg/kg	1.56	23.397	mg/kg	0.0015 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				8.9	mg/kg	1.5	13.352	mg/kg	0.00134 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				14.4	mg/kg	2.976	42.858	mg/kg	0.00429 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	034-002-00-8											
12	zinc { zinc oxide }				34	mg/kg	1.245	42.32	mg/kg	0.00423 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				<52	mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.13 pH		8.13 pH	8.13 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.04 mg/kg		0.04 mg/kg	0.000004 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.23 mg/kg		0.23 mg/kg	0.000023 %		
		201-581-5	85-01-8							
25	anthracene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
		204-371-1	120-12-7							
26	fluoranthene				0.42 mg/kg		0.42 mg/kg	0.000042 %		
		205-912-4	206-44-0							
27	pyrene				0.4 mg/kg		0.4 mg/kg	0.00004 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.24 mg/kg		0.24 mg/kg	0.000024 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.2 mg/kg		0.2 mg/kg	0.00002 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.23 mg/kg		0.23 mg/kg	0.000023 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.19 mg/kg		0.19 mg/kg	0.000019 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0378 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS2

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	<b>WS2</b>	LoW Code:	
Sample Depth:	<b>0.0-1.0 m</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	<b>28.6%</b> (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 28.6% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				7	mg/kg	1.32	9.242	mg/kg	0.000924 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.2	mg/kg	1.142	0.228	mg/kg	0.0000228 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				114.5	mg/kg	1.462	167.348	mg/kg	0.0167 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				6	mg/kg	1.126	6.755	mg/kg	0.000676 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	10	mg/kg	1.56	15.598	mg/kg	0.001 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				7.3	mg/kg	1.5	10.951	mg/kg	0.0011 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				14.7	mg/kg	2.976	43.751	mg/kg	0.00438 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	034-002-00-8											
12	zinc { zinc oxide }				33	mg/kg	1.245	41.076	mg/kg	0.00411 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				349	mg/kg		349	mg/kg	0.0349 %		
			TPH									





environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.85 pH		7.85 pH	7.85 pH		
			PH							
20	naphthalene				0.77 mg/kg		0.77 mg/kg	0.000077 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.72 mg/kg		0.72 mg/kg	0.000072 %		
		205-917-1	208-96-8							
22	acenaphthene				0.14 mg/kg		0.14 mg/kg	0.000014 %		
		201-469-6	83-32-9							
23	fluorene				0.46 mg/kg		0.46 mg/kg	0.000046 %		
		201-695-5	86-73-7							
24	phenanthrene				2.26 mg/kg		2.26 mg/kg	0.000226 %		
		201-581-5	85-01-8							
25	anthracene				0.82 mg/kg		0.82 mg/kg	0.000082 %		
		204-371-1	120-12-7							
26	fluoranthene				5.08 mg/kg		5.08 mg/kg	0.000508 %		
		205-912-4	206-44-0							
27	pyrene				5.03 mg/kg		5.03 mg/kg	0.000503 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				2.97 mg/kg		2.97 mg/kg	0.000297 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				3.42 mg/kg		3.42 mg/kg	0.000342 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				5.8 mg/kg		5.8 mg/kg	0.00058 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				2.25 mg/kg		2.25 mg/kg	0.000225 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				4.15 mg/kg		4.15 mg/kg	0.000415 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				2.91 mg/kg		2.91 mg/kg	0.000291 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.59 mg/kg		0.59 mg/kg	0.000059 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				3.15 mg/kg		3.15 mg/kg	0.000315 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0683 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



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## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0349%)

Classification of sample: WS2[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS2[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>1.0-2.0 m</b>		
Moisture content:		
<b>20.1%</b>		
(no correction)		

Hazard properties

None identified

Determinands

Moisture content: 20.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				9.7 mg/kg	1.32	12.807 mg/kg	0.00128 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				151.4 mg/kg	1.462	221.28 mg/kg	0.0221 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				523 mg/kg	1.126	588.84 mg/kg	0.0589 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	91 mg/kg	1.56	141.943 mg/kg	0.0091 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				5.9 mg/kg	1.5	8.851 mg/kg	0.000885 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				30 mg/kg	2.976	89.288 mg/kg	0.00893 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				4 mg/kg	2.554	10.214 mg/kg	0.00102 %		
	034-002-00-8									
12	zinc { zinc oxide }				121 mg/kg	1.245	150.61 mg/kg	0.0151 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.86 pH		7.86 pH	7.86 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
		201-695-5	86-73-7							
24	phenanthrene				0.68 mg/kg		0.68 mg/kg	0.000068 %		
		201-581-5	85-01-8							
25	anthracene				0.35 mg/kg		0.35 mg/kg	0.000035 %		
		204-371-1	120-12-7							
26	fluoranthene				1.44 mg/kg		1.44 mg/kg	0.000144 %		
		205-912-4	206-44-0							
27	pyrene				0.92 mg/kg		0.92 mg/kg	0.000092 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.7 mg/kg		0.7 mg/kg	0.00007 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.62 mg/kg		0.62 mg/kg	0.000062 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.78 mg/kg		0.78 mg/kg	0.000078 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.3 mg/kg		0.3 mg/kg	0.00003 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.56 mg/kg		0.56 mg/kg	0.000056 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.29 mg/kg		0.29 mg/kg	0.000029 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.06 mg/kg		0.06 mg/kg	0.000006 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.3 mg/kg		0.3 mg/kg	0.00003 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.124 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS2[2]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS2[2]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>2.0-3.0 m</b>		
Moisture content:		
<b>33.4%</b>		
(no correction)		

Hazard properties

None identified

Determinands

Moisture content: 33.4% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				24 mg/kg	1.32	31.688 mg/kg	0.00317 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.5 mg/kg	1.142	0.571 mg/kg	0.0000571 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				78 mg/kg	1.462	114.001 mg/kg	0.0114 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				74 mg/kg	1.126	83.316 mg/kg	0.00833 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	245 mg/kg	1.56	382.155 mg/kg	0.0245 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				0.5 mg/kg	1.353	0.677 mg/kg	0.0000677 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				5.2 mg/kg	1.5	7.801 mg/kg	0.00078 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				38.2 mg/kg	2.976	113.693 mg/kg	0.0114 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				128 mg/kg	1.245	159.323 mg/kg	0.0159 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.14 pH		8.14 pH	8.14 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0815 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

### Classification of sample: WS3

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

### Sample details

Sample Name:	<b>WS3</b>	LoW Code:	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	<b>1.0-2.0 m</b>	Entry:		17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:	<b>34.8%</b> (no correction)			

### Hazard properties

None identified

### Determinands

Moisture content: 34.8% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				22.7 mg/kg	1.32	29.971 mg/kg	0.003 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.7 mg/kg	1.142	0.8 mg/kg	0.00008 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				103.5 mg/kg	1.462	151.271 mg/kg	0.0151 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				68 mg/kg	1.126	76.56 mg/kg	0.00766 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	242 mg/kg	1.56	377.475 mg/kg	0.0242 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				0.6 mg/kg	1.353	0.812 mg/kg	0.0000812 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				8 mg/kg	1.5	12.002 mg/kg	0.0012 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				44.2 mg/kg	2.976	131.551 mg/kg	0.0132 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %		
	034-002-00-8									
12	zinc { zinc oxide }				112 mg/kg	1.245	139.408 mg/kg	0.0139 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							





environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.25 pH		8.25 pH	8.25 pH		
			PH							
20	naphthalene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		205-917-1	208-96-8							
22	acenaphthene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
		201-469-6	83-32-9							
23	fluorene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
		201-695-5	86-73-7							
24	phenanthrene				1.46 mg/kg		1.46 mg/kg	0.000146 %		
		201-581-5	85-01-8							
25	anthracene				0.15 mg/kg		0.15 mg/kg	0.000015 %		
		204-371-1	120-12-7							
26	fluoranthene				0.9 mg/kg		0.9 mg/kg	0.00009 %		
		205-912-4	206-44-0							
27	pyrene				0.78 mg/kg		0.78 mg/kg	0.000078 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.49 mg/kg		0.49 mg/kg	0.000049 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.62 mg/kg		0.62 mg/kg	0.000062 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.58 mg/kg		0.58 mg/kg	0.000058 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.23 mg/kg		0.23 mg/kg	0.000023 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.39 mg/kg		0.39 mg/kg	0.000039 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.2 mg/kg		0.2 mg/kg	0.00002 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.26 mg/kg		0.26 mg/kg	0.000026 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0852 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Classification of sample: WS4

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

Sample Name:	<b>WS4</b>	LoW Code:	
Sample Depth:	<b>0.25-0.75 m</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	<b>25.1%</b> (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

## Hazard properties

None identified

## Determinands

Moisture content: 25.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				7 mg/kg	1.197	8.38 mg/kg	0.000838 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				29 mg/kg	1.32	38.289 mg/kg	0.00383 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.8 mg/kg	1.142	0.914 mg/kg	0.0000914 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				107.5 mg/kg	1.462	157.117 mg/kg	0.0157 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				783 mg/kg	1.126	881.571 mg/kg	0.0882 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	405 mg/kg	1.56	631.725 mg/kg	0.0405 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				7.4 mg/kg	1.5	11.101 mg/kg	0.00111 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				42.4 mg/kg	2.976	126.194 mg/kg	0.0126 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %		
	034-002-00-8									
12	zinc { zinc oxide }				344 mg/kg	1.245	428.182 mg/kg	0.0428 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				226 mg/kg		226 mg/kg	0.0226 %		
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.26 pH		8.26 pH	8.26 pH		
			PH							
20	naphthalene				<0.4 mg/kg		<0.4 mg/kg	<0.00004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.5 mg/kg		<0.5 mg/kg	<0.00005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.4 mg/kg		<0.4 mg/kg	<0.00004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				2.79 mg/kg		2.79 mg/kg	0.000279 %		
		201-581-5	85-01-8							
25	anthracene				<0.4 mg/kg		<0.4 mg/kg	<0.00004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				3.65 mg/kg		3.65 mg/kg	0.000365 %		
		205-912-4	206-44-0							
27	pyrene				3.37 mg/kg		3.37 mg/kg	0.000337 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				1.96 mg/kg		1.96 mg/kg	0.000196 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				2.18 mg/kg		2.18 mg/kg	0.000218 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				2.26 mg/kg		2.26 mg/kg	0.000226 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.88 mg/kg		0.88 mg/kg	0.000088 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				1.4 mg/kg		1.4 mg/kg	0.00014 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				1.04 mg/kg		1.04 mg/kg	0.000104 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.4 mg/kg		<0.4 mg/kg	<0.00004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				1.13 mg/kg		1.13 mg/kg	0.000113 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.231 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0226%)

Classification of sample: WS4[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name: <b>WS4[1]</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>1.0-2.0 m</b>	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content: <b>38.3%</b> (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 38.3% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				5	mg/kg	1.197	5.986	mg/kg	0.000599 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				45.3	mg/kg	1.32	59.811	mg/kg	0.00598 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.9	mg/kg	1.142	1.028	mg/kg	0.000103 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				107.4	mg/kg	1.462	156.971	mg/kg	0.0157 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				203	mg/kg	1.126	228.555	mg/kg	0.0229 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	536	mg/kg	1.56	836.061	mg/kg	0.0536 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				1.6	mg/kg	1.353	2.166	mg/kg	0.000217 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				7.4	mg/kg	1.5	11.101	mg/kg	0.00111 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				51.5	mg/kg	2.976	153.278	mg/kg	0.0153 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2	mg/kg	2.554	5.107	mg/kg	0.000511 %		
	034-002-00-8											
12	zinc { zinc oxide }				266	mg/kg	1.245	331.094	mg/kg	0.0331 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				519	mg/kg		519	mg/kg	0.0519 %		
			TPH									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.12 pH		8.12 pH	8.12 pH		
			PH							
20	naphthalene				1.8 mg/kg		1.8 mg/kg	0.00018 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.51 mg/kg		0.51 mg/kg	0.000051 %		
		205-917-1	208-96-8							
22	acenaphthene				2.24 mg/kg		2.24 mg/kg	0.000224 %		
		201-469-6	83-32-9							
23	fluorene				1.45 mg/kg		1.45 mg/kg	0.000145 %		
		201-695-5	86-73-7							
24	phenanthrene				23.29 mg/kg		23.29 mg/kg	0.00233 %		
		201-581-5	85-01-8							
25	anthracene				3.65 mg/kg		3.65 mg/kg	0.000365 %		
		204-371-1	120-12-7							
26	fluoranthene				33.8 mg/kg		33.8 mg/kg	0.00338 %		
		205-912-4	206-44-0							
27	pyrene				30.85 mg/kg		30.85 mg/kg	0.00309 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				18.74 mg/kg		18.74 mg/kg	0.00187 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				22.21 mg/kg		22.21 mg/kg	0.00222 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				28.96 mg/kg		28.96 mg/kg	0.0029 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				11.26 mg/kg		11.26 mg/kg	0.00113 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				20.84 mg/kg		20.84 mg/kg	0.00208 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				13.19 mg/kg		13.19 mg/kg	0.00132 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				3.75 mg/kg		3.75 mg/kg	0.000375 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				16.49 mg/kg		16.49 mg/kg	0.00165 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.224 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0519%)



## Classification of sample: WS05

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

Sample Name:	LoW Code:	
<b>WS05</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>1.0-2.0 m</b>		
Moisture content:		
<b>25.4%</b>		
(no correction)		

## Hazard properties

None identified

## Determinands

Moisture content: 25.4% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				28.6 mg/kg	1.32	37.761 mg/kg	0.00378 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				38.2 mg/kg	1.462	55.831 mg/kg	0.00558 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				33 mg/kg	1.126	37.154 mg/kg	0.00372 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	85 mg/kg	1.56	132.584 mg/kg	0.0085 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				0.4 mg/kg	1.353	0.541 mg/kg	0.0000541 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				2.3 mg/kg	1.5	3.45 mg/kg	0.000345 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				22.6 mg/kg	2.976	67.264 mg/kg	0.00673 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				63 mg/kg	1.245	78.417 mg/kg	0.00784 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X 216-653-1 1634-04-4				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
15	benzene 601-020-00-8 200-753-7 71-43-2				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
16	toluene 601-021-00-3 203-625-9 108-88-3				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
17	ethylbenzene 601-023-00-4 202-849-4 100-41-4				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
18	xylene 601-022-00-9 202-422-2 [1] 95-47-6 [1] 203-396-5 [2] 106-42-3 [2] 203-576-3 [3] 108-38-3 [3] 215-535-7 [4] 1330-20-7 [4]				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	pH PH				7.93 pH		7.93 pH	7.93 pH		
20	naphthalene 601-052-00-2 202-049-5 91-20-3				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
21	acenaphthylene 205-917-1 208-96-8				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
22	acenaphthene 201-469-6 83-32-9				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	fluorene 201-695-5 86-73-7				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
24	phenanthrene 201-581-5 85-01-8				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
25	anthracene 204-371-1 120-12-7				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
26	fluoranthene 205-912-4 206-44-0				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
27	pyrene 204-927-3 129-00-0				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
28	benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
29	chrysene 601-048-00-0 205-923-4 218-01-9				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
30	benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
31	benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 200-028-5 50-32-8				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
33	indeno[123-cd]pyrene 205-893-2 193-39-5				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
34	dibenz[a,h]anthracene 601-041-00-2 200-181-8 53-70-3				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
35	benzo[ghi]perylene 205-883-8 191-24-2				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
36	polychlorobiphenyls; PCB 602-039-00-4 215-648-1 1336-36-3				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
Total:								0.0425 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS05[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS05[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>2.0-2.6 m</b>		
Moisture content:		
<b>29.6%</b>		
(no correction)		

Hazard properties

None identified

Determinands

Moisture content: 29.6% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				1 mg/kg	1.197	1.197 mg/kg	0.00012 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				8.5 mg/kg	1.32	11.223 mg/kg	0.00112 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				61.7 mg/kg	1.462	90.178 mg/kg	0.00902 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				6 mg/kg	1.126	6.755 mg/kg	0.000676 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				3.5 mg/kg	1.5	5.251 mg/kg	0.000525 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				23.6 mg/kg	2.976	70.24 mg/kg	0.00702 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc oxide }				58 mg/kg	1.245	72.193 mg/kg	0.00722 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.15 pH		8.15 pH	8.15 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0324 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Classification of sample: WS9

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

Sample Name:	LoW Code:	
<b>WS9</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>1.0-2.0 m</b>		
Moisture content:		
<b>33.9%</b>		
(no correction)		

## Hazard properties

None identified

## Determinands

Moisture content: 33.9% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				14.4 mg/kg	1.32	19.013 mg/kg	0.0019 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.4 mg/kg	1.142	0.457 mg/kg	0.0000457 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				147.5 mg/kg	1.462	215.579 mg/kg	0.0216 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				33 mg/kg	1.126	37.154 mg/kg	0.00372 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	171 mg/kg	1.56	266.728 mg/kg	0.0171 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				0.3 mg/kg	1.353	0.406 mg/kg	0.0000406 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				9.3 mg/kg	1.5	13.952 mg/kg	0.0014 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				32.3 mg/kg	2.976	96.133 mg/kg	0.00961 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				70 mg/kg	1.245	87.13 mg/kg	0.00871 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.89 pH		7.89 pH	7.89 pH		
			PH							
20	naphthalene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.04 mg/kg		0.04 mg/kg	0.000004 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				0.05 mg/kg		0.05 mg/kg	0.000005 %		
		201-695-5	86-73-7							
24	phenanthrene				0.66 mg/kg		0.66 mg/kg	0.000066 %		
		201-581-5	85-01-8							
25	anthracene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		204-371-1	120-12-7							
26	fluoranthene				0.29 mg/kg		0.29 mg/kg	0.000029 %		
		205-912-4	206-44-0							
27	pyrene				0.24 mg/kg		0.24 mg/kg	0.000024 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.17 mg/kg		0.17 mg/kg	0.000017 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.21 mg/kg		0.21 mg/kg	0.000021 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.17 mg/kg		0.17 mg/kg	0.000017 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0702 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS9[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS9[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>2.0-2.8 m</b>		
Moisture content:		
<b>25.3%</b>		
(no correction)		

Hazard properties

None identified

Determinands

Moisture content: 25.3% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				20.4 mg/kg	1.32	26.935 mg/kg	0.00269 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.5 mg/kg	1.142	0.571 mg/kg	0.0000571 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				75.5 mg/kg	1.462	110.347 mg/kg	0.011 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				370 mg/kg	1.126	416.579 mg/kg	0.0417 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	299 mg/kg	1.56	466.385 mg/kg	0.0299 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				6 mg/kg	1.5	9.001 mg/kg	0.0009 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				40.2 mg/kg	2.976	119.646 mg/kg	0.012 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %		
	034-002-00-8									
12	zinc { zinc oxide }				1459 mg/kg	1.245	1816.038 mg/kg	0.182 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							





environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.13 pH		8.13 pH	8.13 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.26 mg/kg		0.26 mg/kg	0.000026 %		
		201-581-5	85-01-8							
25	anthracene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		204-371-1	120-12-7							
26	fluoranthene				0.5 mg/kg		0.5 mg/kg	0.00005 %		
		205-912-4	206-44-0							
27	pyrene				0.46 mg/kg		0.46 mg/kg	0.000046 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.25 mg/kg		0.25 mg/kg	0.000025 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.26 mg/kg		0.26 mg/kg	0.000026 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.29 mg/kg		0.29 mg/kg	0.000029 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.21 mg/kg		0.21 mg/kg	0.000021 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.286 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Classification of sample: WS10

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

Sample Name:	LoW Code:	
<b>WS10</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>2.0-3.0 m</b>		
Moisture content:		
<b>22.7%</b>		
(no correction)		

## Hazard properties

None identified

## Determinands

Moisture content: **22.7%** No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				1 mg/kg	1.197	1.197 mg/kg	0.00012 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				8 mg/kg	1.32	10.563 mg/kg	0.00106 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				137.2 mg/kg	1.462	200.525 mg/kg	0.0201 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				8 mg/kg	1.126	9.007 mg/kg	0.000901 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	14 mg/kg	1.56	21.837 mg/kg	0.0014 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				8.4 mg/kg	1.5	12.602 mg/kg	0.00126 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				20.7 mg/kg	2.976	61.609 mg/kg	0.00616 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc oxide }				48 mg/kg	1.245	59.746 mg/kg	0.00597 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.1 pH		8.1 pH	8.1 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0426 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Classification of sample: WS12

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS12</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>0.25-0.75 m</b>		
Moisture content:		
<b>31.3%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 31.3% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				6 mg/kg	1.197	7.183 mg/kg	0.000718 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				36.3 mg/kg	1.32	47.928 mg/kg	0.00479 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				1.5 mg/kg	1.142	1.713 mg/kg	0.000171 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				109.9 mg/kg	1.462	160.625 mg/kg	0.0161 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				416 mg/kg	1.126	468.37 mg/kg	0.0468 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	718 mg/kg	1.56	1119.947 mg/kg	0.0718 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				0.4 mg/kg	1.353	0.541 mg/kg	0.0000541 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				11.5 mg/kg	1.5	17.252 mg/kg	0.00173 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				68 mg/kg	2.976	202.386 mg/kg	0.0202 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				3 mg/kg	2.554	7.661 mg/kg	0.000766 %		
	034-002-00-8									
12	zinc { zinc oxide }				770 mg/kg	1.245	958.43 mg/kg	0.0958 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				607 mg/kg		607 mg/kg	0.0607 %		
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.88 pH		7.88 pH	7.88 pH		
			PH							
20	naphthalene				0.64 mg/kg		0.64 mg/kg	0.000064 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.33 mg/kg		0.33 mg/kg	0.000033 %		
		205-917-1	208-96-8							
22	acenaphthene				0.39 mg/kg		0.39 mg/kg	0.000039 %		
		201-469-6	83-32-9							
23	fluorene				0.67 mg/kg		0.67 mg/kg	0.000067 %		
		201-695-5	86-73-7							
24	phenanthrene				5.67 mg/kg		5.67 mg/kg	0.000567 %		
		201-581-5	85-01-8							
25	anthracene				1.39 mg/kg		1.39 mg/kg	0.000139 %		
		204-371-1	120-12-7							
26	fluoranthene				7.46 mg/kg		7.46 mg/kg	0.000746 %		
		205-912-4	206-44-0							
27	pyrene				6.34 mg/kg		6.34 mg/kg	0.000634 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				4.37 mg/kg		4.37 mg/kg	0.000437 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				3.7 mg/kg		3.7 mg/kg	0.00037 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				4.96 mg/kg		4.96 mg/kg	0.000496 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				1.93 mg/kg		1.93 mg/kg	0.000193 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				3.32 mg/kg		3.32 mg/kg	0.000332 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				2.31 mg/kg		2.31 mg/kg	0.000231 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.64 mg/kg		0.64 mg/kg	0.000064 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				2.04 mg/kg		2.04 mg/kg	0.000204 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.324 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



environmental management for business

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## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0607%)

Classification of sample: WS12[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name: <b>WS12[1]</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>1.0-2.0 m</b>	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content: <b>58.4%</b> (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 58.4% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				3	mg/kg	1.197	3.591	mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				19	mg/kg	1.32	25.086	mg/kg	0.00251 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.9	mg/kg	1.142	1.028	mg/kg	0.000103 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				101.2	mg/kg	1.462	147.909	mg/kg	0.0148 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				83	mg/kg	1.126	93.449	mg/kg	0.00934 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	188	mg/kg	1.56	293.245	mg/kg	0.0188 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				0.6	mg/kg	1.353	0.812	mg/kg	0.0000812 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				7.3	mg/kg	1.5	10.951	mg/kg	0.0011 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				43.8	mg/kg	2.976	130.36	mg/kg	0.013 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2	mg/kg	2.554	5.107	mg/kg	0.000511 %		
	034-002-00-8											
12	zinc { zinc oxide }				121	mg/kg	1.245	150.61	mg/kg	0.0151 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				<52	mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH									





environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.59 pH		7.59 pH	7.59 pH		
			PH							
20	naphthalene				0.7 mg/kg		0.7 mg/kg	0.00007 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		205-917-1	208-96-8							
22	acenaphthene				0.22 mg/kg		0.22 mg/kg	0.000022 %		
		201-469-6	83-32-9							
23	fluorene				0.29 mg/kg		0.29 mg/kg	0.000029 %		
		201-695-5	86-73-7							
24	phenanthrene				2.09 mg/kg		2.09 mg/kg	0.000209 %		
		201-581-5	85-01-8							
25	anthracene				0.67 mg/kg		0.67 mg/kg	0.000067 %		
		204-371-1	120-12-7							
26	fluoranthene				4.28 mg/kg		4.28 mg/kg	0.000428 %		
		205-912-4	206-44-0							
27	pyrene				3.55 mg/kg		3.55 mg/kg	0.000355 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				1.85 mg/kg		1.85 mg/kg	0.000185 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				1.98 mg/kg		1.98 mg/kg	0.000198 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				2.48 mg/kg		2.48 mg/kg	0.000248 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.97 mg/kg		0.97 mg/kg	0.000097 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				1.82 mg/kg		1.82 mg/kg	0.000182 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				1.08 mg/kg		1.08 mg/kg	0.000108 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.32 mg/kg		0.32 mg/kg	0.000032 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.97 mg/kg		0.97 mg/kg	0.000097 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0833 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS12[2]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name: <b>WS12[2]</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>2.0-3.0 m</b>	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content: <b>48%</b> (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 48% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				1 mg/kg	1.197	1.197	mg/kg	0.00012 %		
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				14 mg/kg	1.32	18.485	mg/kg	0.00185 %		
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.343	mg/kg	0.0000343 %		
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide }				63.5 mg/kg	1.462	92.809	mg/kg	0.00928 %		
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	copper { dicopper oxide; copper (I) oxide }				12 mg/kg	1.126	13.511	mg/kg	0.00135 %		
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	22 mg/kg	1.56	34.316	mg/kg	0.0022 %		
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				3.3 mg/kg	1.5	4.951	mg/kg	0.000495 %		
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				37.1 mg/kg	2.976	110.419	mg/kg	0.011 %		
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554	mg/kg	0.000255 %		
	034-002-00-8										
12	zinc { zinc oxide }				93 mg/kg	1.245	115.758	mg/kg	0.0116 %		
	030-013-00-7	215-222-5	1314-13-2								
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH								



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.68 pH		8.68 pH	8.68 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0435 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS14

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	<b>WS14</b>	LoW Code:	
Sample Depth:	<b>1.0-2.0 m</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	<b>24.4%</b> (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 24.4% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				3	mg/kg	1.197	3.591	mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				18.4	mg/kg	1.32	24.294	mg/kg	0.00243 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.1	mg/kg	1.142	0.114	mg/kg	0.0000114 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				91.9	mg/kg	1.462	134.317	mg/kg	0.0134 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				86	mg/kg	1.126	96.826	mg/kg	0.00968 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	344	mg/kg	1.56	536.576	mg/kg	0.0344 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				9.9	mg/kg	1.5	14.852	mg/kg	0.00149 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				50.7	mg/kg	2.976	150.897	mg/kg	0.0151 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				3	mg/kg	2.554	7.661	mg/kg	0.000766 %		
	034-002-00-8											
12	zinc { zinc oxide }				148	mg/kg	1.245	184.218	mg/kg	0.0184 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				<52	mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.64 pH		7.64 pH	7.64 pH		
			PH							
20	naphthalene				0.25 mg/kg		0.25 mg/kg	0.000025 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
		201-695-5	86-73-7							
24	phenanthrene				1.02 mg/kg		1.02 mg/kg	0.000102 %		
		201-581-5	85-01-8							
25	anthracene				0.16 mg/kg		0.16 mg/kg	0.000016 %		
		204-371-1	120-12-7							
26	fluoranthene				1.17 mg/kg		1.17 mg/kg	0.000117 %		
		205-912-4	206-44-0							
27	pyrene				0.9 mg/kg		0.9 mg/kg	0.00009 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.32 mg/kg		0.32 mg/kg	0.000032 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.41 mg/kg		0.41 mg/kg	0.000041 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.32 mg/kg		0.32 mg/kg	0.000032 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.15 mg/kg		0.15 mg/kg	0.000015 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.06 mg/kg		0.06 mg/kg	0.000006 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.06 mg/kg		0.06 mg/kg	0.000006 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.102 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS14[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name: <b>WS14[1]</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>2.0-3.0 m</b>	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content: <b>90.5%</b> (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 90.5% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				6	mg/kg	1.197	7.183	mg/kg	0.000718 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				28.6	mg/kg	1.32	37.761	mg/kg	0.00378 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.7	mg/kg	1.142	0.8	mg/kg	0.00008 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				66.1	mg/kg	1.462	96.609	mg/kg	0.00966 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				104	mg/kg	1.126	117.092	mg/kg	0.0117 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	584	mg/kg	1.56	910.932	mg/kg	0.0584 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				1.6	mg/kg	1.353	2.166	mg/kg	0.000217 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				6	mg/kg	1.5	9.001	mg/kg	0.0009 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				49.1	mg/kg	2.976	146.135	mg/kg	0.0146 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
	034-002-00-8											
12	zinc { zinc oxide }				154	mg/kg	1.245	191.686	mg/kg	0.0192 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				88	mg/kg		88	mg/kg	0.0088 %		
			TPH									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.28 pH		7.28 pH	7.28 pH		
			PH							
20	naphthalene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.7 mg/kg		0.7 mg/kg	0.00007 %		
		201-581-5	85-01-8							
25	anthracene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		204-371-1	120-12-7							
26	fluoranthene				0.19 mg/kg		0.19 mg/kg	0.000019 %		
		205-912-4	206-44-0							
27	pyrene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.17 mg/kg		0.17 mg/kg	0.000017 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.23 mg/kg		0.23 mg/kg	0.000023 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.19 mg/kg		0.19 mg/kg	0.000019 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.129 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification





## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0088%)

## Classification of sample: WS15

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS15</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>2.0-3.0 m</b>		
Moisture content:		
<b>31.1%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 31.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				4 mg/kg	1.197	4.788 mg/kg	0.000479 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				22.8 mg/kg	1.32	30.103 mg/kg	0.00301 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.9 mg/kg	1.142	1.028 mg/kg	0.000103 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				121 mg/kg	1.462	176.848 mg/kg	0.0177 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				73 mg/kg	1.126	82.19 mg/kg	0.00822 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	280 mg/kg	1.56	436.748 mg/kg	0.028 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				0.6 mg/kg	1.353	0.812 mg/kg	0.0000812 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				9.3 mg/kg	1.5	13.952 mg/kg	0.0014 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				79.8 mg/kg	2.976	237.506 mg/kg	0.0238 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %		
	034-002-00-8									
12	zinc { zinc oxide }				124 mg/kg	1.245	154.345 mg/kg	0.0154 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.7 pH		7.7 pH	7.7 pH		
			PH							
20	naphthalene				0.05 mg/kg		0.05 mg/kg	0.000005 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.41 mg/kg		0.41 mg/kg	0.000041 %		
		201-581-5	85-01-8							
25	anthracene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
		204-371-1	120-12-7							
26	fluoranthene				0.17 mg/kg		0.17 mg/kg	0.000017 %		
		205-912-4	206-44-0							
27	pyrene				0.16 mg/kg		0.16 mg/kg	0.000016 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.18 mg/kg		0.18 mg/kg	0.000018 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.17 mg/kg		0.17 mg/kg	0.000017 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.14 mg/kg		0.14 mg/kg	0.000014 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.06 mg/kg		0.06 mg/kg	0.000006 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.104 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS15[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS15[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>3.0-4.0 m</b>		
Moisture content:		
<b>26.4%</b>		
(no correction)		

Hazard properties

None identified

Determinands

Moisture content: 26.4% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				1 mg/kg	1.197	1.197 mg/kg	0.00012 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				8.5 mg/kg	1.32	11.223 mg/kg	0.00112 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				139.1 mg/kg	1.462	203.302 mg/kg	0.0203 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				4 mg/kg	1.126	4.504 mg/kg	0.00045 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	10 mg/kg	1.56	15.598 mg/kg	0.001 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				8.3 mg/kg	1.5	12.452 mg/kg	0.00125 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				18.9 mg/kg	2.976	56.251 mg/kg	0.00563 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				45 mg/kg	1.245	56.012 mg/kg	0.0056 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.84 pH		7.84 pH	7.84 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0411 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS15[2]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS15[2]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>4.0-4.5 m</b>		
Moisture content:		
<b>41.8%</b>		
(no correction)		

Hazard properties

None identified

Determinands

Moisture content: 41.8% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				1 mg/kg	1.197	1.197 mg/kg	0.00012 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				6.7 mg/kg	1.32	8.846 mg/kg	0.000885 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				119.4 mg/kg	1.462	174.51 mg/kg	0.0175 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				5 mg/kg	1.126	5.629 mg/kg	0.000563 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	12 mg/kg	1.56	18.718 mg/kg	0.0012 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				10.4 mg/kg	1.5	15.602 mg/kg	0.00156 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				23.2 mg/kg	2.976	69.049 mg/kg	0.0069 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc oxide }				58 mg/kg	1.245	72.193 mg/kg	0.00722 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.97 pH		7.97 pH	7.97 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0415 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



## Classification of sample: WS16

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS16</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>2.00-3.00 m</b>		
Moisture content:		
<b>26.1%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 26.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				20.2 mg/kg	1.32	26.671 mg/kg	0.00267 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.5 mg/kg	1.142	0.571 mg/kg	0.0000571 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				69.3 mg/kg	1.462	101.286 mg/kg	0.0101 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				60 mg/kg	1.126	67.553 mg/kg	0.00676 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	218 mg/kg	1.56	340.04 mg/kg	0.0218 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				1.4 mg/kg	1.353	1.895 mg/kg	0.000189 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				4.3 mg/kg	1.5	6.451 mg/kg	0.000645 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				34 mg/kg	2.976	101.193 mg/kg	0.0101 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc oxide }				121 mg/kg	1.245	150.61 mg/kg	0.0151 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.81 pH		7.81 pH	7.81 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.05 mg/kg		0.05 mg/kg	0.000005 %		
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				0.04 mg/kg		0.04 mg/kg	0.000004 %		
		205-912-4	206-44-0							
27	pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0734 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Classification of sample: WS16[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS16[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>3.00-4.00 m</b>		
Moisture content:		
<b>23.9%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 23.9% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				9.3 mg/kg	1.32	12.279 mg/kg	0.00123 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				106.7 mg/kg	1.462	155.948 mg/kg	0.0156 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				8 mg/kg	1.126	9.007 mg/kg	0.000901 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	22 mg/kg	1.56	34.316 mg/kg	0.0022 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				3.5 mg/kg	1.5	5.251 mg/kg	0.000525 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				14.9 mg/kg	2.976	44.346 mg/kg	0.00443 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc oxide }				34 mg/kg	1.245	42.32 mg/kg	0.00423 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.59 pH		8.59 pH	8.59 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.035 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

### Classification of sample: WS18

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS18</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>1.0-2.0 m</b>		
Moisture content:		
<b>23.1%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 23.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				22.9 mg/kg	1.32	30.235 mg/kg	0.00302 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.8 mg/kg	1.142	0.914 mg/kg	0.0000914 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				78.3 mg/kg	1.462	114.44 mg/kg	0.0114 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				82 mg/kg	1.126	92.323 mg/kg	0.00923 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	155 mg/kg	1.56	241.771 mg/kg	0.0155 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				0.2 mg/kg	1.353	0.271 mg/kg	0.0000271 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				6.2 mg/kg	1.5	9.301 mg/kg	0.00093 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				39.6 mg/kg	2.976	117.86 mg/kg	0.0118 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %		
	034-002-00-8									
12	zinc { zinc oxide }				153 mg/kg	1.245	190.441 mg/kg	0.019 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				92 mg/kg		92 mg/kg	0.0092 %		
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.38 pH		8.38 pH	8.38 pH		
			PH							
20	naphthalene				0.68 mg/kg		0.68 mg/kg	0.000068 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
		205-917-1	208-96-8							
22	acenaphthene				0.06 mg/kg		0.06 mg/kg	0.000006 %		
		201-469-6	83-32-9							
23	fluorene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		201-695-5	86-73-7							
24	phenanthrene				1.43 mg/kg		1.43 mg/kg	0.000143 %		
		201-581-5	85-01-8							
25	anthracene				0.18 mg/kg		0.18 mg/kg	0.000018 %		
		204-371-1	120-12-7							
26	fluoranthene				1.14 mg/kg		1.14 mg/kg	0.000114 %		
		205-912-4	206-44-0							
27	pyrene				1.14 mg/kg		1.14 mg/kg	0.000114 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.66 mg/kg		0.66 mg/kg	0.000066 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.87 mg/kg		0.87 mg/kg	0.000087 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.97 mg/kg		0.97 mg/kg	0.000097 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.38 mg/kg		0.38 mg/kg	0.000038 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.69 mg/kg		0.69 mg/kg	0.000069 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.46 mg/kg		0.46 mg/kg	0.000046 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.14 mg/kg		0.14 mg/kg	0.000014 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.44 mg/kg		0.44 mg/kg	0.000044 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.082 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



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## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0092%)



Classification of sample: WS18[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS18[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>2.0-3.0 m</b>		
Moisture content:		
<b>30.5%</b>		
(no correction)		

Hazard properties

None identified

Determinands

Moisture content: 30.5% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				8.7 mg/kg	1.32	11.487 mg/kg	0.00115 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				149.9 mg/kg	1.462	219.087 mg/kg	0.0219 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				50 mg/kg	1.126	56.294 mg/kg	0.00563 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	51 mg/kg	1.56	79.551 mg/kg	0.0051 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				9.5 mg/kg	1.5	14.252 mg/kg	0.00143 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				15.2 mg/kg	2.976	45.239 mg/kg	0.00452 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc oxide }				47 mg/kg	1.245	58.502 mg/kg	0.00585 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.54 pH		8.54 pH	8.54 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.22 mg/kg		0.22 mg/kg	0.000022 %		
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
		205-912-4	206-44-0							
27	pyrene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.03 mg/kg		0.03 mg/kg	0.000003 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.05 mg/kg		0.05 mg/kg	0.000005 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0515 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

**Classification of sample: WS18[2]**

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

**Sample details**

Sample Name: <b>WS18[2]</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>3.0-4.0 m</b>	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content: <b>18.4%</b> (no correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: **18.4%** No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				2	mg/kg	1.197	2.394	mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				10.2	mg/kg	1.32	13.467	mg/kg	0.00135 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.2	mg/kg	1.142	0.228	mg/kg	0.0000228 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				155.7	mg/kg	1.462	227.564	mg/kg	0.0228 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				8	mg/kg	1.126	9.007	mg/kg	0.000901 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	21	mg/kg	1.56	32.756	mg/kg	0.0021 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				9.9	mg/kg	1.5	14.852	mg/kg	0.00149 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				13.6	mg/kg	2.976	40.477	mg/kg	0.00405 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	034-002-00-8											
12	zinc { zinc oxide }				39	mg/kg	1.245	48.544	mg/kg	0.00485 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				<52	mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.57 pH		8.57 pH	8.57 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		205-912-4	206-44-0							
27	pyrene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.06 mg/kg		0.06 mg/kg	0.000006 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0434 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS30

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name: <b>WS30</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>2.0-3.0 m</b>	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content: <b>24.1%</b> (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 24.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				3	mg/kg	1.197	3.591	mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				23.6	mg/kg	1.32	31.16	mg/kg	0.00312 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.7	mg/kg	1.142	0.8	mg/kg	0.00008 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				66.3	mg/kg	1.462	96.901	mg/kg	0.00969 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				104	mg/kg	1.126	117.092	mg/kg	0.0117 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	236	mg/kg	1.56	368.116	mg/kg	0.0236 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				1	mg/kg	1.353	1.353	mg/kg	0.000135 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				2.5	mg/kg	1.5	3.75	mg/kg	0.000375 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				32.2	mg/kg	2.976	95.836	mg/kg	0.00958 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
	034-002-00-8											
12	zinc { zinc oxide }				300	mg/kg	1.245	373.414	mg/kg	0.0373 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				390	mg/kg		390	mg/kg	0.039 %		
			TPH									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.11 pH		8.11 pH	8.11 pH		
			PH							
20	naphthalene				1.46 mg/kg		1.46 mg/kg	0.000146 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.27 mg/kg		0.27 mg/kg	0.000027 %		
		205-917-1	208-96-8							
22	acenaphthene				1.37 mg/kg		1.37 mg/kg	0.000137 %		
		201-469-6	83-32-9							
23	fluorene				1.25 mg/kg		1.25 mg/kg	0.000125 %		
		201-695-5	86-73-7							
24	phenanthrene				15.04 mg/kg		15.04 mg/kg	0.0015 %		
		201-581-5	85-01-8							
25	anthracene				1.8 mg/kg		1.8 mg/kg	0.00018 %		
		204-371-1	120-12-7							
26	fluoranthene				17.72 mg/kg		17.72 mg/kg	0.00177 %		
		205-912-4	206-44-0							
27	pyrene				15.55 mg/kg		15.55 mg/kg	0.00156 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				6.33 mg/kg		6.33 mg/kg	0.000633 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				8.29 mg/kg		8.29 mg/kg	0.000829 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				9.04 mg/kg		9.04 mg/kg	0.000904 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				3.51 mg/kg		3.51 mg/kg	0.000351 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				5.71 mg/kg		5.71 mg/kg	0.000571 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				3.65 mg/kg		3.65 mg/kg	0.000365 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.99 mg/kg		0.99 mg/kg	0.000099 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				3.49 mg/kg		3.49 mg/kg	0.000349 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.145 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.039%)



Classification of sample: WS30[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS30[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>3.0-4.0 m</b>		
Moisture content:		
<b>29.3%</b>		
(no correction)		

Hazard properties

None identified

Determinands

Moisture content: 29.3% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				12.3 mg/kg	1.32	16.24 mg/kg	0.00162 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.7 mg/kg	1.142	0.8 mg/kg	0.00008 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				72.5 mg/kg	1.462	105.963 mg/kg	0.0106 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				53 mg/kg	1.126	59.672 mg/kg	0.00597 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	169 mg/kg	1.56	263.609 mg/kg	0.0169 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				0.5 mg/kg	1.353	0.677 mg/kg	0.0000677 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				3.9 mg/kg	1.5	5.851 mg/kg	0.000585 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				25.6 mg/kg	2.976	76.192 mg/kg	0.00762 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				124 mg/kg	1.245	154.345 mg/kg	0.0154 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				205 mg/kg		205 mg/kg	0.0205 %		
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.82 pH		7.82 pH	7.82 pH		
			PH							
20	naphthalene				0.41 mg/kg		0.41 mg/kg	0.000041 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		205-917-1	208-96-8							
22	acenaphthene				0.22 mg/kg		0.22 mg/kg	0.000022 %		
		201-469-6	83-32-9							
23	fluorene				0.41 mg/kg		0.41 mg/kg	0.000041 %		
		201-695-5	86-73-7							
24	phenanthrene				2.62 mg/kg		2.62 mg/kg	0.000262 %		
		201-581-5	85-01-8							
25	anthracene				0.65 mg/kg		0.65 mg/kg	0.000065 %		
		204-371-1	120-12-7							
26	fluoranthene				3.3 mg/kg		3.3 mg/kg	0.00033 %		
		205-912-4	206-44-0							
27	pyrene				3 mg/kg		3 mg/kg	0.0003 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				1.37 mg/kg		1.37 mg/kg	0.000137 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				1.73 mg/kg		1.73 mg/kg	0.000173 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				1.81 mg/kg		1.81 mg/kg	0.000181 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.71 mg/kg		0.71 mg/kg	0.000071 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				1.19 mg/kg		1.19 mg/kg	0.000119 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.76 mg/kg		0.76 mg/kg	0.000076 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.23 mg/kg		0.23 mg/kg	0.000023 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.72 mg/kg		0.72 mg/kg	0.000072 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.082 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0205%)

Classification of sample: WS31

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name: <b>WS31</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>2.0-3.0 m</b>	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content: <b>23.1%</b> (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 23.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				2	mg/kg	1.197	2.394	mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				21.4	mg/kg	1.32	28.255	mg/kg	0.00283 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.7	mg/kg	1.142	0.8	mg/kg	0.00008 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				80.6	mg/kg	1.462	117.801	mg/kg	0.0118 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				103	mg/kg	1.126	115.966	mg/kg	0.0116 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	243	mg/kg	1.56	379.035	mg/kg	0.0243 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				0.3	mg/kg	1.353	0.406	mg/kg	0.0000406 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				4.9	mg/kg	1.5	7.351	mg/kg	0.000735 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				24.3	mg/kg	2.976	72.323	mg/kg	0.00723 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
	034-002-00-8											
12	zinc { zinc oxide }				149	mg/kg	1.245	185.462	mg/kg	0.0185 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				100	mg/kg		100	mg/kg	0.01 %		
			TPH									



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.17 pH		8.17 pH	8.17 pH		
			PH							
20	naphthalene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.05 mg/kg		0.05 mg/kg	0.000005 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.52 mg/kg		0.52 mg/kg	0.000052 %		
		201-581-5	85-01-8							
25	anthracene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
		204-371-1	120-12-7							
26	fluoranthene				0.74 mg/kg		0.74 mg/kg	0.000074 %		
		205-912-4	206-44-0							
27	pyrene				0.66 mg/kg		0.66 mg/kg	0.000066 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.41 mg/kg		0.41 mg/kg	0.000041 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.48 mg/kg		0.48 mg/kg	0.000048 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.58 mg/kg		0.58 mg/kg	0.000058 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.23 mg/kg		0.23 mg/kg	0.000023 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.36 mg/kg		0.36 mg/kg	0.000036 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.28 mg/kg		0.28 mg/kg	0.000028 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.26 mg/kg		0.26 mg/kg	0.000026 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0882 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.01%)

## Classification of sample: WS31[1]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS31[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>3.0-4.0 m</b>		
Moisture content:		
<b>30.1%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 30.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				22.5 mg/kg	1.32	29.707 mg/kg	0.00297 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.6 mg/kg	1.142	0.685 mg/kg	0.0000685 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				121.6 mg/kg	1.462	177.725 mg/kg	0.0178 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				115 mg/kg	1.126	129.477 mg/kg	0.0129 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	192 mg/kg	1.56	299.485 mg/kg	0.0192 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				0.4 mg/kg	1.353	0.541 mg/kg	0.0000541 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				7.9 mg/kg	1.5	11.851 mg/kg	0.00119 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				37.3 mg/kg	2.976	111.015 mg/kg	0.0111 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				105 mg/kg	1.245	130.695 mg/kg	0.0131 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							





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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.21 pH		8.21 pH	8.21 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.23 mg/kg		0.23 mg/kg	0.000023 %		
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				0.05 mg/kg		0.05 mg/kg	0.000005 %		
		205-912-4	206-44-0							
27	pyrene				0.04 mg/kg		0.04 mg/kg	0.000004 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0842 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS31[2]

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS31[2]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
<b>4.0-5.0 m</b>		
Moisture content:		
<b>35%</b>		
(no correction)		

Hazard properties

None identified

Determinands

Moisture content: 35% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				12.4 mg/kg	1.32	16.372 mg/kg	0.00164 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				91.4 mg/kg	1.462	133.586 mg/kg	0.0134 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				4 mg/kg	1.126	4.504 mg/kg	0.00045 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	9 mg/kg	1.56	14.038 mg/kg	0.0009 %		
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				8.4 mg/kg	1.5	12.602 mg/kg	0.00126 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				28.4 mg/kg	2.976	84.526 mg/kg	0.00845 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc oxide }				44 mg/kg	1.245	54.767 mg/kg	0.00548 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.26 pH		8.26 pH	8.26 pH		
			PH							
20	naphthalene				0.14 mg/kg		0.14 mg/kg	0.000014 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.04 mg/kg		0.04 mg/kg	0.000004 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
		201-695-5	86-73-7							
24	phenanthrene				1.07 mg/kg		1.07 mg/kg	0.000107 %		
		201-581-5	85-01-8							
25	anthracene				0.15 mg/kg		0.15 mg/kg	0.000015 %		
		204-371-1	120-12-7							
26	fluoranthene				0.96 mg/kg		0.96 mg/kg	0.000096 %		
		205-912-4	206-44-0							
27	pyrene				0.8 mg/kg		0.8 mg/kg	0.00008 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.49 mg/kg		0.49 mg/kg	0.000049 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.57 mg/kg		0.57 mg/kg	0.000057 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.63 mg/kg		0.63 mg/kg	0.000063 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.25 mg/kg		0.25 mg/kg	0.000025 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.39 mg/kg		0.39 mg/kg	0.000039 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.32 mg/kg		0.32 mg/kg	0.000032 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.36 mg/kg		0.36 mg/kg	0.000036 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0379 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Appendix A: Classifier defined and non CLP determinands

### chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

### TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

### ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4

Description/Comments:

Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)

Additional Hazard Statement(s): Carc. 2 H351

Reason for additional Hazards Statement(s)/Risk Phrase(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

### pH (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

### acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

### acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

### fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

### phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

### anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

**fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 21 Aug 2015  
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

**pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 21 Aug 2015  
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

**indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 06 Aug 2015  
Hazard Statements: Carc. 2 H351

**benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 23 Jul 2015  
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

**polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4  
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.  
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)  
Additional Hazard Statement(s): Carc. 1A H350  
Reason for additional Hazards Statement(s)/Risk Phrase(s):  
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

**Appendix B: Rationale for selection of metal species****antimony {antimony trioxide}**

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings

**arsenic {arsenic trioxide}**

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

**cadmium {cadmium oxide}**

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history

**chromium in chromium(III) compounds {chromium(III) oxide}**

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

**chromium in chromium(VI) compounds {chromium(VI) oxide}**

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

**copper {dicopper oxide; copper (I) oxide}**

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

**lead {lead chromate}**

Worst case CLP species based on hazard statements/molecular weight

**mercury {mercury dichloride}**

Worst case CLP species based on hazard statements/molecular weight



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**molybdenum {molybdenum(VI) oxide}**

Worst case CLP species based on hazard statements/molecular weight

**nickel {nickel chromate}**

Worst case CLP species based on hazard statements/molecular weight

**selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}**

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

**zinc {zinc oxide}**

Laboratory analysis shows Hexavalent Chromium is below detection, thus zinc chromate is extremely unlikely to have formed.

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## Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**

HazWasteOnline Classification Engine Version: 2018.341.3722.7617 (07 Dec 2018)

HazWasteOnline Database: 2018.341.3722.7617 (07 Dec 2018)

This classification utilises the following guidance and legislation:

- WM3 v1.1 - Waste Classification** - 1st Edition v1.1 - May 2018
- CLP Regulation** - Regulation 1272/2008/EC of 16 December 2008
- 1st ATP** - Regulation 790/2009/EC of 10 August 2009
- 2nd ATP** - Regulation 286/2011/EC of 10 March 2011
- 3rd ATP** - Regulation 618/2012/EU of 10 July 2012
- 4th ATP** - Regulation 487/2013/EU of 8 May 2013
- Correction to 1st ATP** - Regulation 758/2013/EU of 7 August 2013
- 5th ATP** - Regulation 944/2013/EU of 2 October 2013
- 6th ATP** - Regulation 605/2014/EU of 5 June 2014
- WFD Annex III replacement** - Regulation 1357/2014/EU of 18 December 2014
- Revised List of Wastes 2014** - Decision 2014/955/EU of 18 December 2014
- 7th ATP** - Regulation 2015/1221/EU of 24 July 2015
- 8th ATP** - Regulation (EU) 2016/918 of 19 May 2016
- 9th ATP** - Regulation (EU) 2016/1179 of 19 July 2016
- 10th ATP** - Regulation (EU) 2017/776 of 4 May 2017
- HP14 amendment** - Regulation (EU) 2017/997 of 8 June 2017
- 13th ATP** - Regulation (EU) 2018/1480 of 4 October 2018
- POPs Regulation 2004** - Regulation 850/2004/EC of 29 April 2004
- 1st ATP to POPs Regulation** - Regulation 756/2010/EU of 24 August 2010
- 2nd ATP to POPs Regulation** - Regulation 757/2010/EU of 24 August 2010

# Waste Classification Report



AAYLE-4MBWC-CY2N4

## Job name

18-234-32 (17-09-04)

## Description/Comments

## Project

18-234-32

## Site

Castleforbes

## Related Documents

#	Name	Description
None		

## Waste Stream Template

O'Callaghan Moran Waste Stream

## Classified by

Name:  
**Austin Hynes**  
 Date:  
**11 Dec 2018 14:51 GMT**  
 Telephone:  
**021 4345366**

Company:  
**O'Callaghan Moran and Associates**  
**Unit 15 Melbourne Business Park**  
**Model Farm Road**  
**Cork**

## Report

Created by: Austin Hynes  
 Created date: 11 Dec 2018 14:51 GMT

## Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	WS1	0.0-1.0	Non Hazardous		3
2	WS3	0.25-0.75	Non Hazardous		6
3	WS9	0.0-1.0	Hazardous	HP 7, HP 11	8
4	WS10	0.0-1.0	Non Hazardous		11
5	WS10[1]	1.0-2.0	Non Hazardous		13
6	WS14	0.25-0.75	Non Hazardous		16
7	WS15	1.0-2.0	Non Hazardous		19
8	WS16	0.00-1.00	Non Hazardous		22
9	WS16[1]	1.00-2.00	Non Hazardous		24
10	WS18	0.25-0.75	Hazardous	HP 7, HP 11	27
11	WS21	0.25-0.75	Non Hazardous		30
12	WS21[1]	1.00-2.00	Non Hazardous		33





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#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
13	WS21[2]	2.00-3.00	Non Hazardous		36
14	WS21[3]	3.00-3.80	Non Hazardous		38
15	WS23	0.25-0.75	Hazardous	HP 14	40
16	WS23[1]	1.00-1.60	Non Hazardous		43
17	WS24	0.0-1.0	Non Hazardous		46
18	WS28	1.0-2.0	Hazardous	HP 7, HP 11	49
19	WS28[1]	2.0-3.0	Hazardous	HP 7, HP 11	52
20	WS29	1.0-2.0	Hazardous	HP 7, HP 11	55
21	WS30	1.0-2.0	Non Hazardous		58
22	WS31	0.25-0.75	Non Hazardous		61
23	WS31[1]	1.0-2.0	Non Hazardous		63

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	65
Appendix B: Rationale for selection of metal species	66
Appendix C: Version	67

## Classification of sample: WS1

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

## Sample details

Sample Name:	<b>WS1</b>	LoW Code:	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	<b>0.0-1.0 m</b>	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)	
Moisture content:	<b>48.8%</b> (no correction)			

## Hazard properties

None identified

## Determinands

Moisture content: 48.8% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				4 mg/kg	1.197	4.788 mg/kg	0.000479 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				39.2 mg/kg	1.32	51.757 mg/kg	0.00518 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.6 mg/kg	1.142	0.685 mg/kg	0.0000685 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				81.9 mg/kg	1.462	119.701 mg/kg	0.012 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				224 mg/kg	1.126	252.199 mg/kg	0.0252 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	511 mg/kg		511 mg/kg	0.0511 %		
	082-001-00-6									
8	mercury { mercury dichloride }				2 mg/kg	1.353	2.707 mg/kg	0.000271 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				8.5 mg/kg	1.5	12.752 mg/kg	0.00128 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				89.1 mg/kg	2.976	265.185 mg/kg	0.0265 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %		
	034-002-00-8									
12	zinc { zinc oxide }				242 mg/kg	1.245	301.221 mg/kg	0.0301 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				449 mg/kg		449 mg/kg	0.0449 %		
			TPH							



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.83 pH		7.83 pH	7.83 pH		
			PH							
20	naphthalene				3.5 mg/kg		3.5 mg/kg	0.00035 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				7.01 mg/kg		7.01 mg/kg	0.000701 %		
		205-917-1	208-96-8							
22	acenaphthene				1.52 mg/kg		1.52 mg/kg	0.000152 %		
		201-469-6	83-32-9							
23	fluorene				5.68 mg/kg		5.68 mg/kg	0.000568 %		
		201-695-5	86-73-7							
24	phenanthrene				37.69 mg/kg		37.69 mg/kg	0.00377 %		
		201-581-5	85-01-8							
25	anthracene				13.36 mg/kg		13.36 mg/kg	0.00134 %		
		204-371-1	120-12-7							
26	fluoranthene				61.98 mg/kg		61.98 mg/kg	0.0062 %		
		205-912-4	206-44-0							
27	pyrene				54.62 mg/kg		54.62 mg/kg	0.00546 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				29.98 mg/kg		29.98 mg/kg	0.003 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				31.22 mg/kg		31.22 mg/kg	0.00312 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				38.6 mg/kg		38.6 mg/kg	0.00386 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				15.01 mg/kg		15.01 mg/kg	0.0015 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				30.7 mg/kg		30.7 mg/kg	0.00307 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				16.22 mg/kg		16.22 mg/kg	0.00162 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				4.72 mg/kg		4.72 mg/kg	0.000472 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				17.11 mg/kg		17.11 mg/kg	0.00171 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.235 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



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## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0449%)

Classification of sample: WS3

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

Sample details

Sample Name:	<b>WS3</b>	LoW Code:	
Sample Depth:	<b>0.25-0.75 m</b>	Chapter:	<b>17: Construction and Demolition Wastes (including excavated soil from contaminated sites)</b>
Moisture content:	<b>20.9%</b> (no correction)	Entry:	<b>17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)</b>

Hazard properties

None identified

Determinands

Moisture content: 20.9% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %			
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				9 mg/kg	1.32	11.883 mg/kg	0.00119 %			
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				1.4 mg/kg	1.142	1.599 mg/kg	0.00016 %			
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide }				111.5 mg/kg	1.462	162.963 mg/kg	0.0163 %			
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD	
	024-001-00-0	215-607-8	1333-82-0								
6	copper { dicopper oxide; copper (I) oxide }				12 mg/kg	1.126	13.511 mg/kg	0.00135 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	21 mg/kg		21 mg/kg	0.0021 %			
	082-001-00-6										
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD	
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				7.9 mg/kg	1.5	11.851 mg/kg	0.00119 %			
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				29.4 mg/kg	2.976	87.502 mg/kg	0.00875 %			
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD	
	034-002-00-8										
12	zinc { zinc oxide }				104 mg/kg	1.245	129.45 mg/kg	0.0129 %			
	030-013-00-7	215-222-5	1314-13-2								
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD	
			TPH								



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.45 pH		8.45 pH	8.45 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.68 mg/kg		0.68 mg/kg	0.000068 %		
		201-581-5	85-01-8							
25	anthracene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
		204-371-1	120-12-7							
26	fluoranthene				0.98 mg/kg		0.98 mg/kg	0.000098 %		
		205-912-4	206-44-0							
27	pyrene				0.85 mg/kg		0.85 mg/kg	0.000085 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.4 mg/kg		0.4 mg/kg	0.00004 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.45 mg/kg		0.45 mg/kg	0.000045 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.53 mg/kg		0.53 mg/kg	0.000053 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.2 mg/kg		0.2 mg/kg	0.00002 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.31 mg/kg		0.31 mg/kg	0.000031 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.21 mg/kg		0.21 mg/kg	0.000021 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.05 mg/kg		0.05 mg/kg	0.000005 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.24 mg/kg		0.24 mg/kg	0.000024 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0503 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Classification of sample: WS9

**Hazardous Waste**  
Classified as **17 09 03 \***  
in the List of Waste

## Sample details

Sample Name:	LoW Code:	
<b>WS9</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>0.0-1.0 m</b>		
Moisture content:		
<b>28.6%</b>		
(no correction)		

## Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.128%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.128%)

## Determinands

Moisture content: 28.6% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				4 mg/kg	1.197	4.788 mg/kg	0.000479 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				23.9 mg/kg	1.32	31.556 mg/kg	0.00316 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.5 mg/kg	1.142	0.571 mg/kg	0.0000571 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				117.9 mg/kg	1.462	172.317 mg/kg	0.0172 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				162 mg/kg	1.126	182.394 mg/kg	0.0182 %		
	029-002-00-X	215-270-7	1317-39-1							





environmental management for business

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	359	mg/kg		359	mg/kg	0.0359 %		
	082-001-00-6											
8	mercury { mercury dichloride }				1.4	mg/kg	1.353	1.895	mg/kg	0.000189 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				8.1	mg/kg	1.5	12.152	mg/kg	0.00122 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				72.5	mg/kg	2.976	215.779	mg/kg	0.0216 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2	mg/kg	2.554	5.107	mg/kg	0.000511 %		
	034-002-00-8											
12	zinc { zinc oxide }				191	mg/kg	1.245	237.74	mg/kg	0.0238 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				1276	mg/kg		1276	mg/kg	0.128 %		
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
17	ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
18	xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19	pH				7.61	pH		7.61	pH	7.61 pH		
			PH									
20	naphthalene				2.64	mg/kg		2.64	mg/kg	0.000264 %		
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				11.77	mg/kg		11.77	mg/kg	0.00118 %		
		205-917-1	208-96-8									
22	acenaphthene				0.87	mg/kg		0.87	mg/kg	0.000087 %		
		201-469-6	83-32-9									
23	fluorene				2.37	mg/kg		2.37	mg/kg	0.000237 %		
		201-695-5	86-73-7									
24	phenanthrene				35.08	mg/kg		35.08	mg/kg	0.00351 %		
		201-581-5	85-01-8									
25	anthracene				12.92	mg/kg		12.92	mg/kg	0.00129 %		
		204-371-1	120-12-7									
26	fluoranthene				85.89	mg/kg		85.89	mg/kg	0.00859 %		
		205-912-4	206-44-0									
27	pyrene				76.26	mg/kg		76.26	mg/kg	0.00763 %		
		204-927-3	129-00-0									
28	benzo[a]anthracene				37.44	mg/kg		37.44	mg/kg	0.00374 %		
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				43.51	mg/kg		43.51	mg/kg	0.00435 %		
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				55.4	mg/kg		55.4	mg/kg	0.00554 %		
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				21.55	mg/kg		21.55	mg/kg	0.00216 %		
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				43.27	mg/kg		43.27	mg/kg	0.00433 %		
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				25.41	mg/kg		25.41	mg/kg	0.00254 %		
		205-893-2	193-39-5									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
34	dibenz[a,h]anthracene				5.72 mg/kg		5.72 mg/kg	0.000572 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				27.52 mg/kg		27.52 mg/kg	0.00275 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.299 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.128%)

### Classification of sample: WS10

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS10</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
<b>0.0-1.0 m</b>		
Moisture content:		
<b>21%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 21% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				6 mg/kg	1.197	7.183 mg/kg	0.000718 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				25.3 mg/kg	1.32	33.404 mg/kg	0.00334 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				145.4 mg/kg	1.462	212.51 mg/kg	0.0213 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				1110 mg/kg	1.126	1249.736 mg/kg	0.125 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	418 mg/kg		418 mg/kg	0.0418 %		
	082-001-00-6									
8	mercury { mercury dichloride }				0.1 mg/kg	1.353	0.135 mg/kg	0.0000135 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				5.8 mg/kg	1.5	8.701 mg/kg	0.00087 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				43 mg/kg	2.976	127.979 mg/kg	0.0128 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				6 mg/kg	2.554	15.322 mg/kg	0.00153 %		
	034-002-00-8									
12	zinc { zinc oxide }				234 mg/kg	1.245	291.263 mg/kg	0.0291 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.79 pH		7.79 pH	7.79 pH		
			PH							
20	naphthalene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.81 mg/kg		0.81 mg/kg	0.000081 %		
		201-581-5	85-01-8							
25	anthracene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		204-371-1	120-12-7							
26	fluoranthene				0.61 mg/kg		0.61 mg/kg	0.000061 %		
		205-912-4	206-44-0							
27	pyrene				0.61 mg/kg		0.61 mg/kg	0.000061 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.44 mg/kg		0.44 mg/kg	0.000044 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.47 mg/kg		0.47 mg/kg	0.000047 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.63 mg/kg		0.63 mg/kg	0.000063 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.24 mg/kg		0.24 mg/kg	0.000024 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.47 mg/kg		0.47 mg/kg	0.000047 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.29 mg/kg		0.29 mg/kg	0.000029 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.38 mg/kg		0.38 mg/kg	0.000038 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.242 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS10[1]

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS10[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
<b>1.0-2.0 m</b>		
Moisture content:		
<b>29.9%</b>		
(no correction)		

Hazard properties

None identified

Determinands

Moisture content: 29.9% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				4 mg/kg	1.197	4.788 mg/kg	0.000479 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				17.5 mg/kg	1.32	23.106 mg/kg	0.00231 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.7 mg/kg	1.142	0.8 mg/kg	0.00008 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				115.7 mg/kg	1.462	169.102 mg/kg	0.0169 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				104 mg/kg	1.126	117.092 mg/kg	0.0117 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	245 mg/kg		245 mg/kg	0.0245 %		
	082-001-00-6									
8	mercury { mercury dichloride }				0.1 mg/kg	1.353	0.135 mg/kg	0.0000135 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				8.9 mg/kg	1.5	13.352 mg/kg	0.00134 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				39.6 mg/kg	2.976	117.86 mg/kg	0.0118 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				279 mg/kg	1.245	347.275 mg/kg	0.0347 %		
	030-013-00-7	215-222-5	1314-13-2							
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							



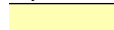



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
15	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
16	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
17	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
18	pH				7.68 pH		7.68 pH	7.68 pH		
			PH							
19	naphthalene				0.21 mg/kg		0.21 mg/kg	0.000021 %		
	601-052-00-2	202-049-5	91-20-3							
20	acenaphthylene				0.16 mg/kg		0.16 mg/kg	0.000016 %		
		205-917-1	208-96-8							
21	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
22	fluorene				0.35 mg/kg		0.35 mg/kg	0.000035 %		
		201-695-5	86-73-7							
23	phenanthrene				0.78 mg/kg		0.78 mg/kg	0.000078 %		
		201-581-5	85-01-8							
24	anthracene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		204-371-1	120-12-7							
25	fluoranthene				0.31 mg/kg		0.31 mg/kg	0.000031 %		
		205-912-4	206-44-0							
26	pyrene				0.35 mg/kg		0.35 mg/kg	0.000035 %		
		204-927-3	129-00-0							
27	benzo[a]anthracene				0.17 mg/kg		0.17 mg/kg	0.000017 %		
	601-033-00-9	200-280-6	56-55-3							
28	chrysene				0.26 mg/kg		0.26 mg/kg	0.000026 %		
	601-048-00-0	205-923-4	218-01-9							
29	benzo[b]fluoranthene				0.27 mg/kg		0.27 mg/kg	0.000027 %		
	601-034-00-4	205-911-9	205-99-2							
30	benzo[k]fluoranthene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
	601-036-00-5	205-916-6	207-08-9							
31	benzo[a]pyrene; benzo[def]chrysene				0.14 mg/kg		0.14 mg/kg	0.000014 %		
	601-032-00-3	200-028-5	50-32-8							
32	indeno[123-cd]pyrene				0.14 mg/kg		0.14 mg/kg	0.000014 %		
		205-893-2	193-39-5							
33	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
34	benzo[ghi]perylene				0.18 mg/kg		0.18 mg/kg	0.000018 %		
		205-883-8	191-24-2							
35	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
36	diesel petroleum group				1127 mg/kg		1127 mg/kg	0.113 %		
			68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9							
Total:								0.217 %		



Key

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	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

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### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

diesel petroleum group: (conc.: 0.113%)



Classification of sample: WS14

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

Sample details

Sample Name: <b>WS14</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>0.25-0.75 m</b>	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content: <b>38%</b> (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 38% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				5	mg/kg	1.197	5.986	mg/kg	0.000599 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				29.6	mg/kg	1.32	39.082	mg/kg	0.00391 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				1.1	mg/kg	1.142	1.257	mg/kg	0.000126 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				57.2	mg/kg	1.462	83.601	mg/kg	0.00836 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				164	mg/kg	1.126	184.646	mg/kg	0.0185 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	380	mg/kg		380	mg/kg	0.038 %		
	082-001-00-6											
8	mercury { mercury dichloride }				0.7	mg/kg	1.353	0.947	mg/kg	0.0000947 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				7.6	mg/kg	1.5	11.401	mg/kg	0.00114 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				66.4	mg/kg	2.976	197.624	mg/kg	0.0198 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				3	mg/kg	2.554	7.661	mg/kg	0.000766 %		
	034-002-00-8											
12	zinc { zinc oxide }				241	mg/kg	1.245	299.976	mg/kg	0.03 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				169	mg/kg		169	mg/kg	0.0169 %		
			TPH									



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.75 pH		7.75 pH	7.75 pH		
			PH							
20	naphthalene				0.3 mg/kg		0.3 mg/kg	0.00003 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.32 mg/kg		0.32 mg/kg	0.000032 %		
		205-917-1	208-96-8							
22	acenaphthene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
		201-469-6	83-32-9							
23	fluorene				0.21 mg/kg		0.21 mg/kg	0.000021 %		
		201-695-5	86-73-7							
24	phenanthrene				3.52 mg/kg		3.52 mg/kg	0.000352 %		
		201-581-5	85-01-8							
25	anthracene				0.51 mg/kg		0.51 mg/kg	0.000051 %		
		204-371-1	120-12-7							
26	fluoranthene				4.98 mg/kg		4.98 mg/kg	0.000498 %		
		205-912-4	206-44-0							
27	pyrene				4.28 mg/kg		4.28 mg/kg	0.000428 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				1.67 mg/kg		1.67 mg/kg	0.000167 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				2.47 mg/kg		2.47 mg/kg	0.000247 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				2.83 mg/kg		2.83 mg/kg	0.000283 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				1.1 mg/kg		1.1 mg/kg	0.00011 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				1.79 mg/kg		1.79 mg/kg	0.000179 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				1.21 mg/kg		1.21 mg/kg	0.000121 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.35 mg/kg		0.35 mg/kg	0.000035 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				1.13 mg/kg		1.13 mg/kg	0.000113 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.141 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0169%)

## Classification of sample: WS15

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS15</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
<b>1.0-2.0 m</b>		
Moisture content:		
<b>21.7%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 21.7% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				4 mg/kg	1.197	4.788 mg/kg	0.000479 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				23.9 mg/kg	1.32	31.556 mg/kg	0.00316 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				1.1 mg/kg	1.142	1.257 mg/kg	0.000126 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				94.5 mg/kg	1.462	138.117 mg/kg	0.0138 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				80 mg/kg	1.126	90.071 mg/kg	0.00901 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	289 mg/kg		289 mg/kg	0.0289 %		
	082-001-00-6									
8	mercury { mercury dichloride }				1.1 mg/kg	1.353	1.489 mg/kg	0.000149 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				6.9 mg/kg	1.5	10.351 mg/kg	0.00104 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				49.8 mg/kg	2.976	148.218 mg/kg	0.0148 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %		
	034-002-00-8									
12	zinc { zinc oxide }				221 mg/kg	1.245	275.082 mg/kg	0.0275 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				97 mg/kg		97 mg/kg	0.0097 %		
			TPH							



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.11 pH		8.11 pH	8.11 pH		
			PH							
20	naphthalene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
		205-917-1	208-96-8							
22	acenaphthene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		201-469-6	83-32-9							
23	fluorene				0.16 mg/kg		0.16 mg/kg	0.000016 %		
		201-695-5	86-73-7							
24	phenanthrene				1.67 mg/kg		1.67 mg/kg	0.000167 %		
		201-581-5	85-01-8							
25	anthracene				0.33 mg/kg		0.33 mg/kg	0.000033 %		
		204-371-1	120-12-7							
26	fluoranthene				1.81 mg/kg		1.81 mg/kg	0.000181 %		
		205-912-4	206-44-0							
27	pyrene				1.5 mg/kg		1.5 mg/kg	0.00015 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.71 mg/kg		0.71 mg/kg	0.000071 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.79 mg/kg		0.79 mg/kg	0.000079 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.84 mg/kg		0.84 mg/kg	0.000084 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.32 mg/kg		0.32 mg/kg	0.000032 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.6 mg/kg		0.6 mg/kg	0.00006 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.34 mg/kg		0.34 mg/kg	0.000034 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.35 mg/kg		0.35 mg/kg	0.000035 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.11 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



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## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0097%)

Classification of sample: WS16

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

Sample details

Sample Name: <b>WS16</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>0.00-1.00 m</b>	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content: <b>18.2%</b> (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 18.2% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				4 mg/kg	1.197	4.788 mg/kg	0.000479 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				27.2 mg/kg	1.32	35.913 mg/kg	0.00359 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.8 mg/kg	1.142	0.914 mg/kg	0.0000914 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				70.6 mg/kg	1.462	103.186 mg/kg	0.0103 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				238 mg/kg	1.126	267.961 mg/kg	0.0268 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	2000 mg/kg		2000 mg/kg	0.2 %		
	082-001-00-6									
8	mercury { mercury dichloride }				0.9 mg/kg	1.353	1.218 mg/kg	0.000122 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				6.1 mg/kg	1.5	9.151 mg/kg	0.000915 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				65.8 mg/kg	2.976	195.838 mg/kg	0.0196 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %		
	034-002-00-8									
12	zinc { zinc oxide }				302 mg/kg	1.245	375.904 mg/kg	0.0376 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							





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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X   216-653-1   1634-04-4				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
15	benzene 601-020-00-8   200-753-7   71-43-2				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
16	toluene 601-021-00-3   203-625-9   108-88-3				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
17	ethylbenzene 601-023-00-4   202-849-4   100-41-4				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
18	xylene 601-022-00-9   202-422-2 [1]   95-47-6 [1] 106-42-3 [2]   203-396-5 [2]   106-42-3 [2] 108-38-3 [3]   203-576-3 [3]   108-38-3 [3] 1330-20-7 [4]   215-535-7 [4]   1330-20-7 [4]				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	pH PH				7.82 pH		7.82 pH	7.82 pH		
20	naphthalene 601-052-00-2   202-049-5   91-20-3				0.14 mg/kg		0.14 mg/kg	0.000014 %		
21	acenaphthylene 205-917-1   208-96-8				0.13 mg/kg		0.13 mg/kg	0.000013 %		
22	acenaphthene 201-469-6   83-32-9				0.11 mg/kg		0.11 mg/kg	0.000011 %		
23	fluorene 201-695-5   86-73-7				0.07 mg/kg		0.07 mg/kg	0.000007 %		
24	phenanthrene 201-581-5   85-01-8				1.25 mg/kg		1.25 mg/kg	0.000125 %		
25	anthracene 204-371-1   120-12-7				0.27 mg/kg		0.27 mg/kg	0.000027 %		
26	fluoranthene 205-912-4   206-44-0				2.23 mg/kg		2.23 mg/kg	0.000223 %		
27	pyrene 204-927-3   129-00-0				2.17 mg/kg		2.17 mg/kg	0.000217 %		
28	benzo[a]anthracene 601-033-00-9   200-280-6   56-55-3				1.13 mg/kg		1.13 mg/kg	0.000113 %		
29	chrysene 601-048-00-0   205-923-4   218-01-9				1.17 mg/kg		1.17 mg/kg	0.000117 %		
30	benzo[b]fluoranthene 601-034-00-4   205-911-9   205-99-2				1.72 mg/kg		1.72 mg/kg	0.000172 %		
31	benzo[k]fluoranthene 601-036-00-5   205-916-6   207-08-9				0.67 mg/kg		0.67 mg/kg	0.000067 %		
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3   200-028-5   50-32-8				1.12 mg/kg		1.12 mg/kg	0.000112 %		
33	indeno[123-cd]pyrene 205-893-2   193-39-5				0.84 mg/kg		0.84 mg/kg	0.000084 %		
34	dibenz[a,h]anthracene 601-041-00-2   200-181-8   53-70-3				0.11 mg/kg		0.11 mg/kg	0.000011 %		
35	benzo[ghi]perylene 205-883-8   191-24-2				0.99 mg/kg		0.99 mg/kg	0.000099 %		
36	polychlorobiphenyls; PCB 602-039-00-4   215-648-1   1336-36-3				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
Total:								0.307 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

**Classification of sample: WS16[1]**

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

**Sample details**

Sample Name: <b>WS16[1]</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>1.00-2.00 m</b>	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content: <b>29%</b> (no correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: **29% No Moisture Correction applied (MC)**

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				47	mg/kg	1.197	56.264	mg/kg	0.00563 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				31.3	mg/kg	1.32	41.326	mg/kg	0.00413 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				1.9	mg/kg	1.142	2.17	mg/kg	0.000217 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				59.9	mg/kg	1.462	87.547	mg/kg	0.00875 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				277	mg/kg	1.126	311.871	mg/kg	0.0312 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	697	mg/kg		697	mg/kg	0.0697 %		
	082-001-00-6											
8	mercury { mercury dichloride }				1.4	mg/kg	1.353	1.895	mg/kg	0.000189 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				6.1	mg/kg	1.5	9.151	mg/kg	0.000915 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				74.3	mg/kg	2.976	221.136	mg/kg	0.0221 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2	mg/kg	2.554	5.107	mg/kg	0.000511 %		
	034-002-00-8											
12	zinc { zinc oxide }				442	mg/kg	1.245	550.164	mg/kg	0.055 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				110	mg/kg		110	mg/kg	0.011 %		
			TPH									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X   216-653-1   1634-04-4				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
15	benzene 601-020-00-8   200-753-7   71-43-2				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
16	toluene 601-021-00-3   203-625-9   108-88-3				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
17	ethylbenzene 601-023-00-4   202-849-4   100-41-4				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
18	xylene 601-022-00-9   202-422-2 [1]   95-47-6 [1] 106-42-3 [2]   203-396-5 [2]   106-42-3 [2] 108-38-3 [3]   203-576-3 [3]   108-38-3 [3] 1330-20-7 [4]   215-535-7 [4]   1330-20-7 [4]				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	pH PH				7.79 pH		7.79 pH	7.79 pH		
20	naphthalene 601-052-00-2   202-049-5   91-20-3				0.12 mg/kg		0.12 mg/kg	0.000012 %		
21	acenaphthylene 205-917-1   208-96-8				0.12 mg/kg		0.12 mg/kg	0.000012 %		
22	acenaphthene 201-469-6   83-32-9				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	fluorene 201-695-5   86-73-7				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
24	phenanthrene 201-581-5   85-01-8				0.88 mg/kg		0.88 mg/kg	0.000088 %		
25	anthracene 204-371-1   120-12-7				0.23 mg/kg		0.23 mg/kg	0.000023 %		
26	fluoranthene 205-912-4   206-44-0				0.86 mg/kg		0.86 mg/kg	0.000086 %		
27	pyrene 204-927-3   129-00-0				0.88 mg/kg		0.88 mg/kg	0.000088 %		
28	benzo[a]anthracene 601-033-00-9   200-280-6   56-55-3				0.59 mg/kg		0.59 mg/kg	0.000059 %		
29	chrysene 601-048-00-0   205-923-4   218-01-9				0.58 mg/kg		0.58 mg/kg	0.000058 %		
30	benzo[b]fluoranthene 601-034-00-4   205-911-9   205-99-2				0.77 mg/kg		0.77 mg/kg	0.000077 %		
31	benzo[k]fluoranthene 601-036-00-5   205-916-6   207-08-9				0.3 mg/kg		0.3 mg/kg	0.00003 %		
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3   200-028-5   50-32-8				0.54 mg/kg		0.54 mg/kg	0.000054 %		
33	indeno[123-cd]pyrene 205-893-2   193-39-5				0.37 mg/kg		0.37 mg/kg	0.000037 %		
34	dibenz[a,h]anthracene 601-041-00-2   200-181-8   53-70-3				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
35	benzo[ghi]perylene 205-883-8   191-24-2				0.46 mg/kg		0.46 mg/kg	0.000046 %		
36	polychlorobiphenyls; PCB 602-039-00-4   215-648-1   1336-36-3				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
Total:								0.21 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.011%)

Classification of sample: WS18

**Hazardous Waste**  
Classified as **17 09 03 \***  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>WS18</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>0.25-0.75 m</b>		
Moisture content:		
<b>45%</b>		
(no correction)		

Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.143%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.143%)

Determinands

Moisture content: 45% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				7 mg/kg	1.197	8.38 mg/kg	0.000838 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				40.2 mg/kg	1.32	53.077 mg/kg	0.00531 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				1.9 mg/kg	1.142	2.17 mg/kg	0.000217 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				23.6 mg/kg	1.462	34.493 mg/kg	0.00345 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				355 mg/kg	1.126	399.69 mg/kg	0.04 %		
	029-002-00-X	215-270-7	1317-39-1							



environmental management for business

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	671	mg/kg		671	mg/kg	0.0671 %		
	082-001-00-6											
8	mercury { mercury dichloride }				0.6	mg/kg	1.353	0.812	mg/kg	0.0000812 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				4.5	mg/kg	1.5	6.751	mg/kg	0.000675 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				48.6	mg/kg	2.976	144.646	mg/kg	0.0145 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				3	mg/kg	2.554	7.661	mg/kg	0.000766 %		
	034-002-00-8											
12	zinc { zinc oxide }				812	mg/kg	1.245	1010.708	mg/kg	0.101 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				1430	mg/kg		1430	mg/kg	0.143 %		
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
17	ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
18	xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19	pH				8	pH		8	pH	8pH		
			PH									
20	naphthalene				1.94	mg/kg		1.94	mg/kg	0.000194 %		
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				2.09	mg/kg		2.09	mg/kg	0.000209 %		
		205-917-1	208-96-8									
22	acenaphthene				2.19	mg/kg		2.19	mg/kg	0.000219 %		
		201-469-6	83-32-9									
23	fluorene				1.42	mg/kg		1.42	mg/kg	0.000142 %		
		201-695-5	86-73-7									
24	phenanthrene				17.23	mg/kg		17.23	mg/kg	0.00172 %		
		201-581-5	85-01-8									
25	anthracene				4.35	mg/kg		4.35	mg/kg	0.000435 %		
		204-371-1	120-12-7									
26	fluoranthene				26.83	mg/kg		26.83	mg/kg	0.00268 %		
		205-912-4	206-44-0									
27	pyrene				25.09	mg/kg		25.09	mg/kg	0.00251 %		
		204-927-3	129-00-0									
28	benzo[a]anthracene				10.88	mg/kg		10.88	mg/kg	0.00109 %		
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				14.79	mg/kg		14.79	mg/kg	0.00148 %		
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				18.78	mg/kg		18.78	mg/kg	0.00188 %		
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				7.31	mg/kg		7.31	mg/kg	0.000731 %		
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				13.46	mg/kg		13.46	mg/kg	0.00135 %		
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				8.86	mg/kg		8.86	mg/kg	0.000886 %		
		205-893-2	193-39-5									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
34	dibenz[a,h]anthracene				1.99 mg/kg		1.99 mg/kg	0.000199 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				8.53 mg/kg		8.53 mg/kg	0.000853 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.394 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.143%)



**Classification of sample: WS21**

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

**Sample details**

<p>Sample Name: <b>WS21</b></p> <p>Sample Depth: <b>0.25-0.75 m</b></p> <p>Moisture content: <b>21.2%</b> (no correction)</p>	<p>LoW Code: Chapter: Entry:</p>	<p><b>17: Construction and Demolition Wastes (including excavated soil from contaminated sites)</b> <b>17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)</b></p>
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**Hazard properties**

None identified

**Determinands**

Moisture content: **21.2% No Moisture Correction applied (MC)**

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %			
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				13.2 mg/kg	1.32	17.428 mg/kg	0.00174 %			
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				1.7 mg/kg	1.142	1.942 mg/kg	0.000194 %			
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide }				77.9 mg/kg	1.462	113.855 mg/kg	0.0114 %			
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD	
	024-001-00-0	215-607-8	1333-82-0								
6	copper { dicopper oxide; copper (I) oxide }				79 mg/kg	1.126	88.945 mg/kg	0.00889 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	106 mg/kg		106 mg/kg	0.0106 %			
	082-001-00-6										
8	mercury { mercury dichloride }				0.3 mg/kg	1.353	0.406 mg/kg	0.0000406 %			
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				4 mg/kg	1.5	6.001 mg/kg	0.0006 %			
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				23.6 mg/kg	2.976	70.24 mg/kg	0.00702 %			
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %			
	034-002-00-8										
12	zinc { zinc oxide }				427 mg/kg	1.245	531.493 mg/kg	0.0531 %			
	030-013-00-7	215-222-5	1314-13-2								
13	TPH (C6 to C40) petroleum group				679 mg/kg		679 mg/kg	0.0679 %			
			TPH								



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.44 pH		8.44 pH	8.44 pH		
			PH							
20	naphthalene				0.86 mg/kg		0.86 mg/kg	0.000086 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
		205-917-1	208-96-8							
22	acenaphthene				1.71 mg/kg		1.71 mg/kg	0.000171 %		
		201-469-6	83-32-9							
23	fluorene				1.56 mg/kg		1.56 mg/kg	0.000156 %		
		201-695-5	86-73-7							
24	phenanthrene				10.18 mg/kg		10.18 mg/kg	0.00102 %		
		201-581-5	85-01-8							
25	anthracene				1.83 mg/kg		1.83 mg/kg	0.000183 %		
		204-371-1	120-12-7							
26	fluoranthene				9.11 mg/kg		9.11 mg/kg	0.000911 %		
		205-912-4	206-44-0							
27	pyrene				7.56 mg/kg		7.56 mg/kg	0.000756 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				2.98 mg/kg		2.98 mg/kg	0.000298 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				3.41 mg/kg		3.41 mg/kg	0.000341 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				4.78 mg/kg		4.78 mg/kg	0.000478 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				1.86 mg/kg		1.86 mg/kg	0.000186 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				3.22 mg/kg		3.22 mg/kg	0.000322 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				1.9 mg/kg		1.9 mg/kg	0.00019 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.67 mg/kg		0.67 mg/kg	0.000067 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				2.02 mg/kg		2.02 mg/kg	0.000202 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.168 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0679%)

### Classification of sample: WS21[1]

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS21[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
<b>1.00-2.00 m</b>		
Moisture content:		
<b>28.1%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 28.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				6 mg/kg	1.197	7.183 mg/kg	0.000718 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				57.7 mg/kg	1.32	76.183 mg/kg	0.00762 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				2.1 mg/kg	1.142	2.399 mg/kg	0.00024 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				75.6 mg/kg	1.462	110.494 mg/kg	0.011 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				213 mg/kg	1.126	239.814 mg/kg	0.024 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	468 mg/kg		468 mg/kg	0.0468 %		
	082-001-00-6									
8	mercury { mercury dichloride }				0.5 mg/kg	1.353	0.677 mg/kg	0.0000677 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				8.4 mg/kg	1.5	12.602 mg/kg	0.00126 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				69.7 mg/kg	2.976	207.446 mg/kg	0.0207 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				3 mg/kg	2.554	7.661 mg/kg	0.000766 %		
	034-002-00-8									
12	zinc { zinc oxide }				1008 mg/kg	1.245	1254.672 mg/kg	0.125 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				173 mg/kg		173 mg/kg	0.0173 %		
			TPH							



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.92 pH		7.92 pH	7.92 pH		
			PH							
20	naphthalene				0.2 mg/kg		0.2 mg/kg	0.00002 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				0.06 mg/kg		0.06 mg/kg	0.000006 %		
		201-695-5	86-73-7							
24	phenanthrene				0.68 mg/kg		0.68 mg/kg	0.000068 %		
		201-581-5	85-01-8							
25	anthracene				0.24 mg/kg		0.24 mg/kg	0.000024 %		
		204-371-1	120-12-7							
26	fluoranthene				1.87 mg/kg		1.87 mg/kg	0.000187 %		
		205-912-4	206-44-0							
27	pyrene				1.84 mg/kg		1.84 mg/kg	0.000184 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				1.02 mg/kg		1.02 mg/kg	0.000102 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				1.17 mg/kg		1.17 mg/kg	0.000117 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				1.52 mg/kg		1.52 mg/kg	0.000152 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.59 mg/kg		0.59 mg/kg	0.000059 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				1.09 mg/kg		1.09 mg/kg	0.000109 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.64 mg/kg		0.64 mg/kg	0.000064 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.17 mg/kg		0.17 mg/kg	0.000017 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.64 mg/kg		0.64 mg/kg	0.000064 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.257 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

---

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

---

TPH (C6 to C40) petroleum group: (conc.: 0.0173%)

Classification of sample: WS21[2]

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

Sample details

Sample Name: <b>WS21[2]</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>2.00-3.00 m</b>	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content: <b>48.5%</b> (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 48.5% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				13.2 mg/kg	1.32	17.428 mg/kg	0.00174 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.5 mg/kg	1.142	0.571 mg/kg	0.0000571 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				79.5 mg/kg	1.462	116.194 mg/kg	0.0116 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				47 mg/kg	1.126	52.917 mg/kg	0.00529 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	71 mg/kg		71 mg/kg	0.0071 %		
	082-001-00-6									
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				7.3 mg/kg	1.5	10.951 mg/kg	0.0011 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				27.7 mg/kg	2.976	82.443 mg/kg	0.00824 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				232 mg/kg	1.245	288.774 mg/kg	0.0289 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							





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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.13 pH		8.13 pH	8.13 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0699 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

**Classification of sample: WS21[3]**

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

**Sample details**

Sample Name: <b>WS21[3]</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>3.00-3.80 m</b>	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content: <b>37.9%</b> (no correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: 37.9% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				21.8 mg/kg	1.32	28.783 mg/kg	0.00288 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				2 mg/kg	1.142	2.285 mg/kg	0.000228 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				72.9 mg/kg	1.462	106.547 mg/kg	0.0107 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				225 mg/kg	1.126	253.325 mg/kg	0.0253 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	233 mg/kg		233 mg/kg	0.0233 %		
	082-001-00-6									
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				4.4 mg/kg	1.5	6.601 mg/kg	0.00066 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				33.8 mg/kg	2.976	100.598 mg/kg	0.0101 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				632 mg/kg	1.245	786.659 mg/kg	0.0787 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.47 pH		8.47 pH	8.47 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.26 mg/kg		0.26 mg/kg	0.000026 %		
		201-581-5	85-01-8							
25	anthracene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
		204-371-1	120-12-7							
26	fluoranthene				0.7 mg/kg		0.7 mg/kg	0.00007 %		
		205-912-4	206-44-0							
27	pyrene				0.61 mg/kg		0.61 mg/kg	0.000061 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.28 mg/kg		0.28 mg/kg	0.000028 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.36 mg/kg		0.36 mg/kg	0.000036 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.33 mg/kg		0.33 mg/kg	0.000033 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.28 mg/kg		0.28 mg/kg	0.000028 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.158 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: WS23

**Hazardous Waste**  
Classified as **17 09 03 \***  
in the List of Waste

Sample details

Sample Name:	WS23	LoW Code:	
Sample Depth:	0.25-0.75 m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	20% (no correction)	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)

Hazard properties

**HP 14: Ecotoxic** "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

**Aquatic Chronic 1; H410** "Very toxic to aquatic life with long lasting effects."

Because of determinands:

dicopper oxide; copper (I) oxide: (compound conc.: 0.339%)

lead compounds with the exception of those specified elsewhere in this Annex: (Note 1 conc.: 0.1%)

Determinands

Moisture content: 20% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				5 mg/kg	1.197	5.986 mg/kg	0.000599 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				39.4 mg/kg	1.32	52.021 mg/kg	0.0052 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.7 mg/kg	1.142	0.8 mg/kg	0.00008 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				72.8 mg/kg	1.462	106.401 mg/kg	0.0106 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				3011 mg/kg	1.126	3390.05 mg/kg	0.339 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	1002 mg/kg		1002 mg/kg	0.1 %		
	082-001-00-6									
8	mercury { mercury dichloride }				1.5 mg/kg	1.353	2.03 mg/kg	0.000203 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				8.5 mg/kg	1.5	12.752 mg/kg	0.00128 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				48.7 mg/kg	2.976	144.944 mg/kg	0.0145 %		
	028-035-00-7	238-766-5	14721-18-7							



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#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2	mg/kg	2.554	5.107	mg/kg	0.000511 %		
	034-002-00-8											
12	zinc { zinc oxide }				348	mg/kg	1.245	433.16	mg/kg	0.0433 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				<52	mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				0.007	mg/kg		0.007	mg/kg	0.0000007 %		
	601-020-00-8	200-753-7	71-43-2									
16	toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
17	ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
18	xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19	pH				8.44	pH		8.44	pH	8.44 pH		
			PH									
20	naphthalene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		205-917-1	208-96-8									
22	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9									
23	fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7									
24	phenanthrene				0.48	mg/kg		0.48	mg/kg	0.000048 %		
		201-581-5	85-01-8									
25	anthracene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
		204-371-1	120-12-7									
26	fluoranthene				0.95	mg/kg		0.95	mg/kg	0.000095 %		
		205-912-4	206-44-0									
27	pyrene				0.98	mg/kg		0.98	mg/kg	0.000098 %		
		204-927-3	129-00-0									
28	benzo[a]anthracene				0.48	mg/kg		0.48	mg/kg	0.000048 %		
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				0.66	mg/kg		0.66	mg/kg	0.000066 %		
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				0.86	mg/kg		0.86	mg/kg	0.000086 %		
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				0.34	mg/kg		0.34	mg/kg	0.000034 %		
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				0.66	mg/kg		0.66	mg/kg	0.000066 %		
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				0.4	mg/kg		0.4	mg/kg	0.00004 %		
		205-893-2	193-39-5									
34	dibenz[a,h]anthracene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
	601-041-00-2	200-181-8	53-70-3									
35	benzo[ghi]perylene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
		205-883-8	191-24-2									
36	polychlorobiphenyls; PCB				<0.035	mg/kg		<0.035	mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3									
Total:										0.521 %		



Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 2; H225** "Highly flammable liquid and vapour."

Because of determinand:

benzene: (conc.: 7.0e-07%)

### Classification of sample: WS23[1]

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS23[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
<b>1.00-1.60 m</b>		
Moisture content:		
<b>21.1%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 21.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				4 mg/kg	1.197	4.788 mg/kg	0.000479 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				15.1 mg/kg	1.32	19.937 mg/kg	0.00199 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				4.3 mg/kg	1.142	4.912 mg/kg	0.000491 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				110.6 mg/kg	1.462	161.648 mg/kg	0.0162 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				187 mg/kg	1.126	210.541 mg/kg	0.0211 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	221 mg/kg		221 mg/kg	0.0221 %		
	082-001-00-6									
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				10.2 mg/kg	1.5	15.302 mg/kg	0.00153 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				96.8 mg/kg	2.976	288.102 mg/kg	0.0288 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				1355 mg/kg	1.245	1686.587 mg/kg	0.169 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				150 mg/kg		150 mg/kg	0.015 %		
			TPH							





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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.33 pH		8.33 pH	8.33 pH		
			PH							
20	naphthalene				1.02 mg/kg		1.02 mg/kg	0.000102 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.47 mg/kg		0.47 mg/kg	0.000047 %		
		205-917-1	208-96-8							
22	acenaphthene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
		201-469-6	83-32-9							
23	fluorene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
		201-695-5	86-73-7							
24	phenanthrene				2.64 mg/kg		2.64 mg/kg	0.000264 %		
		201-581-5	85-01-8							
25	anthracene				0.59 mg/kg		0.59 mg/kg	0.000059 %		
		204-371-1	120-12-7							
26	fluoranthene				4.65 mg/kg		4.65 mg/kg	0.000465 %		
		205-912-4	206-44-0							
27	pyrene				4.36 mg/kg		4.36 mg/kg	0.000436 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				1.62 mg/kg		1.62 mg/kg	0.000162 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				2.7 mg/kg		2.7 mg/kg	0.00027 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				3.25 mg/kg		3.25 mg/kg	0.000325 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				1.27 mg/kg		1.27 mg/kg	0.000127 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				2.19 mg/kg		2.19 mg/kg	0.000219 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				1.3 mg/kg		1.3 mg/kg	0.00013 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.3 mg/kg		0.3 mg/kg	0.00003 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				1.39 mg/kg		1.39 mg/kg	0.000139 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.279 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.015%)

**Classification of sample: WS24**

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

**Sample details**

Sample Name: <b>WS24</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>0.0-1.0 m</b>	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content: <b>22.5%</b> (no correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: **22.5%** No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				4	mg/kg	1.197	4.788	mg/kg	0.000479 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				27.5	mg/kg	1.32	36.309	mg/kg	0.00363 %		
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				1	mg/kg	1.142	1.142	mg/kg	0.000114 %		
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				102	mg/kg	1.462	149.079	mg/kg	0.0149 %		
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				368	mg/kg	1.126	414.327	mg/kg	0.0414 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	713	mg/kg		713	mg/kg	0.0713 %		
	082-001-00-6											
8	mercury { mercury dichloride }				0.7	mg/kg	1.353	0.947	mg/kg	0.0000947 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				8.7	mg/kg	1.5	13.052	mg/kg	0.00131 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				61.6	mg/kg	2.976	183.338	mg/kg	0.0183 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2	mg/kg	2.554	5.107	mg/kg	0.000511 %		
	034-002-00-8											
12	zinc { zinc oxide }				461	mg/kg	1.245	573.813	mg/kg	0.0574 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				498	mg/kg		498	mg/kg	0.0498 %		
			TPH									



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.39 pH		8.39 pH	8.39 pH		
			PH							
20	naphthalene				3.98 mg/kg		3.98 mg/kg	0.000398 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				12.73 mg/kg		12.73 mg/kg	0.00127 %		
		205-917-1	208-96-8							
22	acenaphthene				5.37 mg/kg		5.37 mg/kg	0.000537 %		
		201-469-6	83-32-9							
23	fluorene				17 mg/kg		17 mg/kg	0.0017 %		
		201-695-5	86-73-7							
24	phenanthrene				117.87 mg/kg		117.87 mg/kg	0.0118 %		
		201-581-5	85-01-8							
25	anthracene				31.58 mg/kg		31.58 mg/kg	0.00316 %		
		204-371-1	120-12-7							
26	fluoranthene				116.79 mg/kg		116.79 mg/kg	0.0117 %		
		205-912-4	206-44-0							
27	pyrene				93.6 mg/kg		93.6 mg/kg	0.00936 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				41.6 mg/kg		41.6 mg/kg	0.00416 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				38.54 mg/kg		38.54 mg/kg	0.00385 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				52.4 mg/kg		52.4 mg/kg	0.00524 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				20.38 mg/kg		20.38 mg/kg	0.00204 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				36.13 mg/kg		36.13 mg/kg	0.00361 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				21.52 mg/kg		21.52 mg/kg	0.00215 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				6.17 mg/kg		6.17 mg/kg	0.000617 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				16.62 mg/kg		16.62 mg/kg	0.00166 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.323 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



## Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0498%)

## Classification of sample: WS28

**Hazardous Waste**  
Classified as **17 09 03 \***  
in the List of Waste

## Sample details

Sample Name:	LoW Code:	
<b>WS28</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>1.0-2.0 m</b>		
Moisture content:		
<b>25.9%</b> (no correction)		

## Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.742%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.742%)

## Determinands

Moisture content: 25.9% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				33.2 mg/kg	1.32	43.835 mg/kg	0.00438 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.6 mg/kg	1.142	0.685 mg/kg	0.0000685 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				41 mg/kg	1.462	59.924 mg/kg	0.00599 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				67 mg/kg	1.126	75.435 mg/kg	0.00754 %		
	029-002-00-X	215-270-7	1317-39-1							



environmental management for business

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	255	mg/kg		255	mg/kg	0.0255 %		
	082-001-00-6											
8	mercury { mercury dichloride }				2.6	mg/kg	1.353	3.519	mg/kg	0.000352 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				6.2	mg/kg	1.5	9.301	mg/kg	0.00093 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				50.7	mg/kg	2.976	150.897	mg/kg	0.0151 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
	034-002-00-8											
12	zinc { zinc oxide }				116	mg/kg	1.245	144.387	mg/kg	0.0144 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				7420	mg/kg		7420	mg/kg	0.742 %		
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
	601-021-00-3	203-625-9	108-88-3									
17	ethylbenzene				1.075	mg/kg		1.075	mg/kg	0.000108 %		
	601-023-00-4	202-849-4	100-41-4									
18	xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19	pH				7.71	pH		7.71	pH	7.71 pH		
			PH									
20	naphthalene				2.25	mg/kg		2.25	mg/kg	0.000225 %		
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
		205-917-1	208-96-8									
22	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9									
23	fluorene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
		201-695-5	86-73-7									
24	phenanthrene				0.58	mg/kg		0.58	mg/kg	0.000058 %		
		201-581-5	85-01-8									
25	anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7									
26	fluoranthene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
		205-912-4	206-44-0									
27	pyrene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		204-927-3	129-00-0									
28	benzo[a]anthracene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				0.07	mg/kg		0.07	mg/kg	0.000007 %		
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				0.08	mg/kg		0.08	mg/kg	0.000008 %		
		205-893-2	193-39-5									





environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.818 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 2; H225** "Highly flammable liquid and vapour."

Because of determinands:

- toluene: (conc.: 0.00001%)
- ethylbenzene: (conc.: 0.0001%)

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

- TPH (C6 to C40) petroleum group: (conc.: 0.742%)

Classification of sample: WS28[1]

**Hazardous Waste**  
Classified as **17 09 03 \***  
in the List of Waste

Sample details

Sample Name:	LoW Code:
<b>WS28[1]</b>	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:
<b>2.0-3.0 m</b>	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
Moisture content:	
<b>39.6%</b> (no correction)	

Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.394%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.394%)

Determinands

Moisture content: 39.6% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %			
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				32.4 mg/kg	1.32	42.779 mg/kg	0.00428 %			
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				0.5 mg/kg	1.142	0.571 mg/kg	0.0000571 %			
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide }				31.6 mg/kg	1.462	46.185 mg/kg	0.00462 %			
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD	
	024-001-00-0	215-607-8	1333-82-0								
6	copper { dicopper oxide; copper (I) oxide }				56 mg/kg	1.126	63.05 mg/kg	0.0063 %			
	029-002-00-X	215-270-7	1317-39-1								



environmental management for business

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	464	mg/kg		464	mg/kg	0.0464 %		
	082-001-00-6											
8	mercury { mercury dichloride }				16.2	mg/kg	1.353	21.926	mg/kg	0.00219 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				7.4	mg/kg	1.5	11.101	mg/kg	0.00111 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				66.3	mg/kg	2.976	197.326	mg/kg	0.0197 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2	mg/kg	2.554	5.107	mg/kg	0.000511 %		
	034-002-00-8											
12	zinc { zinc oxide }				86	mg/kg	1.245	107.045	mg/kg	0.0107 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				3935	mg/kg		3935	mg/kg	0.394 %		
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				0.307	mg/kg		0.307	mg/kg	0.0000307 %		
	601-021-00-3	203-625-9	108-88-3									
17	ethylbenzene				1.492	mg/kg		1.492	mg/kg	0.000149 %		
	601-023-00-4	202-849-4	100-41-4									
18	xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1]	95-47-6 [1]									
		203-396-5 [2]	106-42-3 [2]									
		203-576-3 [3]	108-38-3 [3]									
		215-535-7 [4]	1330-20-7 [4]									
19	pH				8.06	pH		8.06	pH	8.06 pH		
			PH									
20	naphthalene				1.79	mg/kg		1.79	mg/kg	0.000179 %		
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				0.07	mg/kg		0.07	mg/kg	0.000007 %		
		205-917-1	208-96-8									
22	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9									
23	fluorene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		201-695-5	86-73-7									
24	phenanthrene				0.88	mg/kg		0.88	mg/kg	0.000088 %		
		201-581-5	85-01-8									
25	anthracene				0.07	mg/kg		0.07	mg/kg	0.000007 %		
		204-371-1	120-12-7									
26	fluoranthene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
		205-912-4	206-44-0									
27	pyrene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
		204-927-3	129-00-0									
28	benzo[a]anthracene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				0.07	mg/kg		0.07	mg/kg	0.000007 %		
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
		602-039-00-4	215-648-1							
Total:								0.49 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 2; H225** "Highly flammable liquid and vapour."

Because of determinands:

- toluene: (conc.: 0.00003%)
- ethylbenzene: (conc.: 0.00014%)

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

- TPH (C6 to C40) petroleum group: (conc.: 0.394%)

## Classification of sample: WS29

**Hazardous Waste**  
Classified as **17 09 03 \***  
in the List of Waste

## Sample details

Sample Name:	LoW Code:	
<b>WS29</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>1.0-2.0 m</b>		
Moisture content:		
<b>31.1%</b> (no correction)		

## Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.45%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.45%)

## Determinands

Moisture content: **31.1%** No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				33.4 mg/kg	1.32	44.099 mg/kg	0.00441 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				36.5 mg/kg	1.462	53.347 mg/kg	0.00533 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				52 mg/kg	1.126	58.546 mg/kg	0.00585 %		
	029-002-00-X	215-270-7	1317-39-1							



environmental management for business

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	149	mg/kg		149	mg/kg	0.0149 %		
	082-001-00-6											
8	mercury { mercury dichloride }				0.5	mg/kg	1.353	0.677	mg/kg	0.0000677 %		
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				2.7	mg/kg	1.5	4.051	mg/kg	0.000405 %		
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				25.3	mg/kg	2.976	75.299	mg/kg	0.00753 %		
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
	034-002-00-8											
12	zinc { zinc oxide }				107	mg/kg	1.245	133.184	mg/kg	0.0133 %		
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				4496	mg/kg		4496	mg/kg	0.45 %		
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				0.02	mg/kg		0.02	mg/kg	0.000002 %		
	601-020-00-8	200-753-7	71-43-2									
16	toluene				0.014	mg/kg		0.014	mg/kg	0.0000014 %		
	601-021-00-3	203-625-9	108-88-3									
17	ethylbenzene				0.017	mg/kg		0.017	mg/kg	0.0000017 %		
	601-023-00-4	202-849-4	100-41-4									
18	xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1]	95-47-6 [1]									
		203-396-5 [2]	106-42-3 [2]									
		203-576-3 [3]	108-38-3 [3]									
		215-535-7 [4]	1330-20-7 [4]									
19	pH				7.96	pH		7.96	pH	7.96 pH		
			PH									
20	naphthalene				43.88	mg/kg		43.88	mg/kg	0.00439 %		
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				0.62	mg/kg		0.62	mg/kg	0.000062 %		
		205-917-1	208-96-8									
22	acenaphthene				8.5	mg/kg		8.5	mg/kg	0.00085 %		
		201-469-6	83-32-9									
23	fluorene				8.78	mg/kg		8.78	mg/kg	0.000878 %		
		201-695-5	86-73-7									
24	phenanthrene				30.62	mg/kg		30.62	mg/kg	0.00306 %		
		201-581-5	85-01-8									
25	anthracene				5.76	mg/kg		5.76	mg/kg	0.000576 %		
		204-371-1	120-12-7									
26	fluoranthene				24.24	mg/kg		24.24	mg/kg	0.00242 %		
		205-912-4	206-44-0									
27	pyrene				21.51	mg/kg		21.51	mg/kg	0.00215 %		
		204-927-3	129-00-0									
28	benzo[a]anthracene				11.14	mg/kg		11.14	mg/kg	0.00111 %		
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				10.86	mg/kg		10.86	mg/kg	0.00109 %		
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				11.79	mg/kg		11.79	mg/kg	0.00118 %		
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				4.58	mg/kg		4.58	mg/kg	0.000458 %		
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				8.74	mg/kg		8.74	mg/kg	0.000874 %		
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				4.51	mg/kg		4.51	mg/kg	0.000451 %		
		205-893-2	193-39-5									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
34	dibenz[a,h]anthracene				1.77 mg/kg		1.77 mg/kg	0.000177 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				5.2 mg/kg		5.2 mg/kg	0.00052 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.522 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 2; H225** "Highly flammable liquid and vapour."

Because of determinands:

benzene: (conc.: 2.0e-06%)

toluene: (conc.: 1.4e-06%)

ethylbenzene: (conc.: 1.7e-06%)

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.45%)



Classification of sample: WS30

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

Sample details

Sample Name:	<b>WS30</b>	LoW Code:	
Sample Depth:	<b>1.0-2.0 m</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	<b>20.8%</b> (no correction)	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)

Hazard properties

None identified

Determinands

Moisture content: 20.8% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				14.5 mg/kg	1.32	19.145 mg/kg	0.00191 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.9 mg/kg	1.142	1.028 mg/kg	0.000103 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				90 mg/kg	1.462	131.54 mg/kg	0.0132 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				40 mg/kg	1.126	45.036 mg/kg	0.0045 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	84 mg/kg		84 mg/kg	0.0084 %		
	082-001-00-6									
8	mercury { mercury dichloride }				0.3 mg/kg	1.353	0.406 mg/kg	0.0000406 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				5.3 mg/kg	1.5	7.951 mg/kg	0.000795 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				29.6 mg/kg	2.976	88.097 mg/kg	0.00881 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				321 mg/kg	1.245	399.553 mg/kg	0.04 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				125 mg/kg		125 mg/kg	0.0125 %		
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.22 pH		8.22 pH	8.22 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				0.21 mg/kg		0.21 mg/kg	0.000021 %		
		205-912-4	206-44-0							
27	pyrene				0.17 mg/kg		0.17 mg/kg	0.000017 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.17 mg/kg		0.17 mg/kg	0.000017 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.19 mg/kg		0.19 mg/kg	0.000019 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.2 mg/kg		0.2 mg/kg	0.00002 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0909 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



## Supplementary Hazardous Property Information

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**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0125%)

## Classification of sample: WS31

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS31</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
<b>0.25-0.75 m</b>		
Moisture content:		
<b>20.5%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 20.5% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				21.2 mg/kg	1.32	27.991 mg/kg	0.0028 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				1 mg/kg	1.142	1.142 mg/kg	0.000114 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				63.6 mg/kg	1.462	92.955 mg/kg	0.0093 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				91 mg/kg	1.126	102.456 mg/kg	0.0102 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	314 mg/kg		314 mg/kg	0.0314 %		
	082-001-00-6									
8	mercury { mercury dichloride }				1.1 mg/kg	1.353	1.489 mg/kg	0.000149 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				4.7 mg/kg	1.5	7.051 mg/kg	0.000705 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				34.4 mg/kg	2.976	102.384 mg/kg	0.0102 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				297 mg/kg	1.245	369.68 mg/kg	0.037 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.33 pH		8.33 pH	8.33 pH		
			PH							
20	naphthalene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.05 mg/kg		0.05 mg/kg	0.000005 %		
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.66 mg/kg		0.66 mg/kg	0.000066 %		
		201-581-5	85-01-8							
25	anthracene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
		204-371-1	120-12-7							
26	fluoranthene				0.9 mg/kg		0.9 mg/kg	0.00009 %		
		205-912-4	206-44-0							
27	pyrene				0.75 mg/kg		0.75 mg/kg	0.000075 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.47 mg/kg		0.47 mg/kg	0.000047 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.55 mg/kg		0.55 mg/kg	0.000055 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.68 mg/kg		0.68 mg/kg	0.000068 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.26 mg/kg		0.26 mg/kg	0.000026 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.42 mg/kg		0.42 mg/kg	0.000042 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.3 mg/kg		0.3 mg/kg	0.00003 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.31 mg/kg		0.31 mg/kg	0.000031 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.108 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Classification of sample: WS31[1]

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>WS31[1]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
<b>1.0-2.0 m</b>		
Moisture content:		
<b>27.4%</b>		
(no correction)		

### Hazard properties

None identified

### Determinands

Moisture content: 27.4% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3 mg/kg	1.197	3.591 mg/kg	0.000359 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				18.2 mg/kg	1.32	24.03 mg/kg	0.0024 %		
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				1 mg/kg	1.142	1.142 mg/kg	0.000114 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				47.4 mg/kg	1.462	69.278 mg/kg	0.00693 %		
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				76 mg/kg	1.126	85.568 mg/kg	0.00856 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	374 mg/kg		374 mg/kg	0.0374 %		
	082-001-00-6									
8	mercury { mercury dichloride }				1.5 mg/kg	1.353	2.03 mg/kg	0.000203 %		
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				3.8 mg/kg	1.5	5.701 mg/kg	0.00057 %		
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				30.1 mg/kg	2.976	89.586 mg/kg	0.00896 %		
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %		
	034-002-00-8									
12	zinc { zinc oxide }				289 mg/kg	1.245	359.722 mg/kg	0.036 %		
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							



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#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.87 pH		7.87 pH	7.87 pH		
			PH							
20	naphthalene				0.97 mg/kg		0.97 mg/kg	0.000097 %		
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.23 mg/kg		0.23 mg/kg	0.000023 %		
		205-917-1	208-96-8							
22	acenaphthene				0.59 mg/kg		0.59 mg/kg	0.000059 %		
		201-469-6	83-32-9							
23	fluorene				0.59 mg/kg		0.59 mg/kg	0.000059 %		
		201-695-5	86-73-7							
24	phenanthrene				3.94 mg/kg		3.94 mg/kg	0.000394 %		
		201-581-5	85-01-8							
25	anthracene				0.68 mg/kg		0.68 mg/kg	0.000068 %		
		204-371-1	120-12-7							
26	fluoranthene				3.43 mg/kg		3.43 mg/kg	0.000343 %		
		205-912-4	206-44-0							
27	pyrene				2.96 mg/kg		2.96 mg/kg	0.000296 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				1.35 mg/kg		1.35 mg/kg	0.000135 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				1.73 mg/kg		1.73 mg/kg	0.000173 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				1.89 mg/kg		1.89 mg/kg	0.000189 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.73 mg/kg		0.73 mg/kg	0.000073 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				1.25 mg/kg		1.25 mg/kg	0.000125 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.79 mg/kg		0.79 mg/kg	0.000079 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.27 mg/kg		0.27 mg/kg	0.000027 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.8 mg/kg		0.8 mg/kg	0.00008 %		
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.109 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification



## Appendix A: Classifier defined and non CLP determinands

### chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

### lead compounds with the exception of those specified elsewhere in this Annex

CLP index number: 082-001-00-6

Description/Comments: Least-worst case: Lead REACH Consortium considers some lead compounds Carcinogenic category 2B

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

Additional Hazard Statement(s): Carc. 2 H351

Reason for additional Hazards Statement(s)/Risk Phrase(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium

[www.reach-lead.eu/substanceinformation.html](http://www.reach-lead.eu/substanceinformation.html). Review date 29/09/2015

### TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

### ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4

Description/Comments:

Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)

Additional Hazard Statement(s): Carc. 2 H351

Reason for additional Hazards Statement(s)/Risk Phrase(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

### pH (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

### acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

### acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

### fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

### phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

**anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 17 Jul 2015  
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

**fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 21 Aug 2015  
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

**pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 21 Aug 2015  
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

**indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 06 Aug 2015  
Hazard Statements: Carc. 2 H351

**benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 23 Jul 2015  
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

**polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4  
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.  
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)  
Additional Hazard Statement(s): Carc. 1A H350  
Reason for additional Hazards Statement(s)/Risk Phrase(s):  
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

**diesel petroleum group** (CAS Number: 68334-30-5, 68476-34-6, 94114-59-7, 1159170-26-9)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: Aquatic Chronic 2 H411 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Carc. 2 H351 , Acute Tox. 4 H332 , Skin Irrit. 2 H315 , Flam. Liq. 3 H226

## Appendix B: Rationale for selection of metal species

### antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings

### arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

### cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history

### chromium in chromium(III) compounds {chromium(III) oxide}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass



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#### **chromium in chromium(VI) compounds {chromium(VI) oxide}**

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

#### **copper {dicopper oxide; copper (I) oxide}**

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

#### **lead {lead compounds with the exception of those specified elsewhere in this Annex}**

Laboratory analysis show Hexavalent Chromium is below detection, thus lead chromate is extremely unlikely to have formed.

#### **mercury {mercury dichloride}**

Worst case CLP species based on hazard statements/molecular weight

#### **molybdenum {molybdenum(VI) oxide}**

Worst case CLP species based on hazard statements/molecular weight

#### **nickel {nickel chromate}**

Worst case CLP species based on hazard statements/molecular weight

#### **selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}**

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

#### **zinc {zinc oxide}**

Laboratory analysis shows Hexavalent Chromium is below detection, thus zinc chromate is extremely unlikely to have formed.

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### **Appendix C: Version**

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018

HazWasteOnline Classification Engine Version: 2018.341.3722.7617 (07 Dec 2018)

HazWasteOnline Database: 2018.341.3722.7617 (07 Dec 2018)

This classification utilises the following guidance and legislation:

**WM3 v1.1 - Waste Classification** - 1st Edition v1.1 - May 2018  
**CLP Regulation** - Regulation 1272/2008/EC of 16 December 2008  
**1st ATP** - Regulation 790/2009/EC of 10 August 2009  
**2nd ATP** - Regulation 286/2011/EC of 10 March 2011  
**3rd ATP** - Regulation 618/2012/EU of 10 July 2012  
**4th ATP** - Regulation 487/2013/EU of 8 May 2013  
**Correction to 1st ATP** - Regulation 758/2013/EU of 7 August 2013  
**5th ATP** - Regulation 944/2013/EU of 2 October 2013  
**6th ATP** - Regulation 605/2014/EU of 5 June 2014  
**WFD Annex III replacement** - Regulation 1357/2014/EU of 18 December 2014  
**Revised List of Wastes 2014** - Decision 2014/955/EU of 18 December 2014  
**7th ATP** - Regulation 2015/1221/EU of 24 July 2015  
**8th ATP** - Regulation (EU) 2016/918 of 19 May 2016  
**9th ATP** - Regulation (EU) 2016/1179 of 19 July 2016  
**10th ATP** - Regulation (EU) 2017/776 of 4 May 2017  
**HP14 amendment** - Regulation (EU) 2017/997 of 8 June 2017  
**13th ATP** - Regulation (EU) 2018/1480 of 4 October 2018  
**POPs Regulation 2004** - Regulation 850/2004/EC of 29 April 2004  
**1st ATP to POPs Regulation** - Regulation 756/2010/EU of 24 August 2010  
**2nd ATP to POPs Regulation** - Regulation 757/2010/EU of 24 August 2010

## Waste Classification Report



JVZN5-ABHRB-2NW85

### Job name

19-234-02

### Description/Comments

### Project

19-234-02

### Site

Castleforbes

### Related Documents

#	Name	Description
None		

### Waste Stream Template

O'Callaghan Moran Waste Stream

### Classified by

Name:  
**Austin Hynes**  
Date:  
**06 Mar 2019 11:02 GMT**  
Telephone:  
**021 4345366**

Company:  
**O'Callaghan Moran and Associates**  
**Unit 15 Melbourne Business Park**  
**Model Farm Road**  
**Cork**

### Report

Created by: Austin Hynes  
Created date: 06 Mar 2019 11:02 GMT

### Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	WS-201	2.00-3.00	Non Hazardous		3
2	WS-202		Non Hazardous		6
3	WS-203	0.00-1.00	Non Hazardous		8
4	WS-204	0.00-0.50	Non Hazardous		11
5	ST1	0.10	Hazardous	HP 7, HP 10, HP 11, HP 14	13
6	ST1[2]	1.20	Hazardous	HP 7, HP 11	15
7	ST1[3]	2.30	Hazardous	HP 7, HP 11	17
8	ST2A	0.10	Hazardous	HP 7, HP 11	19
9	ST2A[2]	1.20	Hazardous	HP 7, HP 11	21
10	ST2A[3]	2.30	Hazardous	HP 7, HP 11	23
11	ST2B	0.10	Hazardous	HP 7, HP 11	25



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#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
12	ST2B[2]	1.20	Hazardous	HP 7, HP 11	27
13	ST2B[3]	2.30	Non Hazardous		29
14	ST2C	0.10	Hazardous	HP 7, HP 11	30
15	ST2C[2]	1.20	Hazardous	HP 7, HP 11	32
16	ST2C[3]	2.30	Hazardous	HP 7, HP 11	34

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	36
Appendix B: Rationale for selection of metal species	37
Appendix C: Version	38

## Classification of sample: WS-201

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

## Sample details

Sample Name:	LoW Code:	
<b>WS-201</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
<b>2.00-3.00 m</b>		
Moisture content:		
<b>32.7%</b>		
(no correction)		

## Hazard properties

None identified

## Determinands

Moisture content: 32.7% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				4 mg/kg	1.197	4.788 mg/kg	0.000479 %		
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				35.6 mg/kg	1.32	47.004 mg/kg	0.0047 %		
	033-003-00-0	215-481-4	1327-53-3							
3	boron { diboron trioxide; boric oxide }				1.6 mg/kg	3.22	5.152 mg/kg	0.000515 %		
	005-008-00-8	215-125-8	1303-86-2							
4	cadmium { cadmium oxide }				1.5 mg/kg	1.142	1.713 mg/kg	0.000171 %		
	048-002-00-0	215-146-2	1306-19-0							
5	chromium in chromium(III) compounds { chromium(III) oxide }				118.1 mg/kg	1.462	172.61 mg/kg	0.0173 %		
		215-160-9	1308-38-9							
6	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
7	copper { dicopper oxide; copper (I) oxide }				221 mg/kg	1.126	248.821 mg/kg	0.0249 %		
	029-002-00-X	215-270-7	1317-39-1							
8	lead { lead chromate }			1	394 mg/kg	1.56	614.567 mg/kg	0.0394 %		
	082-004-00-2	231-846-0	7758-97-6							
9	mercury { mercury dichloride }				0.3 mg/kg	1.353	0.406 mg/kg	0.0000406 %		
	080-010-00-X	231-299-8	7487-94-7							
10	molybdenum { molybdenum(VI) oxide }				12.1 mg/kg	1.5	18.152 mg/kg	0.00182 %		
	042-001-00-9	215-204-7	1313-27-5							
11	nickel { nickel chromate }				146.7 mg/kg	2.976	436.618 mg/kg	0.0437 %		
	028-035-00-7	238-766-5	14721-18-7							
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %		
	034-002-00-8									
13	zinc { zinc oxide }				955 mg/kg	1.245	1188.702 mg/kg	0.119 %		
	030-013-00-7	215-222-5	1314-13-2							
14	TPH (C6 to C40) petroleum group				793 mg/kg		793 mg/kg	0.0793 %		
			TPH							



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HazWasteOnline™

Report created by Austin Hynes on 06 Mar 2019

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
16	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
17	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
18	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
19	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
	006-007-00-5									
21	pH				8.41 pH		8.41 pH	8.41 pH		
			PH							
22	naphthalene				2.65 mg/kg		2.65 mg/kg	0.000265 %		
	601-052-00-2	202-049-5	91-20-3							
23	acenaphthylene				0.61 mg/kg		0.61 mg/kg	0.000061 %		
		205-917-1	208-96-8							
24	acenaphthene				6.93 mg/kg		6.93 mg/kg	0.000693 %		
		201-469-6	83-32-9							
25	fluorene				4.71 mg/kg		4.71 mg/kg	0.000471 %		
		201-695-5	86-73-7							
26	phenanthrene				70.01 mg/kg		70.01 mg/kg	0.007 %		
		201-581-5	85-01-8							
27	anthracene				17.69 mg/kg		17.69 mg/kg	0.00177 %		
		204-371-1	120-12-7							
28	fluoranthene				97.22 mg/kg		97.22 mg/kg	0.00972 %		
		205-912-4	206-44-0							
29	pyrene				76.69 mg/kg		76.69 mg/kg	0.00767 %		
		204-927-3	129-00-0							
30	benzo[a]anthracene				46.01 mg/kg		46.01 mg/kg	0.0046 %		
	601-033-00-9	200-280-6	56-55-3							
31	chrysene				48.4 mg/kg		48.4 mg/kg	0.00484 %		
	601-048-00-0	205-923-4	218-01-9							
32	benzo[b]fluoranthene				59.66 mg/kg		59.66 mg/kg	0.00597 %		
	601-034-00-4	205-911-9	205-99-2							
33	benzo[k]fluoranthene				23.2 mg/kg		23.2 mg/kg	0.00232 %		
	601-036-00-5	205-916-6	207-08-9							
34	benzo[a]pyrene; benzo[def]chrysene				43.82 mg/kg		43.82 mg/kg	0.00438 %		
	601-032-00-3	200-028-5	50-32-8							
35	indeno[123-cd]pyrene				28.07 mg/kg		28.07 mg/kg	0.00281 %		
		205-893-2	193-39-5							
36	dibenz[a,h]anthracene				5.23 mg/kg		5.23 mg/kg	0.000523 %		
	601-041-00-2	200-181-8	53-70-3							
37	benzo[ghi]perylene				26.74 mg/kg		26.74 mg/kg	0.00267 %		
		205-883-8	191-24-2							
38	phenol				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	604-001-00-2	203-632-7	108-95-2							
39	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.388 %		

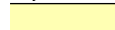







environmental management for business

Key

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	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

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### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

---

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0793%)

Classification of sample: WS-202

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

Sample details

Sample Name: <b>WS-202</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>31.1%</b> (no correction)	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)

Hazard properties

None identified

Determinands

Moisture content: 31.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	TPH (C6 to C40) petroleum group				130 mg/kg		130 mg/kg	0.013 %		
			TPH							
2	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
3	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
4	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
5	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
6	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
Total:								0.013 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- <LOD** Below limit of detection

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."



environmental management for business

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Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.013%)

**Classification of sample: WS-203**

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

**Sample details**

Sample Name: <b>WS-203</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>0.00-1.00 m</b>	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content: <b>17.7%</b> (no correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: 17.7% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				5	mg/kg	1.197	5.986	mg/kg	0.000599 %		
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				23.4	mg/kg	1.32	30.896	mg/kg	0.00309 %		
	033-003-00-0	215-481-4	1327-53-3									
3	boron { diboron trioxide; boric oxide }				1.1	mg/kg	3.22	3.542	mg/kg	0.000354 %		
	005-008-00-8	215-125-8	1303-86-2									
4	cadmium { cadmium oxide }				1.3	mg/kg	1.142	1.485	mg/kg	0.000149 %		
	048-002-00-0	215-146-2	1306-19-0									
5	chromium in chromium(III) compounds { chromium(III) oxide }				20.2	mg/kg	1.462	29.523	mg/kg	0.00295 %		
		215-160-9	1308-38-9									
6	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
7	copper { dicopper oxide; copper (I) oxide }				232	mg/kg	1.126	261.206	mg/kg	0.0261 %		
	029-002-00-X	215-270-7	1317-39-1									
8	lead { lead chromate }			1	640	mg/kg	1.56	998.282	mg/kg	0.064 %		
	082-004-00-2	231-846-0	7758-97-6									
9	mercury { mercury dichloride }				2.7	mg/kg	1.353	3.654	mg/kg	0.000365 %		
	080-010-00-X	231-299-8	7487-94-7									
10	molybdenum { molybdenum(VI) oxide }				2.8	mg/kg	1.5	4.201	mg/kg	0.00042 %		
	042-001-00-9	215-204-7	1313-27-5									
11	nickel { nickel chromate }				40.8	mg/kg	2.976	121.432	mg/kg	0.0121 %		
	028-035-00-7	238-766-5	14721-18-7									
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
	034-002-00-8											
13	zinc { zinc oxide }				484	mg/kg	1.245	602.442	mg/kg	0.0602 %		
	030-013-00-7	215-222-5	1314-13-2									
14	TPH (C6 to C40) petroleum group				467	mg/kg		467	mg/kg	0.0467 %		
			TPH									



environmental management for business

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X   216-653-1   1634-04-4				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
16	benzene 601-020-00-8   200-753-7   71-43-2				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
17	toluene 601-021-00-3   203-625-9   108-88-3				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
18	ethylbenzene 601-023-00-4   202-849-4   100-41-4				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
19	xylene 601-022-00-9   202-422-2 [1]   95-47-6 [1] 203-396-5 [2]   106-42-3 [2] 203-576-3 [3]   108-38-3 [3] 215-535-7 [4]   1330-20-7 [4]				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	pH PH				8.59 pH		8.59 pH	8.59 pH		
22	naphthalene 601-052-00-2   202-049-5   91-20-3				0.49 mg/kg		0.49 mg/kg	0.000049 %		
23	acenaphthylene 205-917-1   208-96-8				0.16 mg/kg		0.16 mg/kg	0.000016 %		
24	acenaphthene 201-469-6   83-32-9				1.88 mg/kg		1.88 mg/kg	0.000188 %		
25	fluorene 201-695-5   86-73-7				1.26 mg/kg		1.26 mg/kg	0.000126 %		
26	phenanthrene 201-581-5   85-01-8				12.09 mg/kg		12.09 mg/kg	0.00121 %		
27	anthracene 204-371-1   120-12-7				2.18 mg/kg		2.18 mg/kg	0.000218 %		
28	fluoranthene 205-912-4   206-44-0				11.38 mg/kg		11.38 mg/kg	0.00114 %		
29	pyrene 204-927-3   129-00-0				9.65 mg/kg		9.65 mg/kg	0.000965 %		
30	benzo[a]anthracene 601-033-00-9   200-280-6   56-55-3				6.05 mg/kg		6.05 mg/kg	0.000605 %		
31	chrysene 601-048-00-0   205-923-4   218-01-9				5.85 mg/kg		5.85 mg/kg	0.000585 %		
32	benzo[b]fluoranthene 601-034-00-4   205-911-9   205-99-2				6.48 mg/kg		6.48 mg/kg	0.000648 %		
33	benzo[k]fluoranthene 601-036-00-5   205-916-6   207-08-9				2.52 mg/kg		2.52 mg/kg	0.000252 %		
34	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3   200-028-5   50-32-8				4.8 mg/kg		4.8 mg/kg	0.00048 %		
35	indeno[123-cd]pyrene 205-893-2   193-39-5				3.01 mg/kg		3.01 mg/kg	0.000301 %		
36	dibenz[a,h]anthracene 601-041-00-2   200-181-8   53-70-3				0.66 mg/kg		0.66 mg/kg	0.000066 %		
37	benzo[ghi]perylene 205-883-8   191-24-2				2.9 mg/kg		2.9 mg/kg	0.00029 %		
38	phenol 604-001-00-2   203-632-7   108-95-2				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
39	polychlorobiphenyls; PCB 602-039-00-4   215-648-1   1336-36-3				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
Total:								0.225 %		



Key

- 
- User supplied data
  - Determinand values ignored for classification, see column 'Conc. Not Used' for reason
  - Determinand defined or amended by HazWasteOnline (see Appendix A)
  - Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
  - <LOD** Below limit of detection
  - CLP: Note 1 Only the metal concentration has been used for classification

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### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

---

TPH (C6 to C40) petroleum group: (conc.: 0.0467%)

## Classification of sample: WS-204

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

## Sample details

Sample Name: <b>WS-204</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: <b>0.00-0.50 m</b>	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content: <b>8.5%</b> (no correction)		

## Hazard properties

None identified

## Determinands

Moisture content: 8.5% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	TPH (C6 to C40) petroleum group				659 mg/kg		659 mg/kg	0.0659 %		
			TPH							
2	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
3	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
4	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
5	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
6	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
Total:								0.0659 %		

### Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- <LOD** Below limit of detection

## Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**For this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.





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Report created by Austin Hynes on 06 Mar 2019

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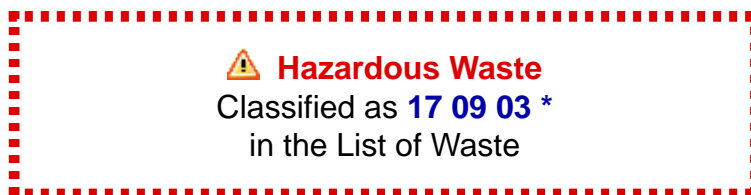
Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0659%)

## Classification of sample: ST1



## Sample details

Sample Name:	LoW Code:	
<b>ST1</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>0.10 m</b>		
Moisture content:		
<b>26.8%</b>		
(no correction)		

## Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 6.769%)

**HP 10: Toxic for reproduction** "waste which has adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring"

Hazard Statements hit:

**Repr. 2; H361d** "Suspected of damaging the unborn child."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 6.769%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 6.769%)

**HP 14: Ecotoxic** "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

**Aquatic Chronic 2; H411** "Toxic to aquatic life with long lasting effects."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 6.769%)

## Determinands

Moisture content: **26.8% No Moisture Correction applied (MC)**



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	TPH (C6 to C40) petroleum group				67691	mg/kg	67691	mg/kg	6.769 %		
			TPH								
Total:									6.769 %		

Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.

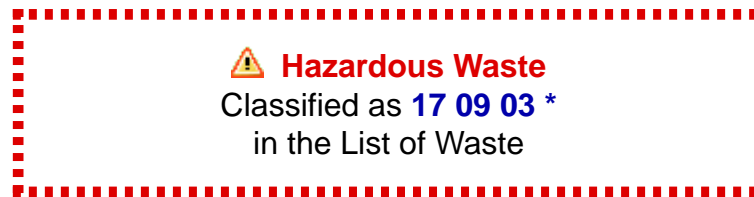
Hazard Statements hit:

**Fam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 6.769%)

## Classification of sample: ST1[2]



## Sample details

Sample Name:	LoW Code:	
<b>ST1[2]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>1.20 m</b>		
Moisture content:		
<b>42.9%</b>		
(no correction)		

## Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.539%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.539%)

## Determinands

Moisture content: 42.9% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	•	TPH (C6 to C40) petroleum group			15393 mg/kg		15393 mg/kg	1.539 %		
			TPH							
Total:								1.539 %		

### Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

## Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.



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Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.539%)

Classification of sample: ST1[3]

 **Hazardous Waste**  
 Classified as **17 09 03 \***  
 in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>ST1[3]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>2.30 m</b>		
Moisture content:		
<b>44.7%</b>		
(no correction)		

Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 2.048%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 2.048%)

Determinands

Moisture content: **44.7% No Moisture Correction applied (MC)**

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	●	TPH (C6 to C40) petroleum group			20476 mg/kg		20476 mg/kg	2.048 %		
			TPH				Total:	2.048 %		

Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.



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Hazard Statements hit:


**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 2.048%)



Classification of sample: ST2A

 **Hazardous Waste**  
 Classified as **17 09 03 \***  
 in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>ST2A</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>0.10 m</b>		
Moisture content:		
<b>23.6%</b>		
(no correction)		

Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.163%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.163%)

Determinands

Moisture content: 23.6% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	●	TPH (C6 to C40) petroleum group			1633 mg/kg		1633 mg/kg	0.163 %		
			TPH				Total:	0.163 %		

Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.



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Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.163%)

Classification of sample: ST2A[2]

 **Hazardous Waste**  
 Classified as **17 09 03 \***  
 in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>ST2A[2]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>1.20 m</b>		
Moisture content:		
<b>54.9%</b>		
(no correction)		

Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.185%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.185%)

Determinands

Moisture content: 54.9% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	●	TPH (C6 to C40) petroleum group			1853 mg/kg		1853	mg/kg	0.185 %		
			TPH				Total:		0.185 %		

Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.



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Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.185%)

### Classification of sample: ST2A[3]



**Hazardous Waste**  
Classified as **17 09 03 \***  
in the List of Waste

### Sample details

Sample Name:	LoW Code:	
<b>ST2A[3]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>2.30 m</b>		
Moisture content:		
<b>41.5%</b> (no correction)		

### Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.157%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.157%)

### Determinands

Moisture content: **41.5% No Moisture Correction applied (MC)**

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	●	TPH (C6 to C40) petroleum group			1572 mg/kg		1572 mg/kg	0.157 %		
			TPH				Total:	0.157 %		

#### Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.



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Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.157%)

Classification of sample: ST2B

 **Hazardous Waste**  
 Classified as **17 09 03 \***  
 in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>ST2B</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>0.10 m</b>		
Moisture content:		
<b>15.8%</b>		
(no correction)		

Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.223%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.223%)

Determinands

Moisture content: 15.8% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	•	TPH (C6 to C40) petroleum group			2233 mg/kg		2233 mg/kg	0.223 %		
			TPH				Total:	0.223 %		

Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.





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environmental management for business

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Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."


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Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.223%)

Classification of sample: ST2B[2]



**Hazardous Waste**  
Classified as **17 09 03 \***  
in the List of Waste

Sample details

Sample Name:	LoW Code:	
<b>ST2B[2]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>1.20 m</b>		
Moisture content:		
<b>20.1%</b>		
(no correction)		

Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.178%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.178%)

Determinands

Moisture content: 20.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	●	TPH (C6 to C40) petroleum group			1775 mg/kg		1775 mg/kg	0.178 %		
			TPH							
Total:								0.178 %		

Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.



environmental management for business

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Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.178%)

**Classification of sample: ST2B[3]**

✔ **Non Hazardous Waste**  
Classified as **17 09 04**  
in the List of Waste

**Sample details**

Sample Name:	LoW Code:	
<b>ST2B[3]</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
<b>2.30 m</b>		
Moisture content:		
<b>35.9%</b> (no correction)		

**Hazard properties**

None identified

**Determinands**


Moisture content: 35.9% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	TPH (C6 to C40) petroleum group				<30 mg/kg		<30 mg/kg	<0.003 %		<LOD
			TPH							
Total:								0.003 %		

**Key**

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- <LOD** Below limit of detection

## Classification of sample: ST2C

 **Hazardous Waste**  
Classified as **17 09 03 \***  
in the List of Waste

## Sample details

Sample Name:	LoW Code:
<b>ST2C</b>	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>0.10 m</b>	
Moisture content:	
<b>31.1%</b> (no correction)	

## Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.202%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.202%)

## Determinands

Moisture content: 31.1% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	●	TPH (C6 to C40) petroleum group			2022	mg/kg		2022	mg/kg	0.202 %		
			TPH									
									Total:	0.202 %		

### Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

## Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.



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Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.202%)

Classification of sample: ST2C[2]

 **Hazardous Waste**  
 Classified as **17 09 03 \***  
 in the List of Waste

Sample details

Sample Name:	LoW Code:
<b>ST2C[2]</b>	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>1.20 m</b>	
Moisture content:	
<b>28.2%</b>	
(no correction)	

Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.141%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.141%)

Determinands

Moisture content: 28.2% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	●	TPH (C6 to C40) petroleum group			1405	mg/kg		1405	mg/kg	0.141 %		
			TPH									
Total:										0.141 %		

Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.





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Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.141%)

Classification of sample: ST2C[3]

 **Hazardous Waste**  
 Classified as **17 09 03 \***  
 in the List of Waste

Sample details

Sample Name:	LoW Code:
<b>ST2C[3]</b>	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 09 03 * (Other construction and demolition wastes (including mixed wastes) containing hazardous substances)
<b>2.30 m</b>	
Moisture content:	
<b>26.8%</b>	
(no correction)	

Hazard properties

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.278%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.278%)

Determinands

Moisture content: 26.8% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	●	TPH (C6 to C40) petroleum group			2781	mg/kg		2781	mg/kg	0.278 %		
			TPH									
									Total:	0.278 %		

Key

- User supplied data
- Hazardous result
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Can be discounted as this is a solid waste without a free draining liquid phase.



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Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.278%)

## Appendix A: Classifier defined and non CLP determinands

### • **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

### • **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4

Description/Comments:

Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)

Additional Hazard Statement(s): Carc. 2 H351

Reason for additional Hazards Statement(s)/Risk Phrase(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

### • **chromium(III) oxide** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

### • **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

CLP index number: 006-007-00-5

Description/Comments: Conversion factor based on a worst case compound: sodium cyanide

Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)

Additional Hazard Statement(s): EUH032 >= 0.2 %

Reason for additional Hazards Statement(s)/Risk Phrase(s):

14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

### • **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

### • **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

### • **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

### • **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

• **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

• **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

• **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

• **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

• **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2 H351

• **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

• **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4

Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

Additional Hazard Statement(s): Carc. 1A H350

Reason for additional Hazards Statement(s)/Risk Phrase(s):

29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

## Appendix B: Rationale for selection of metal species

### antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings

### arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

### boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass

### cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history



#### **chromium in chromium(III) compounds {chromium(III) oxide}**

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

#### **chromium in chromium(VI) compounds {chromium(VI) oxide}**

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

#### **copper {dicopper oxide; copper (I) oxide}**

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. Worst case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

#### **lead {lead chromate}**

Worst case CLP species based on hazard statements/molecular weight

#### **mercury {mercury dichloride}**

Worst case CLP species based on hazard statements/molecular weight

#### **molybdenum {molybdenum(VI) oxide}**

Worst case CLP species based on hazard statements/molecular weight

#### **nickel {nickel chromate}**

Worst case CLP species based on hazard statements/molecular weight

#### **selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}**

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

#### **zinc {zinc oxide}**

Laboratory analysis shows Hexavalent Chromium is below detection, thus zinc chromate is extremely unlikely to have formed.

#### **cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}**

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

## **Appendix C: Version**

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018  
HazWasteOnline Classification Engine Version: 2019.63.3818.7784 (04 Mar 2019)  
HazWasteOnline Database: 2019.63.3818.7784 (04 Mar 2019)

This classification utilises the following guidance and legislation:

**WM3 v1.1 - Waste Classification** - 1st Edition v1.1 - May 2018  
**CLP Regulation** - Regulation 1272/2008/EC of 16 December 2008  
**1st ATP** - Regulation 790/2009/EC of 10 August 2009  
**2nd ATP** - Regulation 286/2011/EC of 10 March 2011  
**3rd ATP** - Regulation 618/2012/EU of 10 July 2012  
**4th ATP** - Regulation 487/2013/EU of 8 May 2013  
**Correction to 1st ATP** - Regulation 758/2013/EU of 7 August 2013  
**5th ATP** - Regulation 944/2013/EU of 2 October 2013  
**6th ATP** - Regulation 605/2014/EU of 5 June 2014  
**WFD Annex III replacement** - Regulation 1357/2014/EU of 18 December 2014  
**Revised List of Wastes 2014** - Decision 2014/955/EU of 18 December 2014  
**7th ATP** - Regulation 2015/1221/EU of 24 July 2015  
**8th ATP** - Regulation (EU) 2016/918 of 19 May 2016  
**9th ATP** - Regulation (EU) 2016/1179 of 19 July 2016  
**10th ATP** - Regulation (EU) 2017/776 of 4 May 2017  
**HP14 amendment** - Regulation (EU) 2017/997 of 8 June 2017  
**13th ATP** - Regulation (EU) 2018/1480 of 4 October 2018  
**POPs Regulation 2004** - Regulation 850/2004/EC of 29 April 2004  
**1st ATP to POPs Regulation** - Regulation 756/2010/EU of 24 August 2010  
**2nd ATP to POPs Regulation** - Regulation 757/2010/EU of 24 August 2010

A10.1 NRA -- Institute of Geologists of Ireland (IGI) Hydrology Impact  
Rating





## Appendix A10.1

### Institute of Geologists of Ireland (IGI) Hydrology Impact Rating

Table 1: Criteria for rating impact magnitude at EIS stage – Estimation of magnitude of impact on hydrology attributes (NRA, 2009)

Magnitude of Impact	Criteria	Typical Examples
<b>Large Adverse</b>	Results in loss of attribute and/or quality and integrity of attribute	Loss or extensive change to a water body or water dependent habitat
<b>Moderate Adverse</b>	Results in impact on integrity of attribute or loss of part of attribute	Calculated risk of serious pollution incident >1% annually <sup>2</sup>
<b>Small Adverse</b>	Results in minor impact on integrity of attribute or loss of small part of attribute	Increase in predicted peak flood level >10mm <sup>1</sup>
<b>Negligible</b>	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Negligible change in predicted peak flood level <sup>1</sup>
<b>Minor Beneficial</b>	Results in minor improvement of attribute quality	Calculated reduction in pollution risk of 50% or more where existing risk is <1% annually <sup>2</sup>
<b>Moderate Beneficial</b>	Results in moderate improvement of attribute quality	Calculated reduction in pollution risk of 50% or more where existing risk is >1% annually <sup>2</sup>
<b>Major Beneficial</b>	Results in major improvement of attribute quality	Reduction in predicted peak flood level >100mm <sup>1</sup>

*Additional examples are provided in the NRA Guidance Document*

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

<sup>1</sup> Refer to Appendix B3 / Annex 1, Method D, Annex 1 of HA216/06 <sup>2</sup>

<sup>2</sup> Source: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 2 Criteria for Rating Impact Significance of Hydrological Attributes (NRA, 2009)

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

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

## A11.1 Ambient Air Quality Standards



## Appendix A11.1

### Ambient Air Quality Standards

National standards for ambient air pollutants in Ireland have generally ensued from Council Directives enacted in the EU (& previously the EC & EEC) (see Table 11.1). The initial interest in ambient air pollution legislation in the EU dates from the early 1980s and was in response to the most serious pollutant problems at that time which was the issue of acid rain. As a result of this sulphur dioxide, and later nitrogen dioxide, were both the focus of EU legislation. Linked to the acid rain problem was urban smog associated with fuel burning for space heating purposes. Also apparent at this time were the problems caused by leaded petrol and EU legislation was introduced to deal with this problem in the early 1980s.

In recent years the EU has focused on defining a basis strategy across the EU in relation to ambient air quality. In 1996, a Framework Directive, Council Directive 96/62/EC, on ambient air quality assessment and management was enacted. The aims of the Directive are fourfold. Firstly, the Directive's aim is to establish objectives for ambient air quality designed to avoid harmful effects to health. Secondly, the Directive aims to assess ambient air quality on the basis of common methods and criteria throughout the EU. Additionally, it is aimed to make information on air quality available to the public via alert thresholds and fourthly, it aims to maintain air quality where it is good and improve it in other cases.

As part of these measures to improve air quality, the European Commission has adopted proposals for daughter legislation under Directive 96/62/EC. The first of these directives to be enacted, Council Directive 1999/30/EC, has been passed into Irish Law as S.I. No 271 of 2002 (Air Quality Standards Regulations 2002), and has set limit values which came into operation on 17<sup>th</sup> June 2002. Council Directive 1999/30/EC, as relating to limit values for sulphur dioxide, nitrogen dioxide, lead and particulate matter, is detailed in Table 11.1. The Air Quality Standards Regulations 2002 detail margins of tolerance, which are trigger levels for certain types of action in the period leading to the attainment date. The margin of tolerance varies from 60% for lead, to 30% for 24-hour limit value for PM<sub>10</sub>, 40% for the hourly and annual limit value for NO<sub>2</sub> and 26% for hourly SO<sub>2</sub> limit values. The margin of tolerance commenced from June 2002, and will start to reduce from 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by the attainment date. A second daughter directive, EU Council Directive 2000/69/EC, has published limit values for both carbon monoxide and benzene in ambient air. This has also been passed into Irish Law under the Air Quality Standards Regulations 2002.

## Castleforbes Strategic Housing Development

### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

The most recent EU Council Directive on ambient air quality was published on the 11/06/08 which has been transposed into Irish Law as S.I. 180 of 2011. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive and its subsequent daughter directives. Provisions were also made for the inclusion of new ambient limit values relating to PM<sub>2.5</sub>. The margins of tolerance specific to each pollutant were also slightly adjusted from previous directives as outlined in Table 11.1. In regards to existing ambient air quality standards, it is not proposed to modify the standards but to strengthen existing provisions to ensure that non-compliances are removed. In addition, new ambient standards for PM<sub>2.5</sub> are included in Directive 2008/50/EC. The approach for PM<sub>2.5</sub> is to establish a target value of 25µg/m<sup>3</sup>, as an annual average (to be attained everywhere by 2010) and a limit value of 25µg/m<sup>3</sup>, as an annual average (to be attained everywhere by 2015), coupled with a target to reduce human exposure generally to PM<sub>2.5</sub> between 2010 and 2020. This exposure reduction target will range from 0% (for PM<sub>2.5</sub> concentrations of less than 8.5µg/m<sup>3</sup> to 20% of the average exposure indicator (AEI) for concentrations of between 18 - 22µg/m<sup>3</sup>). Where the AEI is currently greater than 22µg/m<sup>3</sup> all appropriate measures should be employed to reduce this level to 18µg/m<sup>3</sup> by 2020. The AEI is based on measurements taken in urban background locations averaged over a three year period from 2008 - 2010 and again from 2018-2020. Additionally, an exposure concentration obligation of 20µg/m<sup>3</sup> has been set to be complied with by 2015 again based on the AEI.

Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used which are triggers for particular actions. The Alert Threshold is defined in Council Directive 96/62/EC as “a level beyond which there is a risk to human health from brief exposure and at which immediate steps shall be taken as laid down in Directive 96/62/EC”. These steps include undertaking to ensure that the necessary steps are taken to inform the public (e.g. by means of radio, television and the press).

The Margin of Tolerance is defined in Council Directive 96/62/EC as a concentration which is higher than the limit value when legislation comes into force. It decreases to meet the limit value by the attainment date. The Upper Assessment Threshold is defined in Council Directive 96/62/EC as a concentration above which high quality measurement is mandatory. Data from measurement may be supplemented by information from other sources, including air quality modelling.

An annual average limit for both NO<sub>x</sub> (NO and NO<sub>2</sub>) is applicable for the protection of vegetation in highly rural areas away from major sources of NO<sub>x</sub> such as large conurbations, factories and high road vehicle activity such as a dual carriageway or motorway. Annex VI of EU Directive 1999/30/EC identifies that monitoring to demonstrate compliance with the NO<sub>x</sub> limit for the protection of vegetation should be carried out distances greater than:

## Castleforbes Strategic Housing Development

### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

- 5 km from the nearest motorway or dual carriageway
- 5 km from the nearest major industrial installation
- 20 km from a major urban conurbation.

As a guideline, a monitoring station should be indicative of approximately 1000km<sup>2</sup> of surrounding area.

Under the terms of EU Framework Directive on Ambient Air Quality (96/62/EC), geographical areas within member states have been classified in terms of zones. The zones have been defined in order to meet the criteria for air quality monitoring, assessment and management as described in the Framework Directive and Daughter Directives. Zone A is defined as Dublin and its environs, Zone B is defined as Cork City, Zone C is defined as 21 urban areas with a population greater than 15,000 and Zone D is defined as the remainder of the country. The Zones were defined based on among other things, population and existing ambient air quality.

EU Council Directive 96/62/EC on ambient air quality and assessment has been adopted into Irish Legislation (S.I. No. 33 of 1999). The act has designated the Environmental Protection Agency (EPA) as the competent authority responsible for the implementation of the Directive and for assessing ambient air quality in the State. Other commonly referenced ambient air quality standards include the World Health Organisation. The WHO guidelines differ from air quality standards in that they are primarily set to protect public health from the effects of air pollution. Air quality standards, however, are air quality guidelines recommended by governments, for which additional factors, such as socio-economic factors, may be considered.

## A11.2 Dust Management Plan





## Appendix A11.2 - Dust Management Plan

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK (IAQM 2014, BRE 2003, Scottish Office 1996 and UK ODPM 2002) and the USA (USEPA 1997).

### Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 11.1 for the windrose for Dublin Airport). As the prevailing wind is predominantly westerly to south-westerly, locating construction compounds and storage piles downwind (to the east) of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Prior to demolition of any properties they should be soft stripped inside the buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). During the demolition process explosive blasting should be avoided, water suppression should be used, preferably with a hand held spray.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (BRE 2003, UK ODPM 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods where care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

## Castleforbes Strategic Housing Development

### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details;
- It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein; and
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

#### **Site Roads / Haulage Routes**

Movement of construction trucks along site roads (particularly unpaved roads) can be a significant source of fugitive dust if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (The Scottish Office 1996).

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads;
- Access gates to the site shall be located at least 10m from sensitive receptors where possible;

## Castleforbes Strategic Housing Development

### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

- Bowers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50%(26). Watering shall be conducted during sustained dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use; and
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

#### **Land Clearing / Earth Moving**

Land clearing / earth-moving works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust; and
- During periods of very high winds (gales), activities likely to generate significant dust emissions should be postponed until the gale has subsided.

#### **Storage Piles**

The location and moisture content of storage piles are important factors which determine their potential for dust emissions.

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site. Where possible storage piles should be located downwind of sensitive receptors;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency;
- Where feasible, hoarding will be erected around site boundaries to reduce visual impact. This will also have an added benefit of preventing larger particles from impacting on nearby sensitive receptors.

**Site Traffic on Public Roads**

Spillage and blow-off of debris, aggregates and fine material onto public roads should be reduced to a minimum by employing the following measures:

- Vehicles delivering or collecting material with potential for dust emissions shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust; and
- At the main site traffic exits, a wheel wash facility shall be installed if feasible. All trucks leaving the site must pass through the wheel wash. In addition, public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary.

**Monitoring**

Monitoring of construction dust deposition at nearby sensitive receptors (residential dwellings) during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m<sup>2</sup>\*day) during the monitoring period between 28 - 32 days.

**Summary of Dust Mitigation Measures**

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
- The development of a documented system for managing site practices with regard to dust control;
- The development of a means by which the performance of the dust minimisation plan can be regularly monitored and assessed; and
- The specification of effective measures to deal with any complaints received.

## A14.1 Relevant Legislation



## Appendix A14.1 - Relevant Legislation

### National Monuments Legislation (1930-2004)

The National Monument Act, 1930 (as amended) provides the formal legal mechanism to protect monuments in Ireland. Protection of a monument is provided via:

- Record of Monuments and Places (RMP);
- National Monument in the ownership or guardianship of the Minister for Arts, Heritage, Regional, Rural & Gaeltacht Affairs or a Local Authority;
- National Monument subject to a Preservation Order (or temporary Preservation Order);
- Register of Historic Monuments (RHM).

The definition of a monument is specified as:

- any artificial or partly artificial building, structure or erection or group of such buildings, structures or erections;
- any artificial cave, stone or natural product, whether forming part of the ground, that has been artificially carved, sculptured or worked upon or which (where it does not form part of the place where it is) appears to have been purposely put or arranged in position;
- any, or any part of any, prehistoric or ancient tomb, grave or burial deposit, or (ii) ritual, industrial or habitation site; and
- any place comprising the remains or traces of any such building, structure or erection, any cave, stone or natural product or any such tomb, grave, burial deposit or ritual, industrial or habitation site.

Under Section 14 of the Principal Act (1930):

It shall be unlawful...

to demolish or remove wholly or in part or to disfigure, deface, alter, or in any manner injure or interfere with any such national monument without or otherwise than in accordance with the consent hereinafter mentioned (a licence issued by the Office of Public Works National Monuments Branch),

or

to excavate, dig, plough or otherwise disturb the ground within, around, or in the proximity to any such national monument without or otherwise than in accordance...

Under Amendment to Section 23 of the Principal Act (1930):

## Castleforbes Strategic Housing Development

### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

A person who finds an archaeological object shall, within four days after the finding, make a report of it to a member of the Garda Síochána...or the Director of the National Museum...

The latter is of relevance to any finds made during a watching brief.

In the 1994 Amendment of Section 12 of the Principal Act (1930), all the sites and 'places' recorded by the Sites and Monuments Record of the Office of Public Works are provided with a new status in law. This new status provides a level of protection to the listed sites that is equivalent to that accorded to 'registered' sites [Section 8(1), National Monuments Amendment Act 1954] as follows:

The Commissioners shall establish and maintain a record of monuments and places where they believe there are monuments and the record shall be comprised of a list of monuments and such places and a map or maps showing each monument and such place in respect of each county in the State.

The Commissioners shall cause to be exhibited in a prescribed manner in each county the list and map or maps of the county drawn up and publish in a prescribed manner information about when and where the lists and maps may be consulted.

In addition, when the owner or occupier (not being the Commissioners) of a monument or place which has been recorded, or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Commissioners and shall not, except in the case of urgent necessity and with the consent of the Commissioners, commence the work for a period of two months after having given the notice.

The National Monuments Amendment Act enacted in 2004 provides clarification in relation to the division of responsibilities between the Minister of Environment, Heritage and Local Government, Finance and Arts, Sports and Tourism together with the Commissioners of Public Works. The Minister of Environment, Heritage and Local Government will issue directions relating to archaeological works and will be advised by the National Monuments Section and the National Museum of Ireland. The Act gives discretion to the Minister of Environment, Heritage and Local Government to grant consent or issue directions in relation to road developments (Section 49 and 51) approved by An Bord Pleanála and/or in relation to the discovery of National Monuments.

14A. (1) The consent of the Minister under section 14 of this Act and any further consent or licence under any other provision of the National Monuments Acts 1930 to 2004 shall not be required where the works involved are connected with an approved road development.

14A. (2) Any works of an archaeological nature that are carried out in respect of an approved road development shall be carried out in accordance with the directions of the Minister, which directions



## Castleforbes Strategic Housing Development

### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

shall be issued following consultation by the minister with the Director of the National Museum of Ireland.

Subsection 14A (4) Where a national monument has been discovered to which subsection (3) of this section relates, then the road authority carrying out the road development shall report the discovery to the Minister subject to subsection (7) of this section, and pending any directions by the Minister under paragraph (d) of this subsection, no works which would interfere with the monument shall be carried out, except works urgently required to secure its preservation carried out in accordance with such measures as may be specified by the Minister.

The Minister will consult with the Director of the National Museum of Ireland for a period not longer than 14 days before issuing further directions in relation to the national monument.

The Minister will not be restricted to archaeological considerations alone, but will also consider the wider public interest.

### Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999

This Act provides for the establishment of a national inventory of architectural heritage and historic monuments.

Section 1 of the act defines “architectural heritage” as:

- (a) all structures and buildings together with their settings and attendant grounds, fixtures and fittings,
- (b) groups of such structures and buildings, and,
- (c) sites

which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

Section 2 of the Act states that the Minister (for Arts, Heritage, Gaeltacht and the Islands) shall establish the NIAH, determining its form and content, defining the categories of architectural heritage, and specifying to which category each entry belongs. The information contained within the inventory will be made available to planning authorities, having regard to the security and privacy of both property and persons involved.

Section 3 of the Act states that the Minister may appoint officers, who may in turn request access to premises listed in the inventory from the occupiers of these buildings. The officer is required to inform

## Castleforbes Strategic Housing Development

### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

the occupier of the building why entry is necessary, and in the event of a refusal, can apply for a warrant to enter the premises.

Section 4 of the Act states that obstruction of an officer or a refusal to comply with requirements of entry will result in the owner or occupier being guilty of an offence.

Section 5 of the Act states that sanitary authorities who carry out works on a monument covered by this Act will as far as possible preserve the monument with the proviso that its condition is not a danger to any person or property, and that the sanitation authority will inform the Minister that the works have been carried out.

The provisions in the Act are in addition to and not a substitution for provisions of the National Monument Act (1930–94), and the protection of monuments in the National Monuments Act is extended to the monuments covered by the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act (1999).

## A14.2 Glossary of Impact Assessment



## Appendix A14.1 - Relevant Legislation

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The definition of a monument is specified as:

- any artificial or partly artificial building, structure or erection or group of such buildings, structures or erections;
- any artificial cave, stone or natural product, whether forming part of the ground, that has been artificially carved, sculptured or worked upon or which (where it does not form part of the place where it is) appears to have been purposely put or arranged in position;
- any, or any part of any, prehistoric or ancient tomb, grave or burial deposit, or (ii) ritual, industrial or habitation site; and
- any place comprising the remains or traces of any such building, structure or erection, any cave, stone or natural product or any such tomb, grave, burial deposit or ritual, industrial or habitation site.

Under Section 14 of the Principal Act (1930):

It shall be unlawful...

to demolish or remove wholly or in part or to disfigure, deface, alter, or in any manner injure or interfere with any such national monument without or otherwise than in accordance with the consent hereinafter mentioned (a licence issued by the Office of Public Works National Monuments Branch),

or

to excavate, dig, plough or otherwise disturb the ground within, around, or in the proximity to any such national monument without or otherwise than in accordance...

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### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

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The latter is of relevance to any finds made during a watching brief.

In the 1994 Amendment of Section 12 of the Principal Act (1930), all the sites and 'places' recorded by the Sites and Monuments Record of the Office of Public Works are provided with a new status in law. This new status provides a level of protection to the listed sites that is equivalent to that accorded to 'registered' sites [Section 8(1), National Monuments Amendment Act 1954] as follows:

The Commissioners shall establish and maintain a record of monuments and places where they believe there are monuments and the record shall be comprised of a list of monuments and such places and a map or maps showing each monument and such place in respect of each county in the State.

The Commissioners shall cause to be exhibited in a prescribed manner in each county the list and map or maps of the county drawn up and publish in a prescribed manner information about when and where the lists and maps may be consulted.

In addition, when the owner or occupier (not being the Commissioners) of a monument or place which has been recorded, or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Commissioners and shall not, except in the case of urgent necessity and with the consent of the Commissioners, commence the work for a period of two months after having given the notice.

The National Monuments Amendment Act enacted in 2004 provides clarification in relation to the division of responsibilities between the Minister of Environment, Heritage and Local Government, Finance and Arts, Sports and Tourism together with the Commissioners of Public Works. The Minister of Environment, Heritage and Local Government will issue directions relating to archaeological works and will be advised by the National Monuments Section and the National Museum of Ireland. The Act gives discretion to the Minister of Environment, Heritage and Local Government to grant consent or issue directions in relation to road developments (Section 49 and 51) approved by An Bord Pleanála and/or in relation to the discovery of National Monuments.

14A. (1) The consent of the Minister under section 14 of this Act and any further consent or licence under any other provision of the National Monuments Acts 1930 to 2004 shall not be required where the works involved are connected with an approved road development.

14A. (2) Any works of an archaeological nature that are carried out in respect of an approved road development shall be carried out in accordance with the directions of the Minister, which directions

## Castleforbes Strategic Housing Development

### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

shall be issued following consultation by the minister with the Director of the National Museum of Ireland.

Subsection 14A (4) Where a national monument has been discovered to which subsection (3) of this section relates, then the road authority carrying out the road development shall report the discovery to the Minister subject to subsection (7) of this section, and pending any directions by the Minister under paragraph (d) of this subsection, no works which would interfere with the monument shall be carried out, except works urgently required to secure its preservation carried out in accordance with such measures as may be specified by the Minister.

The Minister will consult with the Director of the National Museum of Ireland for a period not longer than 14 days before issuing further directions in relation to the national monument.

The Minister will not be restricted to archaeological considerations alone, but will also consider the wider public interest.

### Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999

This Act provides for the establishment of a national inventory of architectural heritage and historic monuments.

Section 1 of the act defines “architectural heritage” as:

- (a) all structures and buildings together with their settings and attendant grounds, fixtures and fittings,
- (b) groups of such structures and buildings, and,
- (c) sites

which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

Section 2 of the Act states that the Minister (for Arts, Heritage, Gaeltacht and the Islands) shall establish the NIAH, determining its form and content, defining the categories of architectural heritage, and specifying to which category each entry belongs. The information contained within the inventory will be made available to planning authorities, having regard to the security and privacy of both property and persons involved.

Section 3 of the Act states that the Minister may appoint officers, who may in turn request access to premises listed in the inventory from the occupiers of these buildings. The officer is required to inform

## Castleforbes Strategic Housing Development

### Environmental Impact Assessment Report (EIAR) Volume 3 - APPENDICES

the occupier of the building why entry is necessary, and in the event of a refusal, can apply for a warrant to enter the premises.

Section 4 of the Act states that obstruction of an officer or a refusal to comply with requirements of entry will result in the owner or occupier being guilty of an offence.

Section 5 of the Act states that sanitary authorities who carry out works on a monument covered by this Act will as far as possible preserve the monument with the proviso that its condition is not a danger to any person or property, and that the sanitation authority will inform the Minister that the works have been carried out.

The provisions in the Act are in addition to and not a substitution for provisions of the National Monument Act (1930–94), and the protection of monuments in the National Monuments Act is extended to the monuments covered by the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act (1999).



## A18.1 Construction & Demolition Waste Management Plan



**CONSTRUCTION &  
DEMOLITION WASTE  
MANAGEMENT PLAN FOR  
A PROPOSED MIXED-USE  
DEVELOPMENT**

**AT**

**SHERIFF STREET UPPER,  
DUBLIN 1**

**APPENDIX A18.1**

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Report Prepared For

**Glenveagh Living Ltd.**

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Report Prepared By

**Chonail Bradley**  
Senior Environmental Consultant

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Our Reference

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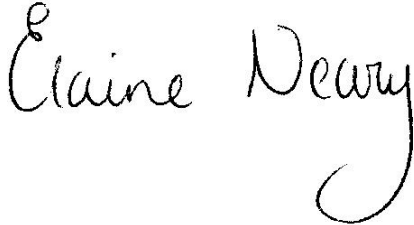
**Cork Office**  
Unit 5, ATS Building,  
Carrigaline Industrial Estate,  
Carrigaline, Co. Cork.  
T: + 353 21 438 7400  
F: + 353 21 483 4606

AWN Consulting Limited  
Registered in Ireland No. 319812  
Directors: F Callaghan, C Dilworth,  
T Donnelly, T Hayes, D Kelly, E Porter

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<b>CONTENTS</b>		<b>Page</b>
1.0	INTRODUCTION	4
2.0	CONSTRUCTION & DEMOLITION WASTE MANAGEMENT IN IRELAND	4
2.1	National Level	4
2.2	Regional Level	5
2.3	Legislative Requirements	6
3.0	DESCRIPTION OF THE PROJECT	7
3.1	Location, Size and Scale of the Development	7
3.2	Details of the Non-Hazardous Wastes to be produced <b>Error! Bookmark not defined.</b>	
3.3	Potential Hazardous Wastes to be produced	8
3.4	Main C&D Waste Categories	10
4.0	WASTE MANAGEMENT	11
4.1	Demolition Waste Generation	11
4.2	Construction Waste Generation	12
4.3	Proposed Waste Management Options	12
4.4	Tracking and Documentation Procedures for Off-Site Waste	15
5.0	ESTIMATED COST OF WASTE MANAGEMENT	15
5.1	Reuse	16
5.2	Recycling	16
5.3	Disposal	16
6.0	DEMOLITION PROCEDURES	16
6.1	Check for Hazards	16
6.2	Removal of Components	16
6.3	Removal of Roofing	17
6.4	Excavation of Services, Demolition of Walls and Concrete	17
7.0	TRAINING PROVISIONS	17
7.1	Waste Manager Training and Responsibilities	17
7.2	Site Crew Training	17
8.0	RECORD KEEPING	17
9.0	OUTLINE WASTE AUDIT PROCEDURE	18
9.1	Responsibility for Waste Audit	18
9.2	Review of Records and Identification of Corrective Actions	18
10.0	CONSULTATION WITH RELEVANT BODIES	19
10.1	Local Authority	19
10.2	Recycling/Salvage Companies	19
11.0	REFERENCES	20

## 1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Construction & Demolition Waste Management Plan (C&D WMP) on behalf of Glenveagh Living Ltd. for a proposed mixed-use development located at Castleforbes Business Park, Sheriff Street Upper, Dublin 1. The proposed development will involve the demolition of all existing structures onsite and the construction of residential units, retail/café/restaurant units, resident amenity space, soft & hard landscaping and services.

The purpose of this plan is to provide information necessary to ensure that the management of construction and demolition (C&D) waste at the site is undertaken in accordance with current legal and industry standards including the *Waste Management Acts 1996 - 2011* and associated Regulations <sup>1</sup>, *Protection of the Environment Act 2003* as amended <sup>2</sup>, *Litter Pollution Act 1997* as amended <sup>3</sup> and the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* <sup>4</sup>. In particular, this Plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also seeks to provide guidance on the appropriate collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This C&D WMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of C&D waste to be generated by the proposed development and makes recommendations for management of different waste streams.

## 2.0 CONSTRUCTION & DEMOLITION WASTE MANAGEMENT IN IRELAND

### 2.1 National Level

The Irish Government issued a policy statement in September 1998 known as '*Changing Our Ways*' <sup>5</sup>, which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2013).

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled '*Recycling of Construction and Demolition Waste*' <sup>6</sup> concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste.

The policy document '*A Resource Opportunity*' <sup>7</sup> was published in July 2012. This document stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention. The document sets out a number of actions in relation to C&D waste and commits to undertake a review of specific producer responsibility requirements for C&D projects over a certain threshold.

In September 2020 the government released a new policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan '*A Waste Action Plan for a Circular Economy*' <sup>8</sup> was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to a new economy, where climate and environmental challenges are turned into opportunities.

It aims to fulfil the commitment in the Programme for Government to publish and start implementing a new National Waste Action Plan. It is intended that this new national waste policy will inform and give direction to waste planning and management in Ireland over the coming years. It will be followed later this year by an All of Government

Circular Economy Strategy. The policy document shifts focus away from waste disposal and moves it back up the production chain. To support the policy, regulation is already being used (Circular Economy Legislative Package) or in the pipeline (Single Use Plastics Directive). The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection & Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

The National Construction and Demolition Waste Council (NCDWC) was launched in June 2002, as one of the recommendations of the Forum for the Construction Industry, in the Task Force B4 final report. The NCDWC subsequently produced '*Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects*'<sup>9</sup> in July 2006 in conjunction with the then Department of the Environment, Heritage and Local Government (DoEHLG). The guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- Waste disposal/recycling of C&D wastes at the site;
- Provision of training for waste manager and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and
- Details of consultation with relevant bodies i.e. waste recycling companies, Dublin City Council etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a C&D Waste Management Plan for developments. This development requires a C&D WMP under the following criterion:

- Demolition/renovation/refurbishment projects generating in excess of 100m<sup>3</sup> in volume, of waste;
- New Residential development of 10 houses or more; and
- New developments, other than above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,250m<sup>2</sup>.

Other guidelines followed in the preparation of this report include '*Construction and Demolition Waste Management – a handbook for Contractors and Site Managers*'<sup>10</sup> published by FÁS and the Construction Industry Federation in 2002.

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

## 2.2 Regional Level

The proposed development is located in the Local Authority area of Dublin City Council (DCC).

The *Eastern-Midlands Region Waste Management Plan 2015 – 2021* is the regional waste management plan for the DCC area published in May 2015.

The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of "70% preparing for reuse, recycling and other recovery of construction and demolition waste" (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €130 - €150 per tonne of waste which includes a €75 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2012*.

The *Dublin City Development Plan 2016 – 2022*<sup>11</sup> sets out a number of policies and objectives for Dublin City in line with the objectives of the regional waste management plan. The plan identifies the development of recycling in order to minimise the use of landfill as the main objective of the City Council. Waste policies and objectives with a particular relevance to the proposed development are:

Policies:

- *SI19: To support the principles of good waste management and the implementation of best international practice in relation to waste management in order for Dublin City and the region to become self-reliant in terms of waste management.*
- *SI20: To prevent and minimise waste and to encourage and support material sorting and recycling.*
- *SI21: To minimise the amount of waste which cannot be prevented and ensure it is managed and treated without causing environmental pollution.*

Objectives:

- *SIO17: To promote the re-use of building materials, recycling of demolition material and the use of materials from renewable sources. In all developments in excess of 10 housing units and commercial developments in excess of 1000 sqm, a materials source and management plan showing type of materials/proportion of re-use/recycled materials to be used shall be implemented by the developer.*
- *SIO18: To implement the current Litter Management Plan through enforcement of the litter laws, street cleaning and education and awareness campaigns.*
- *SIO19: To implement the Eastern-Midlands Waste Management Plan 2015-2021 and achieve the plan targets and objectives.*

## 2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate legislation includes:
  - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
  - Waste Management (Collection Permit) Regulations (S.I No. 820 of 2007) as amended
  - Waste Management (Facility Permit and Registration) Regulations 2007, (S.I No. 821 of 2007) as amended
  - Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended
  - Waste Management (Packaging) Regulations 2014 (S.I. 282 of 2014) as amended
  - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
  - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
  - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
  - European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended



- Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009), as amended
- European Union (Household Food Waste and Bio-waste) Regulation 2015 (S.I. No. 191 of 2015)
- Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) as amended
- Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No. 419 of 2007) as amended
- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998)
- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
- European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended
- Environmental Protection Act 1992 (No. 7 of 1992) as amended.
- Litter Pollution Act 1997 (No. 12 of 1997) as amended.
- Planning and Development Act 2000 (No. 30 of 2000) as amended <sup>12</sup>.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996 - 2001* and subsequent Irish legislation, is the principle of “*Duty of Care*”. This implies that the waste producer is responsible for waste from the time it is generated through until its legal recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. Following on from this is the concept of “*Polluter Pays*” whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the client ensures that the waste contractors engaged by demolition and construction contractors are legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments* or a waste or IE licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

### **3.0 DESCRIPTION OF THE PROJECT**

#### **3.1 Location, Size and Scale of the Development**

The development will consist of the demolition of all structures on the site and the construction of a mixed use residential development set out in 9 no. blocks, ranging in height from 1 to 18 storeys, above part basement/upper ground level, to accommodate 702 no. build to rent residential units, retail/café/restaurant units, cultural building, creche and residential tenant amenity. The site will accommodate car parking spaces, bicycle parking, storage, services and plant areas. The residential buildings are

arranged around a central open space (at ground level) and raised residential courtyards at upper ground level over part basement level. Ground floor level uses located onto Sheriff Street and into the central open space include a cultural building, retail/restaurant/cafe units, and tenant amenity space. Two vehicular access points are proposed along Sheriff Street, and the part basement car parking is split into two areas accordingly, accommodating bicycle parking spaces, car parking spaces, plant, storage areas and other associated facilities. The main pedestrian access is located centrally along Sheriff Street with additional access points from East Rd and from the eastern end of Sheriff Street. The application also includes for a pocket park on the corner of Sheriff Street Upper and East Rd to be provided as a temporary development prior to additional future development on this part of the site. A detailed development description is set out in the Statutory Notices

### **3.2 Details of the Non-Hazardous Wastes to be produced**

There will be waste materials generated from the demolition of the existing buildings and hardstanding areas on site, as well as from the excavation of the building foundations. The volume of waste generated from demolition will be more difficult to segregate than waste generated from the construction phase, as many of the building materials will be bonded together or integrated i.e. plasterboard on timber ceiling joists, steel embedded in concrete etc.

There will also be soil and stones excavated to facilitate construction of the new building foundations, installation of services and basements for apartment blocks. The volume of material to be excavated has been estimated by the project engineers at c. 13,100m<sup>3</sup>. Any suitable excavated material will be reused on site, where possible, however it is anticipated that there will be limited chances to reuse on site and c. 11,100m<sup>3</sup> of excavated material will be required to be removed offsite for appropriate reuse, recycling or disposal.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and oversupply of materials will also be generated.

Waste will also be generated from construction workers e.g. organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

### **3.3 Potential Hazardous Wastes to be produced**

#### **3.3.1 Contaminated Soil**

Site investigations were carried out between October and November of 2018 and in February 2019 by Ground Investigations Ireland. During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site and extended former Castleforbes Industrial Estate. The results and further discussion below only relate to the area of the estate that directly relate to this application.

Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design.

The samples were tested for Total Heavy Metals, Total Organic Carbon (TOC), BTEX (benzene, toluene, ethylbenzene and xylene) aliphatic and aromatic hydrocarbons, Polychlorinated Biphenyls (PCB), Mineral Oil, PAH and asbestos. Leachate generated from the samples was tested for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium and zinc, chloride, fluoride, soluble sulphate, phenols, dissolved organic carbon (DOC), total dissolved solids (TDS).

This parameter range also facilitated an assessment of the potentially hazardous properties of the waste, and also allows a determination of appropriate off-site management options based on the Waste Acceptance Criteria (WAC) applied by landfill operators for any material requiring excavation and removal from the site.

In the investigation three samples from this area classified as hazardous due to the presence of elevated Total Petroleum Hydrocarbons (TPH). The samples are (WS-9 (0-1m), WS-18(0.25-0.75m). One sample is classified as hazardous due to the presence of elevated copper and lead (WS-23 -0.25-0.75m). The appropriate List of Waste (LoW) code for these samples is 17 09 03\* construction demolition waste containing hazardous substances.

Sixteen samples are classified as Non-Hazardous Waste with List of Waste (LoW) code is 17 09 04 (Construction Demolition Waste). The remaining thirty two samples are classified as Non-Hazardous Waste with the List of Waste (LoW) code is 17 05 04 Soil and Stone).

Asbestos was detected in one out of fifty four samples, WS-18 (0.25-0.75m). Quantification analysis indicates that the asbestos level is <0.001%. It

Asbestos fibres (<0.001%) were detected in WS-18 (0.25 -0.75m). This is the only sample where asbestos was detected. While it is likely this is a spurious result further investigations in this area may be required.

All surplus material requiring removal from site will be sampled and samples analysed to classify as either non-hazardous or hazardous in accordance with the EPA publication entitled '*Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous*'<sup>13</sup> using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*<sup>14</sup>, which establishes the criteria for the acceptance of waste at landfills.

Asbestos Containing Material (ACMs) were not identified in this area of the former Castleforbes Industrial Estate. If ACM's are encountered the removal will only be carried out by a suitably permitted waste contractor, in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*. All asbestos will be taken to a suitably licensed or permitted facility.

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the contractor will notify DCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s).

### 3.3.2 Fuel/Oils

As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.

### 3.3.3 Asbestos

A Refurbishment/Demolition Asbestos Survey will be undertaken prior to any demolition onsite. The scope of the asbestos survey will be confined to all accessible areas of the two buildings within the boundary of this site.

If found to be within the development the removal of asbestos or ACMs will be carried out by a suitably qualified contractor and ACM's will only be removed from site by a suitably permitted waste contractor. in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*. All asbestos/ACMs will be taken to a suitably licensed or permitted facility.

### 3.3.4 Japanese Knot Weed and Other Invasive Plant Species

Brady Shipman Martin (BSM) undertook a site assessment/survey searching directly for evidence of Japanese knotweed and other invasive species on the 7<sup>th</sup> of June 2019. This included a walkover survey of the entire site, and around part of the outside perimeter. No Knotweed plant species were recorded inside the site boundary.

Japanese Knotweed (*Fallopia japonica*) is an alien invasive species listed under *schedule 3 of Regulations SI No. 355/2015*. BSM's report concludes that it is not present on this site and there was no indication that it is growing in the immediate vicinity.

### 3.3.5 Other known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, WEEE (containing hazardous components), printer toner/cartridges, batteries (Lead, Ni-Cd or Mercury) and/or fluorescent tubes and other mercury containing waste may be generated from during C&D activities or temporary site offices. These wastes (if encountered) will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

## 3.4 Main C&D Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction and demolition activities at a typical site are shown in Table 3.1. The List of Waste (LoW) code (as effected from 1 June 2015) (also referred to as the European Waste Code or EWC) for each waste stream is also shown.

**Table 3.1** Typical waste types generated and EWCs (*individual waste types may contain hazardous substances*)

Waste Material	LoW/EWC Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Insulation containing asbestos and asbestos-containing construction materials and other insulation containing hazardous substances	17-06-01*, 03* & 05*
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

## 4.0 WASTE MANAGEMENT

### 4.1 Demolition Waste Generation

Demolition works at the site will involve the demolition of existing structures on site. Demolition figures published by the EPA in the 'National Waste Reports' <sup>14</sup> and data from previous projects have been used to estimate the approximate break-down for indicative reuse (offsite), recycling and disposal targets of demolition waste. This breakdown is shown in Table 4.1.

**Table 4.1** Estimated off-site reuse, recycle and disposal rates for demolition waste

Waste Type	Tonnes	Reuse/Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	7.6	0	0.0	85	6.4	15	1.1
Concrete, Bricks, Tiles, Ceramics	477.2	85	405.6	5	23.9	10	47.7
Plasterboard	30.3	30	9.1	60	18.2	10	3.0
Asphalts	7.6	0	0.0	25	1.9	75	5.7
Metal	143.9	5	7.2	80	115.1	15	21.6
Timber	90.9	10	9.1	60	54.5	30	27.3
<b>Total</b>	<b>757.5</b>		<b>431.0</b>		<b>220.1</b>		<b>106.4</b>

The appointed demolition contractor will be required to prepare a detailed demolition management plan prior to work commencing which should refine the above estimated waste figures.

## 4.2 Construction Waste Generation

Table 4.2 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA *National Waste Reports, the GMIT*<sup>15</sup> and other research reports.

**Table 4.2** Waste materials generated on a typical Irish construction site

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
<b>Total</b>	<b>100</b>

Table 4.3 shows the predicted construction waste generation for the proposed development based on the information available to date along with the targets for management of the waste streams. The predicted waste amounts are based on an average medium-scale development waste generation rate per m<sup>2</sup>, using the waste breakdown rates shown in Table 4.2.

**Table 4.3** Estimated off-site reuse, recycle and disposal rates for construction waste

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1234.4	10	123.4	80	987.5	10	123.4
Timber	1047.4	40	419.0	55	576.1	5	52.4
Plasterboard	374.1	30	112.2	60	224.4	10	37.4
Metals	299.3	5	15.0	90	269.3	5	15.0
Concrete	224.4	30	67.3	65	145.9	5	11.2
Other	561.1	20	112.2	60	336.7	20	112.2
<b>Total</b>	<b>3740.6</b>		<b>849.1</b>		<b>2539.9</b>		<b>351.6</b>

In addition to the information in Table 4.3, there will be a small quantity of excavated material that will be generated onsite. Any suitable excavated material will be temporarily stockpiled for reuse as fill, where possible, but reuse on site is expected to be limited and most of the excavated material except is expected to be removed offsite for appropriate reuse, recovery and/or disposal.

It should be noted that until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

## 4.3 Proposed Waste Management Options

Waste materials generated will be segregated on site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. Due to space restrictions onsite, it is expected that most segregation will occur offsite at the waste contractors licensed waste facilities. There will be skips and receptacles provided to facilitate segregation at source where feasible. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor

will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Dublin Region that provide this service.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arising's requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

Some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (Ref. Article 30 (1) (b) of the Waste Collection Permit Regulations 2007 as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste offsite in their work vehicles (which are not design for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR / permit / licence.

Written records will be maintained by the contractor(s) detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contactors who collect waste from the site and COR/permit or licence for the receiving waste facility for all waste removed off site for appropriate reuse, recycling, recovery and/or disposal.

Dedicated bunded storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc, if required.

The management of the main waste streams is outlined as follows:

#### Made Ground

The Waste Management Hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling/recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The excavations are required to facilitate construction works so the preferred option (prevention and minimisation) cannot be accommodated for the excavation phase.

It is anticipated that all excavated material will be taken off site. When material is removed off-site it could be reused as a by-product (and not as a waste), if this is done, it will be done in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*. Article 27 requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated material should not be removed from site until approval from the EPA has been received. It is not envisaged that article 27 will be used to export excavated material off this site.

The next option (beneficial reuse) may be appropriate for the excavated material pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* publication. Clean inert material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end-use.

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27. Similarly, if any soils/stones are imported onto the site from another



construction site as a by-product, this will also be done in accordance with Article 27. It is not envisaged that article 27 will be used to import material onto this site.

If the material is deemed to be a waste, then removal and reuse/recovery/disposal of the material will be carried out in accordance with the *Waste Management Acts 1996 – 2011* as amended, the *Waste Management (Collection Permit) Regulations 2007* as amended and the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any inert and/or non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

#### Bedrock

It is not anticipated that bedrock will be encountered during the excavation phase of this development. If encountered Bedrock will not be crushed on site without the appropriate mobile waste facility permit.

#### Silt & Sludge

During the construction phase, silt and petrochemical interception should be carried out on runoff and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed offsite.

#### Concrete Blocks, Bricks, Tiles & Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction and demolition works are expected to be clean, inert material and should be recycled, where possible.

#### Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

#### Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues etc., will be disposed of in a separate skip and recycled off-site.

#### Metal

Metal will be segregated and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

#### Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the demolition and construction phases will be stored in a separate skip, pending collection for recycling. The site manager will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

#### Glass

Glass materials will be segregated for recycling, where possible.

#### Waste Electrical and Electronic Equipment (WEEE)

Any WEEE will be stored in dedicated covered cages/receptacles/pallets pending collection for recycling.

#### Other Recyclables

Where any other recyclable wastes such as cardboard and soft plastic are generated, these will be segregated at source into dedicated skips and removed off-site.

#### Non-Recyclable Waste

C&D waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip/receptacle will be examined by a member of the waste team (see Section 7.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

#### Asbestos Containing Materials

Any asbestos or ACM found onsite should be removed by a suitably competent contractor and disposed of as asbestos waste before the demolition works begin. All asbestos removal work or encapsulation work must be carried out in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*.

#### Other Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and/or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

### **4.4 Tracking and Documentation Procedures for Off-Site Waste**

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project Waste Manager (see Section 7.0).

All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Acts 1996 - 2011, Waste Management (Collection Permit) Regulations 2007* as amended and *Waste Management (Facility Permit & Registration) Regulations 2007* and amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project waste manager (see Section 7.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR/permit or EPA Waste/IE Licence for that site will be provided to the nominated project waste manager (see Section 7.0). If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from DCC (as the relevant authority on behalf of all local authorities in Ireland) and kept on-site along with details of the final destination (COR, permits, licences etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

All information will be entered in a waste management recording system to be maintained on site.

### **5.0 ESTIMATED COST OF WASTE MANAGEMENT**

An outline of the costs associated with different aspects of waste management is provided below.

The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

### **5.1 Reuse**

By reusing materials on site, there will be a reduction in the transport and recycle/recovery/disposal costs associated with the requirement for a waste contractor to take the material off-site.

Clean and inert soils, gravel, stones etc. which cannot be reused on site may be used as access roads or capping material for landfill sites etc. This material is often taken free of charge or a reduced fee for such purposes, reducing final waste disposal costs.

### **5.2 Recycling**

Salvageable metals will earn a rebate which can be offset against the costs of collection and transportation of the skips.

Clean uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated wastes, such as recyclable waste, from a site than mixed waste.

Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated wastes such as timber from a site than mixed waste.

### **5.3 Disposal**

Landfill charges in the Leinster region are currently at around €130 - €150 per tonne which includes a €75 per tonne landfill levy specified in the *Waste Management (Landfill Levy) Regulations 2015*. In addition to disposal costs, waste contractors will also charge a collection fee for skips.

Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc. is also used as fill/capping material, wherever possible.

## **6.0 DEMOLITION PROCEDURES**

The demolition stage will involve the removal of the existing buildings and hard standing areas. A formal demolition plan should be prepared for the site; however, in general, the following sequence of works should be followed during the demolition stage.

### **6.1 Check for Hazards**

Prior to commencing works, buildings and structures to be demolished will be checked for any likely hazards including asbestos, ACMs, electric power lines or cables, gas reticulation systems, telecommunications, unsafe structures and fire and explosion hazards, e.g. combustible dust, chemical hazards, oil, fuels and contamination.

### **6.2 Removal of Components**

All hazardous materials will be removed first. All components from within the buildings that can be salvaged will be removed next. This will primarily include metal however may also include timbers, doors, windows, wiring and metal ducting, etc.

### **6.3 Removal of Roofing**

Steel roof supports, beams etc. will be dismantled and taken away for recycling/salvage.

### **6.4 Excavation of Services, Demolition of Walls and Concrete**

Services will be removed from the ground and the breakdown of walls will be carried out once all salvageable or reusable materials have been taken from the buildings. Finally, any existing foundations and hard standing areas will be excavated.

## **7.0 TRAINING PROVISIONS**

A member of the construction team will be appointed as the project waste manager to ensure commitment, operational efficiency and accountability during the C&D phases of the project.

### **7.1 Waste Manager Training and Responsibilities**

The nominated waste manager will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site. The waste manager will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the waste manager to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The waste manager will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The waste manager will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this C&D WMP.

### **7.2 Site Crew Training**

Training of site crew is the responsibility of the waste manager and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the C&D WMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

## **8.0 RECORD KEEPING**

Records should be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the waste arisings on site.

A waste tracking log should be used to track each waste movement from the site. On exit from the site the waste collection vehicle driver should stop at the site office and sign out as a visitor and provide the security personnel or waste manager with a waste docket (or WTF for hazardous waste) for the waste load collected. At this time, the

security personnel should complete and sign the Waste Tracking Register with the following information:

- Date
- Time
- Waste Contractor
- Company waste contractor appointed by e.g. Contractor or subcontractor name
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No.
- Waste Type
- EWC/LoW

The waste transfer dockets will be transferred to the site waste manager on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the DCC Waste Regulation Unit as required.

Alternatively, each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste dockets/WTF maintained on file and available for inspection on site by the main contractor as required.

A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times. Subcontractors who have engaged their own waste contractors, should provide the main contractor with a copy of the waste collection permits and COR/permit/licence for the receiving waste facilities and maintain a copy on file available for inspection on site as required.

A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be sent to the DCC Waste Regulation Unit prior to any material being removed from site.

## **9.0 OUTLINE WASTE AUDIT PROCEDURE**

### **9.1 Responsibility for Waste Audit**

The appointed waste manager will be responsible for conducting a waste audit at the site during the C&D phase of the development.

Contact details for the nominated Waste Manager will be provided to the DCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

### **9.2 Review of Records and Identification of Corrective Actions**

A review of all the records for the waste generated and transported off-site should be undertaken mid-way through the project. If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established recovery/reuse/recycling targets for the site.

Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Waste management costs will also be reviewed.

Upon completion of the C & D phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling/reuse/recovery figures for the development.

## **10.0 CONSULTATION WITH RELEVANT BODIES**

### **10.1 Local Authority**

Once demolition and construction contractors have been appointed and prior to removal of any C&D waste materials offsite, details of the proposed destination of each waste stream will be provided to the DCC Waste Regulation Unit.

DCC will also be consulted, as required, throughout the demolition, excavation and construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

### **10.2 Recycling/Salvage Companies**

Companies that specialise in C&D waste management will be contacted to determine their suitability for engagement. Where a waste contractor is engaged, each company will be audited in order to ensure that relevant and up-to-date waste collection permits and facility COR/permits/licences are held. These permit details will be sent to the DCC Waste Regulation Unit. In addition, information regarding individual construction materials will be obtained, including the feasibility of recycling each material, the costs of recycling/reclamation and the means by which the wastes will be collected and transported off-site, and the recycling/reclamation process each material will undergo off site.

## 11.0 REFERENCES

1. Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate and associated legislation includes:
  - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended.
  - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended.
  - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) as amended.
  - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended.
  - European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended.
  - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended.
  - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
  - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
  - European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended.
  - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended.
  - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
  - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended.
  - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended.
  - The European Communities (Transfrontier Shipment of Hazardous Waste) Regulations 1988 (S.I. No. 248 of 1988)
  - European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
  - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended
2. Protection of the Environment Act 2003, (No. 27 of 2003) as amended.
3. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended
4. Eastern-Midlands Region Waste Management Plan 2015 – 2021 (2015).
5. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
6. Forum for the Construction Industry – *Recycling of Construction and Demolition Waste*.
7. Department of Environment, Communities and Local Government (DoECLG), *A Resource Opportunity - Waste Management Policy in Ireland* (2012).
8. Department of Communications, Climate Action and Environment (DCCA), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (2020).
9. Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
10. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers* (2002).
11. Dublin City Council (DCC), *Dublin City Development plan 2016-2022* (2015)
12. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended



13. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2015)
14. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
15. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2012*.
16. EPA and Galway-Mayo Institute of Technology (GMIT), *EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned* (2015).

## A18.2 Operational Waste Management Plan



**OPERATIONAL WASTE  
MANAGEMENT PLAN FOR  
A PROPOSED MIXED-USE  
DEVELOPMENT  
AT**

**SHERIFF STREET UPPER,  
DUBLIN 1**

The Tecpro Building,  
Clonshaugh Business & Technology Park,  
Dublin 17, Ireland.

T: + 353 1 847 4220  
F: + 353 1 847 4257  
E: [info@awnconsulting.com](mailto:info@awnconsulting.com)  
W: [www.awnconsulting.com](http://www.awnconsulting.com)

## **APPENDIX A18.2**

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Report Prepared For

**Glenveagh Living Ltd.**

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Report Prepared By

**Chonail Bradley, Senior Environmental  
Consultant**

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Our Reference

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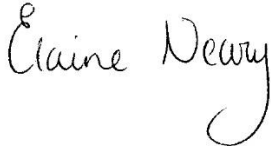
Unit 5, ATS Building,  
Carrigaline Industrial Estate,  
Carrigaline, Co. Cork.  
T: +353 21 438 7400  
F: +353 21 483 4606

**AWN Consulting Limited**  
Registered in Ireland No. 319812  
Directors: F Callaghan, C Dilworth,  
T Donnelly, E Porter  
Associate Director: D Kelly

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Title	Senior Environmental Consultant	Associate
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<b>CONTENTS</b>		<b>Page</b>
1.0	INTRODUCTION	4
2.0	OVERVIEW OF WASTEMANAGEMENT IN IRELAND	4
2.1	National Level	4
2.2	Regional Level	6
2.3	Legislative Requirements	7
2.3.1	Dublin City Council Waste Bye-Laws	8
2.4	Regional Waste Management Service Providers and Facilities	9
3.0	DESCRIPTION OF THE PROJECT	9
3.1	Location, Size and Scale of the Development	9
3.2	Typical Waste Categories	9
3.3	European Waste Codes	10
4.0	ESTIMATED WASTE ARISING	11
5.0	WASTE STORAGE AND COLLECTION	11
5.1	Waste Storage – Residential Units	14
5.2	Waste Storage – Commercial Units	14
5.3	Waste Collection	15
5.4	Additional Waste Materials	16
5.5	Waste Storage Area Design	17
6.0	CONCLUSIONS	18
7.0	REFERENCES	19

## 1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Operational Waste Management Plan (OWMP) on behalf of Glenveagh Living Ltd. for a proposed mixed-use development located at Castleforbes Business Park, Sheriff Street Upper, Dublin 1. The proposed development will involve the demolition of all existing structures onsite and the construction of residential units, retail/café/restaurant units, resident amenity space, soft & hard landscaping and services.

This OWMP has been prepared to ensure that the management of waste during the operational phase of the proposed development is undertaken in accordance with the current legal and industry standards including, the *Waste Management Act 1996 – 2011* as amended and associated Regulations <sup>1</sup>, *Protection of the Environment Act 2003* as amended <sup>2</sup>, *Litter Pollution Act 2003* as amended <sup>3</sup>, the '*Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021*' <sup>4</sup> and the Dublin City Council (DCC) '*Dublin City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws*' (2018) <sup>5</sup>. In particular, this OWMP aims to provide a robust strategy for storing, handling, collection and transport of the wastes generated at site.

This OWMP aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. The OWMP also seeks to provide guidance on the appropriate collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil or water resources). The plan estimates the type and quantity of waste to be generated from the proposed development during the operational phase and provides a strategy for managing the different waste streams.

At present, there are no specific guidelines in Ireland for the preparation of OWMPs. Therefore, in preparing this document, consideration has been given to the requirements of national and regional waste policy, legislation and other guidelines.

## 2.0 OVERVIEW OF WASTEMANAGEMENT IN IRELAND

### 2.1 National Level

The Government issued a policy statement in September 1998 titled as '*Changing Our Ways*' <sup>6</sup> which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. A heavy emphasis was placed on reducing reliance on landfill and finding alternative methods for managing waste. Amongst other things, *Changing Our Ways* stated a target of at least 35% recycling of municipal (i.e. household, commercial and non-process industrial) waste.

A further policy document '*Preventing and Recycling Waste – Delivering Change*' was published in 2002 <sup>7</sup>. This document proposed a number of programmes to increase recycling of waste and allow diversion from landfill. The need for waste minimisation at source was considered a priority.

This view was also supported by a review of sustainable development policy in Ireland and achievements to date, which was conducted in 2002, entitled '*Making Ireland's Development Sustainable – Review, Assessment and Future Action*' <sup>8</sup>. This document also stressed the need to break the link between economic growth and waste generation, again through waste minimisation and reuse of discarded material.

In order to establish the progress of the Government policy document *Changing Our Ways*, a review document was published in April 2004 entitled '*Taking Stock and Moving Forward*' <sup>9</sup>. Covering the period 1998 – 2003, the aim of this document was to assess progress to date with regard to waste management in Ireland, to consider

developments since the policy framework and the local authority waste management plans were put in place, and to identify measures that could be undertaken to further support progress towards the objectives outlined in *Changing Our Ways*.

In particular, *Taking Stock and Moving Forward* noted a significant increase in the amount of waste being brought to local authority landfills. The report noted that one of the significant challenges in the coming years was the extension of the dry recyclable collection services.

The policy document '*A Resource Opportunity*'<sup>10</sup> was published in July 2012. The policy document stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention. The document sets out a number of actions, including the following:

- A move away from landfill and replacement through prevention, reuse, recycling and recovery.
- A Brown Bin roll-out diverting 'organic waste' towards more productive uses.
- Introducing a new regulatory regime for the existing side-by-side competition model within the household waste collection market.
- New Service Standards to ensure that consumers receive higher customer service standards from their operator.
- Placing responsibility on householders to prove they use an authorised waste collection service.
- The establishment of a team of Waste Enforcement Officers for cases relating to serious criminal activity will be prioritised.
- Reducing red tape for industry to identify and reduce any unnecessary administrative burdens on the waste management industry.
- A review of the producer responsibility model will be initiated to assess and evaluate the operation of the model in Ireland.
- Significant reduction of Waste Management Planning Regions from ten to three.

While *A Resource Opportunity* covers the period to 2020, it is subject to a mid-term review in 2016 to ensure that the measures are set out properly and to provide an opportunity for additional measures to be adopted in the event of inadequate performance. In early 2016, the Department of the Environment, Community and Local Government invited comments from interested parties on the discussion paper 'Exporting a Resource Opportunity'. While the EPA have issued a response to the consultation, an updated policy document has not yet been published.

In September 2020 the government released a new policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan '*A Waste Action Plan for a Circular Economy*'<sup>11</sup> was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to a new economy, where climate and environmental challenges are turned into opportunities.

It aims to fulfil the commitment in the Programme for Government to publish and start implementing a new National Waste Action Plan. It is intended that this new national waste policy will inform and give direction to waste planning and management in Ireland over the coming years. It will be followed later this year by an All of Government Circular Economy Strategy. The policy document shifts focus away from waste disposal and moves it back up the production chain. To support the policy, regulation is already being used (Circular Economy Legislative Package) or in the pipeline (Single Use Plastics Directive). The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection & Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement



Since 1998, the Environmental Protection Agency (EPA) has produced periodic 'National Waste (Database) Reports'<sup>12</sup> detailing among other things estimates for household and commercial (municipal) waste generation in Ireland and the level of recycling, recovery and disposal of these materials. The 2017 National Waste Statistics, which is the most recent study published (December 2019), reported the following key statistics for 2017:

- **Generated** – Ireland produced 2,768,043 t of municipal waste in 2017, this is less than a one percent increase since 2016. This means that each person living in Ireland generated 577kg of municipal waste in 2017;
- **Managed** – Waste collected and treated by the waste industry. In 2017, a total of 2,723,543 t of municipal waste was managed and treated;
- **Unmanaged** –Waste that is not collected or brought to a waste facility and is therefore likely to cause pollution in the environment because it is burned, buried or dumped. The EPA estimates that 44,500 t was unmanaged in 2017;
- **Recovered** – the amount of waste recycled, used as a fuel in incinerators, or used to cover landfilled waste. In 2017, over three quarters (77%) of municipal waste was recovered, this is an increase from 74% in 2016;
- **Recycled** – the waste broken down and used to make new items. Recycling also includes the breakdown of food and garden waste to make compost. The recycling rate in 2017 was 41%, the same as 2014 & 2016; and
- **Disposed** – Less than a quarter (23%) of municipal waste was landfilled in 2017, this is a decrease from 26% in 2016.

## 2.2 Regional Level

The proposed development is located in the Local Authority area of Dublin City Council (DCC).

The *EMR Waste Management Plan 2015 – 2021* is the regional waste management plan for the DCC area which was published in May 2015.

The regional plan sets out the following strategic targets for waste management in the region that are relevant to the proposed development:

- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €130-150 per tonne of waste which includes a €75 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2013*.

The *Dublin City Development Plan 2016 – 2022*<sup>13</sup> sets out a number of policies and objectives for Dublin City in line with the objectives of the regional waste management plan. The plan identifies a need to further reduce the role of landfilling in favour of higher value recovery options.

Waste policies and objectives with a particular relevance to this development are:

### Policies:

- *SI19: To support the principles of good waste management and the implementation of best international practice in relation to waste management in order for Dublin city and the region to become self-reliant in terms of waste management.*

- *SI20: To prevent and minimise waste and to encourage and support material sorting and recycling.*
- *SI21: To minimise the amount of waste which cannot be prevented and ensure it is managed and treated without causing environmental pollution.*
- *SI22: To ensure that effect is given as far as possible to the “polluter pays” principle.*

Objectives:

- *SIO16: To require the provision of adequately-sized-recycling facilities in new commercial and large scale residential developments, where appropriate.*
- *SIO18: To implement the current Litter Management Plan through enforcement of the litter laws, street cleaning and education and awareness campaigns.*
- *SIO19: To implement the Eastern-Midlands Waste Management Plan 2015 - 2021 and achieve the plan targets and objectives.*

## 2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 (No. 10 of 1996) as amended 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No 20 of 2011). Sub-ordinate and associated legislation includes:
  - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended
  - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended
  - Waste Management (Facility Permit and Registration) Regulation 2007 (S.I No. 821 of 2007) as amended
  - Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as amended
  - European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended.
  - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended
  - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
  - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
  - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
  - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended
  - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 430 of 2015)
  - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended
  - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended
  - *European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)*
  - European Union (Properties of Waste Which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended
- Environmental Protection Act 1992 (S.I. No. 7 of 1992) as amended;
- Litter Pollution Act 1997 (Act No. 12 of 1997) as amended and
- Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended <sup>14</sup>

These Acts and subordinate Regulations enable the transposition of relevant European Union Policy and Directives into Irish law.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996 - 2011* and subsequent Irish legislation, is the principle of “*Duty of Care*”. This implies that the waste producer is responsible for waste from the time it is generated through until its legal disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final disposal area, waste contractors will be employed to physically transport waste to the final waste disposal site.

It is therefore imperative that the residents, tenants and the proposed facility management company undertake on-site management of waste in accordance with all legal requirements and employ suitably permitted/licenced contractors to undertake off-site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contractor handle, transport and reuse/recover/recycle/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended or a waste or IE (Industrial Emissions Directive) licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

### 2.3.1 Dublin City Council Waste Bye-Laws

*The DCC “Dublin City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2018)”* came into force in May 2019. These bye-laws repeal the previous ‘*Bye-Laws for the Storage, Presentation and Collection of Household and Commercial*’. The bye-laws set a number of enforceable requirements on waste holders with regard to storage, separation and presentation of waste within the DCC functional area. Key requirements under these bye-laws of relevance to the proposed development include the following.

- Kerbside waste presented for collection shall not be presented for collection earlier than 5.00 pm on the day immediately preceding the designated waste collection day;
- In the Central Commercial District, the prescribed time for kerbside waste to be presented shall be not before 5.00 pm on the designated waste collection day;
- All containers used for the presentation of kerbside waste and any uncollected waste shall be removed from any roadway, footway, footpath or any other public place no later than 10:00am on the day following the designated waste collection day, unless an alternative arrangement has been approved in accordance with bye-law 2.3;
- Documentation, including receipts, is obtained and retained for a period of no less than one year to provide proof that any waste removed from the premises has been managed in a manner that conforms to these bye-laws, to the Waste Management Act and, where such legislation is applicable to that person, to the European Union (Household Food Waste and Bio-Waste) Regulations 2015; and
- Adequate access and egress onto and from the premises by waste collection vehicles is maintained.

The full text of the Waste bye-Laws is available from the DCC website.

## **2.4 Regional Waste Management Service Providers and Facilities**

Various contractors offer waste collection services for the residential and commercial sectors in the DCC region. Details of waste collection permits (granted, pending and withdrawn) for the region are available from the NWCPO.

As outlined in the regional waste management plan, there is a decreasing number of landfills available in the region. Only three municipal solid waste landfills remain operational and are all operated by the private sector. There are a number of other licensed and permitted facilities in operation in the region including waste transfer stations, hazardous waste facilities and integrated waste management facilities. There are two existing thermal treatment facilities, one in Duleek, Co. Meath and a second facility in Poolbeg in Dublin.

There is a DCC Recycling Centre at Shamrock terrace, located c.1km to the north west of the development, which can be utilised by the residents of the development for certain household waste streams. This centre can accept paper, cans, cardboard, tetra pak, plastics, textiles and glass.

A copy of all CORs and waste permits issued by the Local Authorities are available from the NWCPO website and all waste/IE licenses issued are available from the EPA.

## **3.0 DESCRIPTION OF THE PROJECT**

### **3.1 Location, Size and Scale of the Development**

The development will consist of the demolition of all structures on the site and the construction of a mixed use residential development set out in 9 no. blocks, ranging in height from 1 to 18 storeys, above part basement/upper ground level, to accommodate 702 no. build to rent residential units, retail/café/restaurant units, cultural building, creche and residential tenant amenity. The site will accommodate car parking spaces, bicycle parking, storage, services and plant areas. The residential buildings are arranged around a central open space (at ground level) and raised residential courtyards at upper ground level over part basement level. Ground floor level uses located onto Sheriff Street and into the central open space include a cultural building, retail/restaurant/cafe units, and tenant amenity space. Two vehicular access points are proposed along Sheriff Street, and the part basement car parking is split into two areas accordingly, accommodating bicycle parking spaces, car parking spaces, plant, storage areas and other associated facilities. The main pedestrian access is located centrally along Sheriff Street with additional access points from East Rd and from the eastern end of Sheriff Street. The application also includes for a pocket park on the corner of Sheriff Street Upper and East Rd to be provided as a temporary development prior to additional future development on this part of the site. A detailed development description is set out in the Statutory Notices.

### **3.2 Typical Waste Categories**

The typical non-hazardous and hazardous wastes that will be generated at the proposed development will include the following:

- Dry Mixed Recyclables (DMR) - includes waste paper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- Organic waste – food waste and green waste generated from internal plants/flowers;
- Glass; and

- Mixed Non-Recyclable (MNR)/General Waste.

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated in small quantities which will need to be managed separately including:

- Green/garden waste may be generated from internal plants or external landscaping;
- Batteries (both hazardous and non-hazardous);
- Waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous);
- Printer cartridges/toners;
- Chemicals (paints, adhesives, resins, detergents, etc.) ;
- Lightbulbs;
- Textiles (rags);
- Waste cooking oil (if any generated by the residents or commercial tenants);
- Furniture (and from time to time other bulky wastes); and
- Abandoned bicycles.

Wastes should be segregated into the above waste types to ensure compliance with waste legislation and guidance while maximising the re-use, recycling and recovery of waste with diversion from landfill wherever possible.

### 3.3 European Waste Codes

In 1994, the *European Waste Catalogue* <sup>15</sup> and *Hazardous Waste List* <sup>16</sup> were published by the European Commission. In 2002, the EPA published a document titled the *European Waste Catalogue and Hazardous Waste List* <sup>17</sup>, which was a condensed version of the original two documents and their subsequent amendments. This document has recently been replaced by the EPA '*Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous*' <sup>18</sup> which became valid from the 1st June 2015. This waste classification system applies across the EU and is the basis for all national and international waste reporting, such as those associated with waste collection permits, COR's, permits and licences and EPA National Waste Database.

Under the classification system, different types of wastes are fully defined by a code. The List of Waste (LoW) code (also referred to as European Waste Code or EWC) for typical waste materials expected to be generated during the operation of the proposed development are provided in Table 3.1 below.

Waste Material	LoW/EWC Code
Paper and Cardboard	20 01 01
Plastics	20 01 39
Metals	20 01 40
Mixed Non-Recyclable Waste	20 03 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Oils and Fats	20 01 25
Textiles	20 01 11
Batteries and Accumulators *	20 01 33* - 34
Printer Toner/Cartridges*	20 01 27* - 28
Green Waste	20 02 01
WEEE *	20 01 35*-36

Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.) *	20 01 13*/19*/27*/28/29*30
Fluorescent tubes and other mercury containing waste *	20 01 21*
Bulky Wastes	20 03 07

\* Individual waste type may contain hazardous materials

**Table 3.1** Typical Waste Types Generated and LoW Codes

#### 4.0 ESTIMATED WASTE ARISING

A waste generation model (WGM) developed by AWN, has been used to predict waste types, weights and volumes arising from operations within the proposed development. The WGM incorporates building area and use and combines these with other data including Irish and US EPA waste generation rates.

The estimated quantum/volume of waste that will be generated from the development has been determined based on the predicted occupancy of the units. While the estimated waste volumes for the commercial units have been calculated based upon floor area m<sup>2</sup> usage.

The total estimated waste generation for the development for the main waste types is presented in Table 4.1 below and is based on the uses and areas as advised by the project Architects October 2020.

The estimated waste generation for the development for the main waste types is presented in Table 4.1.

Waste type	Waste Volume (m <sup>3</sup> /week)	
	Residential Units (Combined)	Commercial Units (Combined)
Organic Waste	9.74	1.42
DMR	66.63	4.99
Glass	1.89	0.19
MNR	38.73	4.96
<b>Total</b>	<b>116.99</b>	<b>11.56</b>

**Table 4.1** Estimated waste generation for the proposed development for the main waste types

The BS5906:2005 Waste Management in Buildings – Code of Practice <sup>19</sup> was considered in the estimations of the waste arising. It has been assumed that the residential units and commercial will generate similar waste volumes over a seven-day period. The estimated waste quantities for the residents include for the waste generated in the community facilities and areas on a weekly basis.

#### 5.0 WASTE STORAGE AND COLLECTION

This section provides information on how waste generated within the development will be stored and how the waste will be collected from the development. This has been prepared with due consideration of the proposed site layout as well as best practice standards, local and national waste management requirements including those of DCC. In particular, consideration has been given to the following documents:

- BS 5906:2005 Waste Management in Buildings – Code of Practice;
- EMR Waste Management Plan 2015 – 2021;
- Dublin City Council Development Plan 2016 – 2022 (Appendix 10);
- DCC Dublin City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2018); *and*
- DoEHLG, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (section 4.8-4.9) (2018) <sup>20</sup>.

Three communal residential Waste Storage Areas (WSA) have been allocated within the development design to accommodate waste arising from the residents. The WSA's locations can be viewed in the drawings submitted with the planning application and are located on both basement level and ground floor level. One WSA is in each basement carpark while the third residential WSA is located on ground level in building C2.

Along with the three residential WSAs a fourth WSA has been allocated for the temporary storage of residential waste prior to collection. This WSA is in block C4 and will only be accessible by facilities management and waste contractors. All residential waste receptacles will be bought to the WSA for collection by the waste contractor.

The commercial units will have their own shared commercial WSA located at ground level, along the eastern side of the development in block C4, adjacent to the service lane between this and the neighbouring office and hotel development.

The WSA location can viewed on the drawings submitted with the application.

Using the estimated waste generation volumes in Table 4.1, the waste receptacle requirements for MNR, DMR, organic waste and glass have been established for the for the development and can be viewed in table 5.1 below.

Area/Use	Receptacles/Bins Required				Equipment
	MNR*	DMR**	Organic	Glass	Compactor
Residential WSA 1 (Basement)	2 x 2m <sup>3</sup> FIBCs	2 x 3m <sup>3</sup> FIBCs	11 x 240L	3 x 240L	1 no. for MNR <sup>1</sup> 1 no. for DMR <sup>2</sup>
Residential WSA 2 (Basement)	3 x 2m <sup>3</sup> FIBCs	3 x 3m <sup>3</sup> FIBCs	24 x 240L	5 x 240L	1 no. for MNR <sup>1</sup> 1 no. for DMR <sup>2</sup>
Residential WSA 1 (Block C2)	5 x 1100L	9 x 1100L	6 x 240L	2 x 240L	-
Commercial Units	5 x 1100L	5 x 1100L	6 x 240L	1 x 240L	-

Note: \* = Mixed Non-Recyclables

\*\* = Dry Mixed Recyclables

<sup>1</sup> = Mixed Non-Recyclables (BM Model)

<sup>2</sup> = Dry Mixed Recyclables (HD Model)

**Table 5.1** Waste storage requirements for the proposed development

The waste receptacle requirements have been established from distribution of the total weekly waste generation estimate into the holding capacity of each receptacle type.

Waste storage receptacles as per Table 5.1 above (or similar appropriate approved containers) will be provided by the building management company in the Residential WSA. Commercial tenants will be responsible for supplying their own waste receptacles.

It is proposed that building management will avail of a commercially available mini compactors for the DMR and MNR waste streams in the two-basement residential WSAs, referred to as an Epac Lodestone compactor. The commercial tenant and residents in Block C2 will not have the use of these compactors.



This option will significantly reduce the volume of waste and as such the number of bins stored on site and the number of bins that will need to be transported to the residential/facility management WSA in Block C4 for collection.

Alternative options can be considered in future by the building management company, as technologies are developed. Solely for the purpose of ensuring the WSA is sufficiently sized, this plan assumes that the Epac option will be used. If required, sufficient space has been allocated in the WSAs so that bins can be used for the storage of waste with a twice weekly waste collection.

As outlined in the current Dublin City Development Plan, it is preferable to use 1,100 litre wheelie bins for waste storage, where practical. However, in the case of organic and glass waste, it is considered more suitable to use smaller waste receptacles due to the weight of bins when filled with organic and glass waste. The use of 240 & 120 litre bins as recommended in Table 5.1 will reduce the manual handling impacts on the building management personnel and waste contractor employees.

The types of bins used will vary in size, design and colour dependent on the appointed waste contractor. However, examples of typical receptacles to be provided in the WSA are shown in Figure 5.1. All waste receptacles used will comply with the IS EN 840 2012 standard for performance requirements of mobile waste containers, where appropriate.



**Figure 5.1** Typical waste receptacles of varying size (240L and 1100L)

The Epac Lodestone compactor referred to in the list of bins/equipment in the residential basement WSA is a compactor that compresses/compacts the waste into 2 and 3m<sup>3</sup> skip bags (also called Flexible Intermediate Bulk Containers or FIBCs). These will require storage pending collection, so this adds to the storage space required but this compactor option results in a lower collection frequency than the alternative compactor. A photo of the Epac Lodestone compactor is provided as Figure 5.2.



**Figure 5.2** Photo of Epac Lodestone Compactor (*Source: AES Bord na Móna Website*)

Receptacles for organic, mixed dry recyclable, glass and mixed non-recyclable waste will be provided in the WSA's from first occupation of the development i.e. once the first residential unit is occupied.

This Plan will be provided to each resident from first occupation of the development i.e. once the first residential unit is occupied. This Plan will be supplemented, as required, by the property management company with any new information on waste segregation, storage, reuse and recycling initiatives that are subsequently introduced.

## 5.1 Waste Storage – Residential Units

Residents will be required to segregate their waste into the following main waste categories within their own units:

- Organic waste;
- DMR;
- Glass; and
- MNR.

Sufficient space will be provided within the apartments for storage of bins to facilitate segregation of waste at source within each apartment. The specific location of the bins within the apartments will be at the discretion of the apartment occupant.

As required, the residents will need to bring these segregated waste materials from their apartments/unit via the lifts to the dedicated waste storage areas located on ground level or basement level. The residents will share 2 centralised WSAs that are located in the eastern and western basement carparks and a ground floor WSA in block C2.

It is proposed to use compactors in the two basement WSAs to compress DMR and MNR waste into suitable containers. This equipment will be clearly labelled to identify which types of waste can be placed inside and the equipment will be suitable for use by all persons.

Full compacted waste bags and organic bins will be moved by facilities management as required to the temporary storage/collection WSA located on the north-east side of the development at the ground level in Block C4.

Access to the shared residential WSAs will be restricted to residents, facility management personnel and the waste contractor by means of a key or electronic fob access.

Other waste materials such as textiles, batteries, printer toner/cartridges and WEEE may be generated infrequently by the residents. Residents will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately. Further details on additional waste types can be found in Section 5.4.

## 5.2 Waste Storage – Commercial Units

The tenants will be required to segregate waste within their unit, into the following main waste types:

- DMR;
- MNR;
- Organic waste; and

- Glass.

Tenants will take their waste to their allocated commercial waste store, at ground level on the eastern side of the development in block C4 at ground level.

Suppliers for the tenants should be requested by the tenants to make deliveries in reusable containers, minimize packaging or to remove any packaging after delivery where possible, to reduce waste generated by the development.

If any kitchens/food preparation areas are allocated in unit areas, this will contribute a significant portion of the volume of waste generated on a daily basis, and as such it is important that adequate provision is made for the storage and transfer of waste from these areas to the WSAs.

If kitchens are required it is anticipated that waste will be generated in kitchens throughout the day, primarily at the following locations:

- Food Storage Areas (i.e. cold stores, dry store, freezer stores and stores for decanting of deliveries);
- Meat Preparation Area;
- Vegetable Preparation Area;
- Cooking Area;

Small bins will be placed adjacent to each of these areas for temporary storage of waste generated during the day. Waste will then be transferred from each of these areas to the appropriate retail/commercial WSA.

All bins/containers in the tenant's areas as well as in the WSAs will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which wastes can be put in each.

Based on the recommended bin requirements in Table 5.1, DMR, MNR, glass and organic bins will be collected on a weekly basis.

Other waste materials such as batteries, printer cartridges, lightbulbs and WEEE will be generated less frequently. Space will have to be allowed for in the tenants own units for storage of these waste types as required. Collection may be arranged by facilities management or the tenant depending on the agreement.

### **5.3 Waste Collection**

There are numerous private contractors that provide household and commercial waste collection in the Dublin City area. All waste contractors servicing the proposed development must hold a valid waste collection permit for the specific waste types collected. All waste collected must be transported to registered, permitted and/or licensed facilities only.

Waste collection vehicles will enter the site off Sheriff Street Upper between the eastern side of Block A and the western side of the neighbouring site. All residential waste will be brought up to ground level and stored temporarily in block C4 temporary storage/collection WSA. The commercial WSA is located at this location. Waste contractors will collect waste receptacles directly from the commercial WSA and the Temporary storage/Collection WSA. The location of the temporary storage/collection WSA and the commercial WSA can viewed on the drawings submitting with the planning application.

Other waste types (e.g. batteries, WEEE, waste cooking oil etc.) are discussed in Section 5.4.

It is recommended that waste collection times/days are staggered for the different waste types to reduce the number of vehicles present for collection/emptying at the collection point on the internal servicing road.

All waste receptacles presented for collection will be clearly identified as required by waste legislation and the requirements of the DCC Waste Bye-Laws. Also, waste will be presented for collection in a manner that will not endanger health, create a risk to traffic, harm the environment or create a nuisance through odours or litter.

#### **5.4 Additional Waste Materials**

In addition to the typical waste materials that are generated on a daily basis, there will be some additional waste types generated from time to time that will need to be managed separately. A non-exhaustive list is presented below.

##### Green waste

Green waste may be generated from gardens, external landscaping and internal plants/flowers. Green waste generated from landscaping of external areas will be removed by external landscape contractors. Green waste generated from gardens internal plants/flowers can be placed in the organic waste bins.

##### Batteries

A take-back service for waste batteries and accumulators (e.g. rechargeable batteries) is in place in order to comply with the Waste Management Batteries and Accumulators Regulations 2014 as amended. In accordance with these regulations consumers are able to bring their waste batteries to their local civic amenity centre or can return them free of charge to retailers which supply the equivalent type of battery, regardless of whether or not the batteries were purchased at the retail outlet and regardless of whether or not the person depositing the waste battery purchases any product or products from the retail outlet.

The commercial tenants cannot use the civic amenity centre. They must segregate their waste batteries and either avail of the take-back service provided by retailers or arrange for recycling/recovery of their waste batteries by a suitably permitted/licenced contractor. Facilities management may arrange collection depending on the agreement.

##### Waste Electrical and Electronic Equipment (WEEE)

The *WEEE Directive 2002/96/EC* and associated Waste Management (WEEE) Regulations have been enacted to ensure a high level of recycling of electronic and electrical equipment. In accordance with the regulations, consumers can bring their waste electrical and electronic equipment to their local recycling centre. In addition consumers can bring back WEEE within 15 days to retailers when they purchase new equipment on a like for like basis. Retailers are also obliged to collect WEEE within 15 days of delivery of a new item, provided the item is disconnected from all mains, does not pose a health and safety risk and is readily available for collection.

As noted above, the commercial tenants cannot use the civic amenity centre. They must segregate their WEEE and either avail of the take-back/collection service provided by retailers or arrange for recycling/recovery of their WEEE by a suitably permitted/licenced contractor. Facilities management may arrange collection depending on the agreement.

##### Printer Cartridge/Toners

It is recommended that a printer cartridge/toner bin is provided in the commercial units, where appropriate. The commercial tenants tenants will be required to store this waste within their unit and arrange for return to retailers or collection by an authorised waste contractor, as required.

Waste printer cartridge/toners generated by residents can usually be returned to the supplier free of charge or can be brought to a civic amenity centre.

#### Chemicals (solvents, paints, adhesives, resins, detergents etc)

Chemicals (such as solvents, paints etc) are largely generated from building maintenance works. Such works are usually completed by external contractors who are responsible for the off-site removal and appropriate recovery/recycling/disposal of any waste materials generated.

Any waste cleaning products or waste packaging from cleaning products generated in the commercial units that is classed as hazardous (if they arise) will be appropriately stored within the tenants own space. Facilities management may arrange collection depending on the agreement.

Any waste cleaning products or waste packaging from cleaning products that are classed as hazardous (if they arise) generated by the residents should be brought to a civic amenity centre.

#### Light Bulbs (Fluorescent Tubes, Long Life, LED and Lilament bulbs)

Waste light bulbs may be generated by lighting in the commercial tenants units. It is anticipated that commercial tenants will be responsible for the off-site removal and appropriate recovery/disposal of these wastes. Facilities management may arrange collection depending on the agreement.

Light bulbs generated by residents should be taken to the nearest civic amenity centre for appropriate storage and recovery/disposal.

#### Textiles

Where possible, waste textiles should be recycled or donated to a charity organisation for reuse.

#### Waste Cooking Oil

If the commercial tenants use cooking oil, waste cooking oil will need to be stored within the unit on a bunded area or spill pallet and regular collections by a dedicated waste contractor will need to be organised as required.

If the residents generate waste cooking oil, this can be brought to a civic amenity centre.

#### Furniture (and other bulky wastes)

Furniture and other bulky waste items (such as carpet etc.) may occasionally be generated by the commercial tenants. The collection of bulky waste will be arranged as required by the tenant. If residents wish to dispose of furniture, this can be brought a civic amenity centre.

#### Abandoned Bicycles

Bicycle parking areas are planned for the development. As happens in other developments, residents and tenants sometimes abandon faulty or unused bicycles and it can be difficult to determine their ownership. Abandoned bicycles should be donated to charity if they arise.

## **5.5 Waste Storage Area Design**

The WSA should be designed and fitted-out to meet the requirements of relevant design standards, including:

- Be fitted with a non-slip floor surface;

- Provide ventilation to reduce the potential for generation of odours with a recommended 6-10 air changes per hour for a mechanical system for internal WSAs;
- Provide suitable lighting – a minimum Lux rating of 220 is recommended;
- Be easily accessible for people with limited mobility;
- Be restricted to access by nominated personnel only;
- Be supplied with hot or cold water for disinfection and washing of bins;
- Be fitted with suitable power supply for power washers;
- Have a sloped floor to a central foul drain for bins washing run-off;
- Have appropriate signage placed above and on bins indicating correct use;
- Have access for potential control of vermin, if required; and
- Be fitted with CCTV for monitoring.

The facilities company(s) will be required to maintain the waste storage areas in good condition as required by the DCC Waste Bye-Laws.

## 6.0 CONCLUSIONS

In summary, this OWMP presents a waste strategy that addresses all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the development.

Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the *EMR Waste Management Plan 2015 – 2021*.

Adherence to this plan will also ensure that waste management at the development is carried out in accordance with the requirements of the *DCC Waste Bye-Laws*.

The waste strategy presented in this document will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated area for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.

## 7.0 REFERENCES

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  - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended
  - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) as amended
  - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended
  - European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014)
  - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
  - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
  - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
  - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
  - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015)
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## Brady Shipman Martin

### **DUBLIN**

Canal House  
Canal Road  
Dublin 6  
+353 1 208 1900

### **CORK**

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

### **LIMERICK**

11 The Crescent  
Limerick  
+353 61 315 127

[mail@bradyshipmanmartin.com](mailto:mail@bradyshipmanmartin.com)  
[www.bradyshipmanmartin.com](http://www.bradyshipmanmartin.com)

