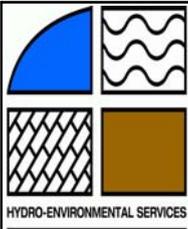




APPENDIX 8-2

HES SITE INVESTIGATION LOGS



TRIAL PIT LOG

TRIAL PIT NUMBER: BP-TP1

PROJECT NUMBER: P1320-0

DATE STARTED: 14/12/2016

EASTING: 241953

SITE: Clonsura, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 274535

CLIENT: Element Power

CONTRACTOR: Paul Etherson

ELEVATION: 84.50mOD

Comments	Sample Number	Sample Type	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
No Water	BP-TP1-S1	B		84.50	0		Ground Surface
				84.10			Soft, brown topsoil, over slightly gravelly CLAY (glacial till)
				83.30	1		WEATHERED BEDROCK Dry, dark grey, clayey, sandy, angular gravels and cobbles of weathered limestone bedrock
				83.20			BEDROCK Strong, solid limestone
No water encountered						EOH 1.3mbgl Total Depth of Trial Pit	

REMARKS:

Bulk rock sample taken at 1.3mbgl

PIT LENGTH: 2.5m

PIT BREADTH: 1.4m

FINAL DEPTH: 1.3m

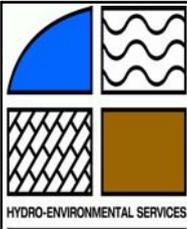
EXCAVATOR: 12 tonne

LEGEND

- ∇ - Water strike
- D - Disturbed sample
- B - Bulk disturbed sample
- W - Water sample
- V - Vane test
- T - No. of threads
- R - Average length of ribbons
- Dil - Dilatancy recorded
- ND - No dilatancy recorded

PAGE 1 of 1

SCALE



TRIAL PIT LOG

TRIAL PIT NUMBER: BP-TP2

PROJECT NUMBER: P1320-0

DATE STARTED: 14/12/2016

EASTING: 241969

SITE: Clonsura, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 274417

CLIENT: Element Power

CONTRACTOR: Paul Etherson

ELEVATION: 97.2mOD

Comments	Sample Number	Sample Type	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
No Water				97.20	0		Ground Surface
				97.10			TOPSOIL Brown, sandy, gravelly CLAY
							GLACIAL TILL Orange/brown, slighty gravelly CLAY
				96.60			WEATHERED BEDROCK Dark, grey, clayey, sandy, angular GRAVELS and COBBLES of weathered Limestone Bedrock
No Water				95.45			
					2		Refusal on strong solid limestone bedrock at 1.75mbgl Total Depth of Trial Pit

REMARKS:

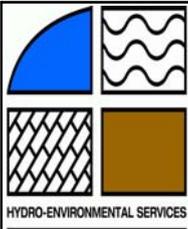
PIT LENGTH: 2.6m
PIT BREADTH: 1.4m
FINAL DEPTH: 1.75m
EXCAVATOR: 12 tonne

LEGEND

- ∇ - Water strike
- D - Disturbed sample
- B - Bulk disturbed sample
- W - Water sample
- V - Vane test
- T - No. of threads
- R - Average length of ribbons
- Dil - Dilatancy recorded
- ND - No dilatancy recorded

PAGE 1 of 1

SCALE



TRIAL PIT LOG

TRIAL PIT NUMBER: BP-TP3

PROJECT NUMBER: P1320-0

DATE STARTED: 14/12/2016

EASTING: 242040

SITE: Clonsura, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 274357

CLIENT: Element Power

CONTRACTOR: Paul Etherson

ELEVATION: 105.0mOD

Comments	Sample Number	Sample Type	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description	
No Water				105.00	0		Ground Surface	
								TOPSOIL/SUBSOIL Orange/brown, slight gravelly CLAY
				104.70				WEATHERED BEDROCK Dark grey, sandy, angular GRAVELS and COBBLES of weathered Limestone Bedrock
				104.60				Refusal on strong solid limestone bedrock at 0.4m
				104.30				

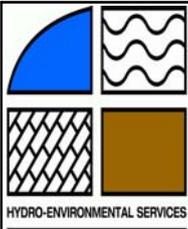
REMARKS:

PIT LENGTH: 1.9m
PIT BREADTH: 1.4m
FINAL DEPTH: 0.4m
EXCAVATOR: 12 tonne

- LEGEND**
 ▽ - Water strike
 D - Disturbed sample
 B - Bulk disturbed sample
 W - Water sample
 V - Vane test
 T - No. of threads
 R - Average length of ribbons
 Dil - Dilatancy recorded
 ND - No dilatancy recorded

PAGE 1 of 1

SCALE



TRIAL PIT LOG

TRIAL PIT NUMBER: BP-TP4

PROJECT NUMBER: P1320-0

DATE STARTED: 14/12/2016

EASTING: 242000

SITE: Clonsura, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 274262

CLIENT: Element Power

CONTRACTOR: Paul Etherson

ELEVATION: 114.1mOD

Comments	Sample Number	Sample Type	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
No Water				114.10	0		Ground Surface
				113.80			TOPSOIL Brown, sandy, gravelly CLAY
				112.70	1		GLACIAL TILL Orange/brown, slighty gravelly CLAY
				112.60			WEATHERED BEDROCK Large angular boulders and cobbles of weathered Limestone Bedrock surrounded by clay matrix
							EOH 1.5mbgl Refusal on strong, solid Limestone Bedrock

Total Depth of Trial Pit

REMARKS:

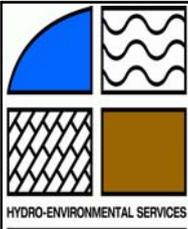
PIT LENGTH: 2.3m
PIT BREADTH: 1.4m
FINAL DEPTH: 1.5m
EXCAVATOR: 12 tonne

LEGEND

- ∇ - Water strike
- D - Disturbed sample
- B - Bulk disturbed sample
- W - Water sample
- V - Vane test
- T - No. of threads
- R - Average length of ribbons
- Dil - Dilatancy recorded
- ND - No dilatancy recorded

PAGE 1 of 1

SCALE



TRIAL PIT LOG

TRIAL PIT NUMBER: BP-TP5

PROJECT NUMBER: P1320-0

DATE STARTED: 14/12/2016

EASTING: 241921

SITE: Clonsura, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 274347

CLIENT: Element Power

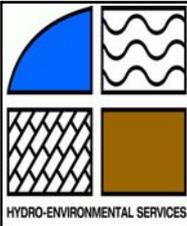
CONTRACTOR: Paul Etherson

ELEVATION: 105.9mOD

Comments	Sample Number	Sample Type	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
				105.90	0		Ground Surface
No Water				105.50			TOPSOIL Brown, sandy, gravelly CLAY
No Water				104.80	1		GLACIAL TILL Orange/brown, gravelly CLAY
No Water				104.00			WEATHERED BEDROCK Dark grey, sandy, clayey, gravels and cobbles of limestone
	Bulk Sample BP-TP5-S1 at 1.8mbgl			103.50	2		WEATHERED BEDROCK Cobbles and boulders of limestone in clay matrix (angular)
							Refusal on solid strong Limestone Bedrock at 2.4mbgl
							Total Depth of Trial Pit
					3		

REMARKS:	PIT LENGTH: 2.6m PIT BREADTH: 1.4m FINAL DEPTH: 2.4m EXCAVATOR: 12 tonne
-----------------	---

LEGEND ∇ - Water strike D - Disturbed sample B - Bulk disturbed sample W - Water sample V - Vane test T - No. of threads R - Average length of ribbons Dil - Dilatancy recorded ND - No dilatancy recorded	PAGE 1 of 1 SCALE
--	--



TRIAL PIT LOG

TRIAL PIT NUMBER: BP-TP6

PROJECT NUMBER: P1320-0

DATE STARTED: 14/12/2016

EASTING: 241862

SITE: Clonsura, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 274379

CLIENT: Element Power

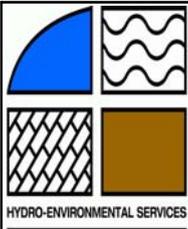
CONTRACTOR: Paul Etherson

ELEVATION: 100.5mOD

Comments	Sample Number	Sample Type	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
No Water				100.50	0		Ground Surface
							TOPSOIL Brown, sandy, gravelly CLAY
				100.30			WEATHERED BEDROCK Weathered angular Limestone bedrock
				100.15			EOH 0.35mbgl - refusal on strong solid Limestone Bedrock
						Total Depth of Trial Pit	

REMARKS: Trial pit in field that slopes steeply to west	PIT LENGTH: 1.8m PIT BREADTH: 1.4m FINAL DEPTH: 0.35m EXCAVATOR: 12 tonne
---	--

LEGEND ▽ - Water strike D - Disturbed sample B - Bulk disturbed sample W - Water sample V - Vane test T - No. of threads R - Average length of ribbons Dil - Dilatancy recorded ND - No dilatancy recorded	PAGE 1 of 1
	SCALE



TRIAL PIT LOG

TRIAL PIT NUMBER: TP1-C

PROJECT NUMBER: P1320-0

DATE STARTED: 13/12/2016

EASTING: 240039

SITE: Coole WF, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 274580

CLIENT: Element Power

CONTRACTOR: Paul Etherson

ELEVATION: ~70mOD

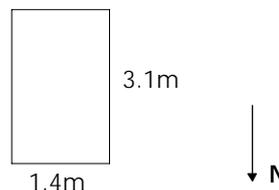
Comments	Sample Number	Sample Type	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
May have been dug before				70.00	0		Ground Surface
				69.10	1		Scraw, heather, roots, sedge Light brown, wet, soft, woody PEAT H4/H5 (may have been dug previously)
Base of pit collapsing due to water inflow			2.7mbgl	67.30	2		Darker brown, wet, soft, woody fibrous PEAT (trace wood)
				67.00	3		Loose, grey, very wet, coarse, slightly silty, slightly sandy, angular GRAVEL
Water inflow at 2.7mbgl	TP1-S1 (2.8-3.0m)	B					Total Depth of Trial Pit

REMARKS:

Water level rose from 2.7mbgl to 2.6 mbgl in 15 mins
Sample of gravel taken at 2.8-3.0mbgl

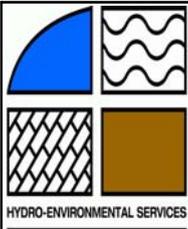
PIT LENGTH: 3.1m
PIT BREADTH: 1.4m
FINAL DEPTH: 3.0m
EXCAVATOR:

- LEGEND**
 ▽ - Water strike
 D - Disturbed sample
 B - Bulk disturbed sample
 W - Water sample
 V - Vane test
 T - No. of threads
 R - Average length of ribbons
 Dil - Dilatancy recorded
 ND - No dilatancy recorded



PAGE 1 of 1

SCALE



TRIAL PIT LOG

TRIAL PIT NUMBER: TP2-C

PROJECT NUMBER: P1320-0

DATE STARTED: 13/12/2016

EASTING: 239994

SITE: Coole WF, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 274552

CLIENT: Element Power

CONTRACTOR: Paul Etherson

ELEVATION: ~70mOD

Comments	Sample Number	Sample Type	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
				70.00	0		Ground Surface
				69.45			(Heather and sedge) Soft, wet, brown, woody PEAT (H4/H5)
Small seepage from peat to Mineral Soil/Till Could not dig past 0.65m bgl - large cobbles and v. stiff ground				69.35			WEATHERED BEDROCK Large angular Cobbles of rock surrounded by matrix of sandy silt and smaller angular gravel
							Total Depth of Trial Pit
					1		
					2		

REMARKS: Solid ground - Shallow peat to South of proposed compound site	PIT LENGTH: 2.8m PIT BREADTH: 1.6m FINAL DEPTH: 0.65m EXCAVATOR:
---	---

LEGEND ∇ - Water strike D - Disturbed sample B - Bulk disturbed sample W - Water sample V - Vane test T - No. of threads R - Average length of ribbons Dil - Dilatancy recorded ND - No dilatancy recorded	PAGE 1 of 1
	SCALE



WINDOW SAMPLE LOG

LOG NUMBER: WS1-C

PROJECT NUMBER: P1320-0

DATE STARTED: 13/12/2016

EASTING: 240025

SITE: Coole WF, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 274562

CLIENT: Element Power

CONTRACTOR: HES

ELEVATION: ~70 mOD

Well Completion Description	Comments	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
		0.95mbgl	70.00 69.10 68.77	0	<p>Soft, dark brown, woody PEAT (H4, H5)</p> <p>Grey, coarse angular GRAVEL</p>	<p>Ground Surface</p> <p>Total Depth of Borehole</p>

REMARKS

C1-PH1 - upstand 10cm; C1-P1 - upstand 49cm
 Drilled at compound site.
 Water levels 14/12/2016 - C1-PH1 - 0.28 mbTOC, C1-P1 - 0.72 mbTOC

PAGE 1 of 1

SCALE



WINDOW SAMPLE LOG

LOG NUMBER: WS01

PROJECT NUMBER: P1320-0

DATE STARTED: 15/12/2016

EASTING: 240876

SITE: Coole WF, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 277321

CLIENT: Element Power

CONTRACTOR: HES

ELEVATION: 64.0mOD

Well Completion Description	Comments	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description	
	Couple WS01		64.00	0		Ground Surface	
						Soft/firm, wet, dark brown, fibrous to woody PEAT	
	Finer peat at base of peat profile		58.65	5		Creamy, soft calcareous mud with shell fragments	
			55.55				Dark grey, silty lacustrine CLAY
			55.00				EOH 9.0mbgl Total Depth of Borehole

REMARKS

Located at T01

Upstands:

- WS01-P1 = 1.0m
- WS01-PH1 = 1.05m

PAGE 1 of 1

SCALE



WINDOW SAMPLE LOG

LOG NUMBER: WS02

PROJECT NUMBER: P1320-0

DATE STARTED: 15/12/2016

EASTING: 241426

SITE: Coole WF, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 277287

CLIENT: Element Power

CONTRACTOR: HES

ELEVATION: 62.0mOD

Well Completion Description	Comments	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description		
	Couple WS02		62.00	0		Ground Surface		
						5	Soft/firm, wet, dark brown, fibrous to woody PEAT	
					57.80			Creamy, soft calcareous mud with shell fragments
					55.95			Soft, dark grey lacustrine CLAY
			53.10			EOH 8.9mbgl Total Depth of Borehole		
				10				

REMARKS

Piezo installed on head land just north of T02 (241426E 277287N)

Upstands:

- WS02-P1 = 0.8m
- WS02-PH1 = 0.7m

PAGE 1 of 1

SCALE



WINDOW SAMPLE LOG

LOG NUMBER: WS03

PROJECT NUMBER: P1320-0

DATE STARTED: 15/12/2016

EASTING: 241517

SITE: Coole WF, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 276713

CLIENT: Element Power

CONTRACTOR: HES

ELEVATION: 66.0mOD

Well Completion Description	Comments	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
			66.00	0		Ground Surface
				5		Soft/firm, wet, dark brown, fibrous to woody PEAT
			59.80			Creamy, soft calcareous mud with shell fragments
			57.60			Dark grey lacustrine CLAY
			57.00			EOH 9.0mbgl
				10		Total Depth of Borehole

REMARKS

PAGE 1 of 1

SCALE



WINDOW SAMPLE LOG

LOG NUMBER: WS07

PROJECT NUMBER: P1320-0

DATE STARTED: 15/12/2016

EASTING: 240950

SITE: Coole WF, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 276633

CLIENT: Element Power

CONTRACTOR: HES

ELEVATION: 64.0mOD

Well Completion Description	Comments	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
			64.00	0		Ground Surface
					0	Soft/firm, wet, dark brown, fibrous to woody PEAT
			60.03			Creamy, soft calcareous mud with shell fragments
				5		
			58.00			Soft, dark grey, lacustrine CLAY
						- Soft to firm from 8.3-9.0
			55.00			EOH 9.0mbgl
						Total Depth of Borehole
				10		

REMARKS

PAGE 1 of 1

SCALE



WINDOW SAMPLE LOG

LOG NUMBER: WS08

PROJECT NUMBER: P1320-0

DATE STARTED: 14/12/2016

EASTING: 240568

SITE: Clonsura, Co. Westmeath

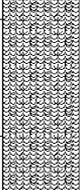
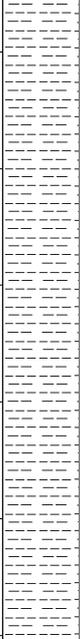
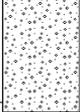
LOGGED BY: M. Gill

NORTHING: 276013

CLIENT: Element Power

CONTRACTOR: HES

ELEVATION: 61.0mOD

Well Completion Description	Comments	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
			61.00	0		Ground Surface
			60.20			Soft, wet, dark brown, fibrous to woody PEAT
			58.52			Soft, creamy, calcareous mud, with shell fragments
			52.90	5		Soft, dark grey, lacustrine CLAY, with interbedded soft and firm clay/silt layers
			51.92			Loose, wet, grey sandy GRAVEL
				10		EOH 9.08mbgl Total Depth of Borehole

REMARKS

Refusal on gravels at 9.08mbgl

PAGE 1 of 1

SCALE



WINDOW SAMPLE LOG

LOG NUMBER: WS09

PROJECT NUMBER: P1320-0

DATE STARTED: 15/12/2016

EASTING: 240923

SITE: Coole WF, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 275577

CLIENT: Element Power

CONTRACTOR: HES

ELEVATION: 66.2mOD

Well Completion Description	Comments	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
	Couple WS09		66.20	0		Ground Surface
						Soft/firm, wet, dark brown, fibrous to woody PEAT
						Soft, creamy, calcareous mud with shell fragments
						Soft, grey, lacustrine CLAY
						Loose, wet, sandy, silty GRAVEL
						Stiff grey GRAVEL EOH 10.96mbgl Total Depth of Borehole

REMARKS

Refusal on gravels at 10.96mbgl

Upstands:

- WS09-P1 = 0.75m
- WS09-PH1 = 0.4m

PAGE 1 of 1

SCALE



WINDOW SAMPLE LOG

LOG NUMBER: WS13

PROJECT NUMBER: P1320-0

DATE STARTED: 15/12/2016

EASTING: 240855

SITE: Clonsura, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 275030

CLIENT: Element Power

CONTRACTOR: HES

ELEVATION: 68.0mOD

Well Completion Description	Comments	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
			68.00	0		Ground Surface
						Soft, wet and woody, brown, fibrous PEAT
				5		
			60.52			Soft, creamy, calcareous mud with fragment shell remains
			58.95			
			58.65			Firm, grey lacustrine CLAY
			58.35			Dense, grey, clayey, silty GRAVEL
				10		EOH 9.65mbgl
						Total Depth of Borehole

REMARKS

Refusal on gravels at 9.65mbgl

PAGE 1 of 1

SCALE



WINDOW SAMPLE LOG

LOG NUMBER: WS100

PROJECT NUMBER: P1320-0

DATE STARTED: 15/12/2016

EASTING: 241441

SITE: Coole WF, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 277395

CLIENT: Element Power

CONTRACTOR: HES

ELEVATION: 63.0mOD

Well Completion Description	Comments	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description
	<p>Couple WS100 Located on high bank at edge of peat works</p> <p>Possible fen Peat</p>		<p>63.00</p> <p>57.40</p> <p>57.00</p>	<p>0</p> <p>5</p>	<p>Soft, wet, dark brown, fibrous PEAT.</p> <p>Slightly stiffer at depth.</p> <p>Creamy, soft calcareous mud with shell fragments</p> <p>EOH 6.0mbgl</p>	<p>Ground Surface</p> <p>Total Depth of Borehole</p>

REMARKS

Piezometers installed between T02 and Lough Bane

Upstands:

- WS100-P1 = 0.05m
- WS100-PH1 = 0.05m

PAGE 1 of 1

SCALE



WINDOW SAMPLE LOG

LOG NUMBER: WS101

PROJECT NUMBER: P1320-0

DATE STARTED: 15/12/2016

EASTING: 240833

SITE: Coole WF, Co. Westmeath

LOGGED BY: M. Gill

NORTHING: 277407

CLIENT: Element Power

CONTRACTOR: HES

ELEVATION: 64.0mOD

Well Completion Description	Comments	Water Strikes	Elevation	Meters Below Ground Surface	Lithology	Formation Description		
	<p>Couple WS101 Located between T01 and lake to north</p>		64.00	0		Ground Surface		
							Soft, wet, brown fibrous Peat	
						5		Possible fen Peat at base
					58.60			Creamy, soft calcareous mud with shell fragments
			58.00			EOH 6.0mbgl		
						Total Depth of Borehole		

REMARKS

Upstands:
WS101-P1 - 1.0m
WS101-PH1 - 0.1m

PAGE 1 of 1

SCALE