

APPENDIX C
Client Supplied Information

Shoreline Management Wales

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Web: www.shorelinemanagement.co.uk (Under Construction)

Nantewlaeth, Heol-y-Glyn,
Cymmer, Port Talbot, SA13 3NB

Date: 13 December 2001
Ref 011213TrostreTip

Mr P.C. Williams
Environment & Economic Development
Carmarthenshire County Council, Civic Offices
Llandeilo, Carmarthenshire SA19 6HW

Dear Mr Williams,

Ref - TROSTRE TIP - Site Trials

The recently discussed site trials at the above site were undertaken on 11th and 12th December and comprised the following tasks:

- 1 To excavate a hole on site, weigh the excavated material and carefully measure the void in order that a value for material density could be determined.
- 2 To excavate small trial pits around the site and assess the suitability of the material.

Please find attached to this letter the following:

- An A2 site plan indicating the positions of the trial pits and trial excavation for determining density.
- An A3 photographic record sheet containing a selection of photographs taken during the exercise.
- A CD containing a full set of digital photographs.
- A print of the excel spread sheet containing data used to calculate the density of material arising from the trial hole.

I also provide the following results, observations and comments:

1 Excavated Trial Hole for density

An area was set out on site and material was excavated and loaded into a lorry for weighing. A total of 13 loads were taken to a local weigh bridge and then returned to site to backfill the excavation. The nett weight of the excavated material was 48.2 tonnes and the void measured 25.77 cubic metres. The void was measured using three people, tapes, stringlines and a dipping pole to maximise accuracy. The density was calculated at 1.87T/m³.

17 DEC 2001

Dec
0105

Trial Pits

Eleven trial pits were excavated to a depth of approximately two metres. Each excavated mound was photographed and recorded as follows:

TRIAL PIT REF No	DEPTH m	NOTE
'X'	1.4	Hard core (h/c), bricks and generally suitable fill material with minor pockets of cohesive/unsuitable material and metal
1	2	Generally good quality fill material with bricks, concrete, granular material with some cohesive material.
2	2.2	Mixture of h/c and clay/cohesive material which would be unsuitable in isolation and would require careful handling if used as fill (avoid wet conditions). Note water holding in base of excavation.
3	1.9	Generally suitable fill/ h/c including concrete, bricks and granular material and pockets of cohesive material. Note - some scrap metal, small pieces of timber and an old cable.
4	2	Generally suitable material but note large lumps of cohesive material. Considered to be suitable material if handled correctly. Water noted in base of excavation.
5	2	Suitable h/c fill material comprising bricks, stone. Concrete and granular fill with minimal pockets of cohesive material. Evidence of plastic sheeting and an old pipe - very limited.
6	2.1	Generally suitable material with occasional pieces of timber and chipboard. Mostly brick, blocks and concrete with sub-soil and granular material.
7	2.1	Granular material with bricks and stone - suitable fill.
8	1.9	Generally suitable fill material will brick, stone and granular material. Also evidence of clay/ cohesive material and would require some care in handling and working in wet conditions should be avoided.
9	2	Suitable fill with no indication of cohesive material.
10	2	Suitable granular fill material with minor fractions of cohesive material. Requires care in wet conditions.
11	2	Suitable granular fill material.
General		The material appeared to be mostly suitable although evidence of clay/ cohesive material in varying quantities was noted in many trial pits. Also, evidence of limited timber, plastic and metal. Some areas may be more problematic than others although most may be regarded as suitable fill provided reasonable care is taken in handling the material. It would be possible, however, that if poor working practices were adopted, a significant proportion of the material would be difficult to move, place and compact. A carefully worded contract document and close site supervision by client representative on site is recommended.

No information was obtained on material lower than two metres below ground level. This material may require examination if the proposed finished ground levels are lower than those proposed in the recently issued outline design.

Please do not hesitate to contact me to discuss any matters arising.

Yours sincerely

A handwritten signature in black ink, appearing to read 'H. Blackwell', with a long horizontal flourish extending to the right.

Howard Blackwell
Shoreline Management Wales

Shoreline Management Wales

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Nantewlaeth, Heol-y-Glyn, Cymmer, Port Talbot, SA13 3NB

Email: howard@shorelinemanagement.co.uk
Web : www.shorelinemanagement.co.uk

Mr. D,N Johnston
Area Contaminated Land Officer
Environment Agency Wales
Glan Tawe,
154 St Helens Road
Swansea SA1 4DF

Date: 13th June
Ref: Trostre Hard Core Tip
File: 020612_EA_DNJ

FAO: Mr David Johnston

Dear Mr Johnston,

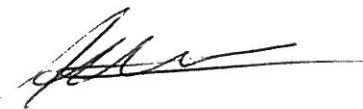
Subject: TROSTRE HARD CORE TIP

Six sample have been taken from the area of the above site to be excavated, of which, three samples have been tested. The work was carried out by Thyssen Geotechnical and Drewentside Environmental Testing Services and I enclose the results along with the certificate of analysis.

I should be grateful if you would comment on the results and hopefully confirm that the proposed works may progress. A contract document is currently being prepared and it is intended to undertake the works during this summer period. I confirm that suitable site measures as specified in the third paragraph of your correspondence to Mr Williams of 8th May (DJ/CL/SIT/Trostre) will be undertaken.

Please do not hesitate to contact me to discuss any matters arising at your convenience.

Yours sincerely



Howard Blackwell
Shoreline Management Wales



Table 1 Contamination Classification Thresholds for Disposal

Determinand	Leachate Quality Threshold (ug/l unless stated)	Total Concentrations		TROSTRE TIP VALUES		
		Lower Threshold Concentration (mg/kg air-dried sample)	Upper Threshold Concentration (mg/kg air dried sample)	TP 1	TP2	TP3
pH	5.5 - 9.5	6 - 8	5 - 9	8.9	8.8	7.6
Toluene Extract	-	5,000*(subject to sp.waste)	10,000*(subject to sp.waste)	120	260	<50 mg/Kg
Cyclohexane Extract	-	2,000*(subject to sp.waste)	5,000*(subject to sp.waste)	<20	<20	<20 mg/Kg
Conductivity	1000 us/cm	-	-			
COD	30 mg/l	-	-			
Ammonia	0.5 mg/l	-	-			
Arsenic	10	10	40	21	17	6 mg/Kg
Cadmium	1	3	15	0.4	<0.2	<0.2 mg/Kg
Chromium (total)	50	600	1,000	46	27	21 mg/Kg
Lead (total)	50	500	2,000	220	130	64 mg/Kg
Mercury	1	1	20	0.4	<0.3	<0.3 mg/Kg
Selenium	10	3	6	0.7	0.4	0.4 mg/Kg
Boron	2,000	3	-	1.6	1.7	1.3 mg/Kg
Copper	20	130	-	95	150	50 mg/Kg
Nickel	50	70	-	33	29	39 mg/Kg
Zinc	500	300	-	470	380	110 mg/Kg
Cyanide (complex)	-	250	250	<1	<1	<1 mg/Kg
Cyanide (free)	50	25	25	<1	<1	<1 mg/Kg
Sulphate (SO ₄)	150 mg/l	2,000	2,000	0.28	0.13	0.04 %
Sulphide	150 mg/l	250	250	140	110	60 mg/Kg
Sulphur (free)	150 mg/l	5,000	5,000			
Phenol	0.5	5	5	2.4	1.4	1.9 mg/Kg
Iron	100	-	-	Attached		
Chloride	200 mg/l	-	-			
Polyaromatic Hydrocarbons	0.2	50	1000	<5	<5	<5 mg/Kg

The above table provides generic guidance on the types of contaminants typically found in contaminated soil. Producers/ holders should confirm the absence of contaminants on a site-specific basis as identified by the desk study or site investigation.

Shoreline Management Wales

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Date: 7 January 2002
Ref 020107_TrostreTip

Mr P.C. Williams
Environment & Economic Development
Carmarthenshire County Council, Civic Offices
Llandeilo, Carmarthenshire SA19 6HW

Dear Mr Williams,

Ref - TROSTRE TIP - DESIGN & QUANTITIES

Following our discussion regarding the above, please find enclosed three A1 drawings comprising two cross section sheets and a plan of the latest design proposal.

The cross sections extend across the whole site and include an OGL profile, a design profile that matches adjacent road levels and a line set at + 6.5m AOD. The design matching the adjacent road level minimises cut and fill quantities and has been transferred onto the plan to show colour coded areas of cut and fill. The road at the eastern end of the site, which is adjacent to the garden centre, increases in level and it may not be appropriate to form an embankment up to the boundary of the garden centre which is set at a lower level. I have therefore defined the filling in this area as 'Optional area of fill' and I recommend an early site inspection in order that the visual impact of this potential filling can be assessed.

The estimated volume of cut is 5,500 cubic metres with available for filling of approximately 2,500 cubic metres resulting in a surplus of 3,000 cubic metres. Filling up to the garden centre could reduce the surplus to approximately 1,600 cubic metres. I recommend a joint examination of the design in order that further refinements can be discussed. For example, an increase of 200mm in design level over the whole site would produce a cut/fill balance. Indeed, a 150mm surcharge or dome/chamber could be readily justified and would probably settle back to the design level over time. Also, the road levels were not accurately (see note on drawing) transferred as access to the site and control station was not possible at the time of the recent survey and a strict transfer of levels may change volumes by a few hundred cubic metres.

I trust the above is helpful and I look forward to discussing the project with you on Friday 11th Jan. In the meantime, do not hesitate to contact me to discuss any matters arising.

Yours sincerely



Howard Blackwell
Shoreline Management Wales

Ei'n Cyf/Our ref: DJ/CL/SITE/Trostre
Eich Cyf/Your ref: 020612_EA_DNJ

Dyddiad/Date: 24 June 2002



ASiantaeth yr
AMGYLCHEDD CYMRU
ENVIRONMENT
AGENCY WALES

Mr Howard Blackwell
Shoreline Management Wales
Nantewlaeth
Heol y Glyn
Cymmer
Port Talbot
SA13 3NB

Dear Mr Blackwell

TROSTRE HARD CORE TIP

Thank you for your letter dated 13 June 2002 regarding the sampling results from the material to be excavated at Trostre Hard Core Tip.

Based on the data provided and assuming that the samples are representative of the general conditions at the site, the movement of this material within the boundaries of the landfill for reprofiling purposes does not give cause for concern. The majority of the samples were within the lower threshold concentration limits quoted in our publication "Guidance for the disposal of Contaminated Soils". There were exceedences of this for Arsenic, Zinc and Copper, though in each case these were relatively minor and insufficient to pose any constraint on the planned works. It is after all likely that the material to remain in place on the landfill is of a similar quality to that being moved.

Should you have any further queries please do not hesitate to contact me again.

Yours sincerely

D N JOHNSTON

Area Contaminated Land Officer

Cc: Phil Williams, Carmarthenshire County Council

Asiantaeth yr Amgylchedd Cymru
Glan Tawe, 154 Ffordd Sant Helen, Abertawe, SA1 4DF
Ffon: 01792 645300 Ffacs: 01792 648652

Environment Agency Wales
Glan Tawe, 154 St Helens Road, Swansea, SA1 4DF
Tel: 01792 645300 Fax: 01792 648652

ENVIRONMENTAL AGENCY	
NOTED	26 JUN 2002
FILE	10148
ENCLOSURE	

Handwritten initials: RW



Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION

Client : CARMARTHENSHIRE COUNTY COUNCIL

Trial Pit No.
TP231

Dates : 15/03/05 - 15/03/05

Location : Llanelli

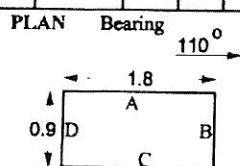
Job Number : 7932

Engineer : MOTT MACDONALD

Ground Level : 6.60 m A.O.D.
Level to Ordnance Datum

Coordinates: 252799.49 E
199690.35 N
Co-ordinates to National Grid

m B.G.L.	Samples			Tests		STRATA			
	Depth	Type No.	U100 Blows	Depth	Test Results	Depth (Thickness)	DESCRIPTION	Legend	Red. Level A.O.D.
0.00 -		D1					MADE GROUND: Firm dark grey to black sandy gravelly CLAY with faint hydrocarbon odour, many sandstone, brick, rare concrete, slag and coal. Gravel of angular to subrounded fine to coarse sandstone, mudstone, brick, glass, ceramics and some slag and rare cementitious asbestos.		
1.00 -		D2				(2.70)			
2.00 -		D3							
2.70 -		B+D4		2.7	Vane - P=100	2.70	Firm to stiff pale grey to mottled orange brown very sandy gravelly CLAY/SILT with some pockets of dark brown damp silt and plant remains. Gravel of angular to subrounded fine to coarse sandstone.		3.90
						(0.30)			
						3.00	Trial Pit terminated at 3.0m depth.		3.60



Groundwater : Seepage at 1.80m

Stability : Stable

Shoring : None used

Remarks :

Equipment Used: JCB 3CX



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Operator:
NT

Logged By:
KH

Sheet No.
1 Of 2

Scale:
1:27.64

All measurements in
metres unless
otherwise stated



Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
 Client : CARMARTHENSHIRE COUNTY COUNCIL

Trial Pit No.
 TP230A

Dates : 15/03/05 - 15/03/05

Location : Llanelli

Job Number : 7932

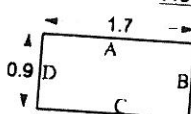
Engineer : MOTT MACDONALD

Ground Level : 7.48 m A.O.D.
 Level to Ordnance Datum

Coordinates : 252674.08 E
 189737.06 N
 Co-ordinates to National Grid

m B.G.L.			Samples			Tests			STRATA			Coordinates: 252674.08 E 189737.06 N Co-ordinates to National Grid			Level to Ordnance Datum																	
Depth			Type No.			U100 Blows			Depth			Test Results			Depth (Thickness)			DESCRIPTION			Legend			Red. Level A.O.D.			Water					
0.10 -			D1															MADE GROUND: Firm to dark grey to black sandy gravelly CLAY with strong hydrocarbon odour and cobbles of brick, sandstone, timber and some slag. Gravel of angular to subrounded fine to coarse sandstone, brick, timber, ceramic and slag.														
1.00 -			D2												(3.00)																	
2.00 -			D3																													
																		3.00			Trial Pitt terminated at 3.0m depth - unable to progress.						4.48					
Bearing 110°			Groundwater : None encountered																											Remarks :		
1.7																																

PLAN Bearing 110°



Groundwater : None encountered

Stability : Slight insability throughout

Shoring : None used

Remarks :

Equipment Used: JCB 3CX



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 1 Of 2

Scale:
 1:27.64

All measurements in
 metres unless
 otherwise stated



Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Trial Pit No.
TP230

Dates : 15/03/05 - 15/03/05

Location : Llanelli

Job Number : 7932

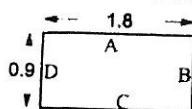
Engineer : MOTT MACDONALD

Ground Level : 7.17 m A.O.D.
Level to Ordnance Datum

Coordinates : 252885.47 E
199687.53 N
Co-ordinates to National Grid

M.B.G.L.	Samples			Tests		STRATA			
	Depth	Type No.	U/100 Blows	Depth	Test Results	Depth (Thickness)	DESCRIPTION	Legend	Red. Level A.O.D.
	0.10 -	D1				(0.10) 0.10	Soft dark grey to black sandy gravelly CLAY with rootlets (TOPSOIL).		
	1.00 -	D2				(2.90)	MADE GROUND: Soft to firm dark grey sandy gravelly CLAY with some brick, concrete and sandstone cobbles. Gravel of angular to subrounded fine to coarse sandstone, brick, concrete, ceramic and some coal tar and faint hydrocarbon odour.		7.07
	2.00 -	D3				3.00	Trial Pit terminated at 3.0m depth.		4.17

PLAN Bearing 110°



Groundwater : None encountered

Stability : Slight instability throughout

Shoring : None used

Remarks :

Equipment Used: JCB 3CX



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Sheet No.
 1 Of 2

Scale:
 1:27.64

All measurements in metres unless otherwise stated



Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Trial Pit No.
TP229

Dates : 15/03/05 - 15/03/05

Location : Llanelli

Job Number : 7932

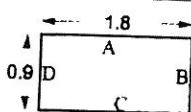
Engineer : MOTT MACDONALD

Ground Level : 7.07 m A.O.D.
Level to Ordnance Datum

Coordinates : 252911.95 E
199737.74 N
Co-ordinates to National Grid

m B.G.L.	Samples			Tests		STRATA				Water
	Depth	Type No.	U100 Blows	Depth	Test Results	Depth (Thickness)	DESCRIPTION	Legend	Red. Level A.O.D.	
0.00 -	D1						MADE GROUND: Firm dark grey to black sandy gravelly CLAY with faint hydrocarbon odour and many sandstone and brick cobbles. Gravel of angular to subrounded fine to coarse sandstone, brick, timber, glass, plastics, ceramics, metal and some slag and rare coal.			
1.00 -	D2					(2.00)				
2.00 -	B+D3			2	Vane - P=100	2.00	Firm to stiff grey brown to mottled orange brown sandy gravelly CLAY/SILT with pockets of very sandy silt and fine to medium sand. Gravel of angular to subangular fine to coarse sandstone.		5.07	
						(1.00)				
						3.00	Trial Pit terminated at 3.0m depth.		4.07	

PLAN Bearing 212°



Groundwater : Seepage at 2.00m

Stability : Slight instability in Made Ground

Shoring : None used

Remarks :

Equipment Used : JCB 3CX



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Sheet No.
 1 Of 2

Scale:
 1:27.64

All measurements in metres unless otherwise stated



Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Trial Pit No.
TP232

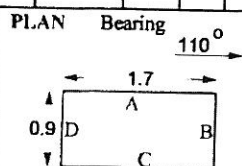
Dates : 15/03/05 - 15/03/05
Location : Llanelli

Job Number : 7932
Engineer : MOTT MACDONALD

Ground Level : 7.00 m A.O.D.
Level to Ordnance Datum

Coordinates : 252870.19 E
199681.28 N
Co-ordinates to National Grid

m B.G.L.	Samples			Tests		STRATA				Water
	Depth	Type No.	U100 Blows	Depth	Test Results	Depth (Thickness)	DESCRIPTION	Legend	Red. Level A.O.D.	
0.10 -	D1					(1.40)	MADE GROUND: Firm dark grey to black sandy gravelly CLAY with strong hydrocarbon odour and many brick and sandstone cobbles. Gravel of angular to subangular fine to coarse sandstone, brick, timber, glass, ceramic, plastic, metal and some slag and rare coal and coal tar.			
1.40 -	B+D2					1.40	Stiff orange brown to mottled grey sandy slightly gravelly friable CLAY/SILT with some pockets of damp brown silt. Gravel of angular to subangular fine to coarse sandstone.		5.60	
2.00 -	D3			2	Vane - P=160	(1.10)				
						2.50	Trial Pit terminated at 2.50m depth.		4.50	



Groundwater : Seepage at 1.40m

Remarks :

Stability : Stable

Shoring : None used

Equipment Used: JCB 3CX



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Sheet No.
1 Of 2

Scale:
1:27.64

All measurements in
metres unless
otherwise stated



Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Borehole No.
BH213

Dates : 12/04/05 - 12/04/05

Location : Llanelli

Job Number : 7932

Engineer : MOTT MACDONALD

Ground Level : 7.72 m A.O.D.
Level to Ordnance Datum

Coordinates: 252922.22 E
 199717.74 N
Co-ordinates to National Grid

m B.G.L.	Samples		Tests		STRATA		Legend	Red. Level A.O.D.	Water	WELL
	Depth	Type No. - UBlows	Depth	Test Results	Depth (Thickness)	DESCRIPTION				
1	0.70 -	B1			(1.80)	MADE GROUND: Medium dense dark grey to black very clayey gravelly fine to coarse ash SAND with some timber and brick cobbles. Gravel of angular to subangular fine to coarse brick, timber, sandstone, ceramic and rare slag and coal.				
	1.20 -	D2	1.2	SPT (S) 14 (10-10-7-3-2-2)						
	1.60 -	B3								
2	2.00 -	D4	2	SPT (S) 10 (1-2-1-3-3-4)	1.80 (0.40)	Soft brown grey to grey sandy slightly gravelly CLAY with rootlets. Gravel of angular to subangular fine to coarse sandstone.		5.92		
	2.50 -	B5			2.20	Firm to locally stiff orange brown to brown grey sandy gravelly CLAY with some sandstone cobbles and pockets of pale grey damp silt. Gravel of angular to subangular fine to coarse sandstone and some mudstone.		5.52		
3	3.00 -	U6 -								
	3.30 -	100/50%								
	3.50 -	D7			(2.10)					
		B8								
4	4.00 -	D9	4	SPT (S) 80/205mm (7-3-10-20-20/55mm-)						
	4.40 -	B10			4.30 (0.30)	Possible weathered mudstone: Recovered as firm to stiff grey to dark grey sandy gravelly CLAY. Gravel of angular to subangular fine to coarse mudstone.		3.42		
	4.60 -	NR11			4.60	Terminated at 4.60m		3.12		

Water Observations			Casing		Groundwater			Chiselling		
Date / Time	Depth	Water	Depth	Cas. Dia.	Struck	Behaviour	Sealed	From	To	Hours
12/04/2005	4.60		3.00	200mm		None encountered		4.40	4.60	0100

Remarks: Dando 2000 using 200mm tools. 50mm gas standpipe installed.

 QUANTUM Bynea House, Bynea Llanelli, Carmarthenshire, SA14 9SU Tel: 01354 744230 Fax: 01354 776150 email: enquiries@quantum-gh.co.uk		Operator: PC	Logged By: KH	Sheet No. 1 Of 1	Scale: 1:60.98	All measurements in metres unless otherwise stated	
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Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Borehole No.
DH213

Dates : 03/05/05 - 03/05/05

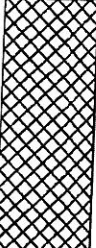
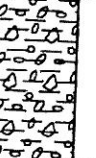
Location : Llanelli

Job Number : 7932

Engineer : MOTT MACDONALD

Ground Level : 7.37 m A.O.D.
Level to Ordnance Datum

Coordinates: 252917.71 E
 199730.36 N
Co-ordinates to National Grid

Run Details				STRATA			
Core Run	Depth (Thickness)	Description	Legend	Red. Level A.O.D.	Water		
1	(2.50)	TIP FILL **					
2	2.50	SANDY CLAY **		4.87			
3	(0.80)	SANDY CLAY & STONES **		4.07			
4	3.30						
5	(1.70)						
6	5.00	BOULDER CLAY **		2.37			
7	(1.50)						
8	6.50	SANDSTONE **		0.87			
9	(3.00)						
	9.50	SANDY MUDSTONE **		-2.13			

Drilling Progress and Water Observations					Groundwater				Flush		
Date / Time	Depth	Casing	Core Dia.	Water	Struck	Sealed	Flow Rate	Remarks	Depth	Type	Returns
					9.50			Medium inflow	0 - 50	AIR	100

Remarks: Tracked mounted rotary rig using 115mm ODEX. ** Drillers Description



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Operator:
 DW

Logged By:
 KH

Sheet No.
 1 Of 6

Scale:
 1:60.83

All measurements in metres unless otherwise stated



Client : CARMARTHENSHIRE COUNTY COUNCIL

Borehole No.
DH213

Job Number : 7932

Engineer : MOTT MACDONALD

Coordinates: 252917.71 E
199730.38 N

Coordinates: 252917.71 E
199730.36 N
Co-ordinates to National Grid

Run Details					STRATA			199730.36 N Co-ordinates to National Grid		Water
Core Run				Depth (Thick- ness)	Description	Legend	Red. Level A.O.D.			
11				(1.50)	SANDY MUDSTONE **					
				11.00	SANDSTONE **		-3.63			
12										
13										
14										
15										
16				(9.00)						
17										
18										
19										
Drilling Progress and Water Observations										

[illegible]

Remarks: Tracked mounted rotary rig using 115mm ODEX. ~ Drillers Description



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KH

Scale:
1:60.83

All measurements in metres unless otherwise stated



Client : CARMARTHENSHIRE COUNTY COUNCIL

Borehole No.
DH213

Job Number : 7932

Engineer : MOTT MACDONALD

Coordinates: 252917.71 E
199730.38 N

Coordinates: 252917.71 E
199730.38 N
Co-ordinates to National Grid

Run Details				STRATA			199730.36 N Co-ordinates to National Grid
Core Run				Depth (Thick- ness)	Description	Legend	Red. Level A.O.D.
				20.00	MUDSTONE **		-12.63
				(1.00)			
21				21.00	DARK MUDSTONE & COAL **		-13.63
				(1.50)			
22				22.50	COAL **		-15.13
				(1.00)			
23				23.50	DARK MUDSTONE & COAL **		-16.13
				(0.50)			
24				24.00	SILTY MUDSTONE **		-16.63
				(6.00)			
25							
26							
27							
28							
29							

Drilling Progress and Water Observations					Groundwater			Flush		
Date / Time	Depth	Casing	Core Dia.	Water	Struck	Sealed	Flow Rate Remarks	Depth	Type	Returns

Remarks: Tracked mounted rotary rig using 115mm QDEX ** Drillers Description

Remarks: Tracked mounted rotary rig using 115mm ODEX. ** Drillers Description



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Logged By.
KH

Sheet No.
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Scale:
1:60.83

All measurements in metres unless otherwise stated



Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Borehole No.
DH213

Dates : 03/05/05 - 03/05/05
Location : Llanelli

Job Number : 7932
Engineer : MOTT MACDONALD

Ground Level : 7.37 m A.O.D.
Level to Ordnance Datum
Coordinates: 252917.71 E
 199730.36 N
Co-ordinates to National Grid

Run Details					STRATA			199730.38 N Co-ordinates to National Grid	Water
Core Run				Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.		
				30.00	SANDSTONE WITH QUARTZ **		-22.83		
31									
32									
33									
34									
35				(6.80)					
36									
37									
38									
39				38.80	COAL **		-31.43		
				(1.20)					

Drilling Progress and Water Observations					Groundwater			Flush		
Date / Time	Depth	Casing	Core Dia.	Water	Struck	Sealed	Flow Rate	Remarks	Depth	Returns

Remarks: Tracked mounted rotary rig using 115mm ODEX. ** Drillers Description



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Logged By:
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Sheet No.
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Scale:
 1:60.83

All measurements in metres unless otherwise stated



Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Dates : 03/05/05 - 03/05/05

Location : Llanelli

Job Number : 7932

Engineer : MOTT MACDONALD

Borehole No.
DH213

Ground Level : 7.37 m A.O.D.
Level to Ordnance Datum
Coordinates: 252917.71 E
199730.36 N
Co-ordinates to National Grid

Run Details				STRATA				Legend	Red. Level A.O.D.	Water
Core Run	Depth (Thickness)	Description								
	40.00	MUDSTONE **							-32.63	
	(1.00)									
	41.00	SANDSTONE **							-33.63	
	(9.00)									

Drilling Progress and Water Observations

Date / Time	Depth	Casing	Core Dia.	Water	Struck	Sealed	Groundwater	Flow Rate	Remarks	Depth	Type	Returns
03/05/2005 00:00	50.00	7.00	115									

Remarks: Tracked mounted rotary rig using 115mm ODEX. ** Drillers Description



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Logged By.
KH

Sheet No.
5 Of 6

Scale:
1:60.83

All measurements in
metres unless
otherwise stated



Coordinates: 252917.71 E
199730.36 N
Co-ordinates to National Grid

Drilling Progress and Water Observations					Groundwater			Flush		
Date / Time	Depth	Casing	Core Dia.	Water	Struck	Sealed	Flow Rate Remarks	Depth	Type	Returns

Remarks: Tracked mounted rotary rig using 115mm ODEX. ** Drillers Description

