

Trial it Log

Logged AW Checked AP		Start 07/11/2014 End 07/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.60m Terminated on sandstone.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C ➔		Ground Level Coordinates Stational Grid Chainage
Samples and Tests			Strata			
Depth	Type	Notes	Description	Depth Level/Thickness	Legend	Backfill Instruments
0.50	ES 1		1 (TOPSOIL) Brown silty fine to coarse SAND with frequent roots. EXPLORATORY HOLE ENDS AT 0.60 m	(0.60) 0.60		
Depth	Type	Remarks				
Groundwater Entries Structure Soil Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Rain	
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4809/01/2015 15:12:27 AGS			Project Coedarcy Sitewide Trial Pitting Project Code Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1	

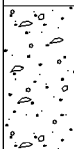
Trial Pit Log



Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.5m Terminated on bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C		Ground Level Coordinates National Grid Chainage	- - -
Samples and Tests			Strata				
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Backfill Instruments	
0.50	ES 1		1 Brown slightly silty gravelly fine to coarse SAND with medium cobble content. Cobbles are angular to subangular of sandstone. Frequent roots. (VO = 0,0)	(1.50)			
			EXPLORATORY HOLE ENDS AT 1.50 m	1.50			
			1.50 m Sandstone bedrock.				
Depth	Type	Notes					
Groundwater Entries Soil Structure Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Some collapse Shoring None Weather Dry, sunny		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4908/01/2015 16:00:39			Project Coedarcy Sitewide Trial Pitting Project O Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1		

Trial it Log

[illegible]

Logged AW Checked AP	Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.90m Terminated due to collapse.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C ➔	Ground Level Coordinates Stational Grid Chainage		
Samples and Tests			Strata			
Depth	Type	Date Records	Description	Depth / Level / Thickness	Legend	Backfill Instruments
0.50	ES 1		1 (TOPSOIL) Brown silty fine to coarse SAND with frequent roots. (VO = 0,0)	(0.40)		
			2 Brown slightly silty gravelly fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone. (VO = 0,0)	(0.50)		
			EXPLORATORY HOLE ENDS AT 0.90 m	0.90		
Depth	Type	Date Records				
Groundwater Entries Soil Structure & Soil Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m	Stability Unstable Shoring None Weather Dry,sunny		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4808/01/2015 16:00:41 			Project Coedarcy Sitewide Trial Pitting Project Soils Carried out for Stodwen Developments Limited	Trial Pit SE Sheet 1 of 1		

Logged AW Checked AP	Start 14/11/2014 End 14/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 3.8m Terminated on bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m 		Ground Level Coordinates Stational Grid Chainage
Samples and Tests			Strata		
Depth	Type	Notes	Description	Depth Level / Thickness	Legend
0.50	ES 1		1 (TOPSOIL) Brown silty, fine to coarse SAND with frequent roots. (VO = 0,0)	0.20	
1.50	ES 2		2 Brown slightly silty gravelly, fine to coarse SAND with high cobble content. Gravel is subangular to subrounded of sandstone. Cobbles are angular to subangular of sandstone. (VO = 0,0)	(3.60)	
2.50	ES 3				
3.50	ES 4				
			EXPLORATORY HOLE ENDS AT 3.80 m	3.80	
Depth	Type	Notes			
Groundwater Entries Structure, Soil, Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Dry, sunny
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.			Project Coedarcy Sitewide Trial Pitting Project Code Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1

Trial Pit Log



Logged JC Checked AP		Start 30/10/2014 End 30/10/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 3.40m Unable to progress through cobbles.	Dimensions and Orientation Width 1.90 m Length 4.20 m A B C		Ground Level Coordinates Stational Chainage		- - -
Samples and Tests			Strata					
Depth	Type	Notes	Description	Depth Level/Thickness	Legend	Backfill Instruments		
0.50	ES 1		1 Very soft to soft orangish brown sandy slightly gravelly SILT. Gravel is angular to subrounded, fine to coarse of sandstone. (VO = 0,0)	(1.20)				
1.50	ES 2		2 Brown silty locally silty gravelly, fine to coarse SAND with low to medium cobble content. Gravel is subangular to subrounded, fine to coarse of sandstone. Cobbles are angular to subangular of sandstone. (VO = 0,0)	1.20				
2.50	ES 3			(2.20)				
			EXPLORATORY HOLE ENDS AT 3.40 m	3.40				
Depth	Type	Notes						
Groundwater Entries Soil Structure Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m			Stability Stable Shoring None Weather Cloudy		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4908/01/2015 16:00:52			Project Coedarcy Sitewide Trial Pitting Project for Stodwen Developments Limited			Trial Pit SE Sheet 1 of 1		

Logged AW Checked AP		Start 05/11/2014 End 05/11/2014		Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.6m Terminated due to collapse.		Dimensions and Orientation Width 1.30 m Length 6.00 m A B C		Ground Level Coordinates Stational Grid Chainage		
Samples and Tests			Strata							
Depth	Type	Photo	Description					Depth Level/Thickness	Legend	Backfill Instrument
0.50	ES 1		1 Brown slightly silty, fine to coarse SAND with high cobble content. Cobbles are subangular to subrounded of sandstone. (VO = 0,0)					(1.60)		
			EXPLORATORY HOLE ENDS AT 1.60 m					1.60		
Depth	Type	Photo								
Groundwater Entries Structure Soil Structure Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m					Stability Unstable Shoring None Weather Dry, sunny		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4809/01/2015 09:15:58 			Project Coedarcy Sitewide Trial Pitting Project Coedarcy Carried out for Stodwen Developments Limited					Trial Pit SE Sheet 1 of 1		

Trial it Log

[illegible]

Trial Pit Log



Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.80m. Unable to progress through cobbles.	Dimensions and Orientation Width 1.60 m Length 4.00 m A B C		Ground Level Coordinates Stational Chainage	- - -
Samples and Tests			Strata				
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Backfill Instruments	
			1 Brown slightly silty fine to coarse SAND with high cobble content. Cobbles are subangular to subrounded of sandstone. (VO = 0,0)	(0.80)			
			EXPLORATORY HOLE ENDS AT 0.80 m	0.80			
Depth	Type	Notes					
Groundwater Entries Soil Structure Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Dry		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4823/01/2015 15:18:40 AGS			Project Co-Ordination Site-wide Trial Pitting Project Co-Ordination Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1		

Logged AW Checked AP		Start 07/11/2014 End 07/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.90m. Terminated on bedrock.	Dimensions and Orientation Width 1.50 m Length 3.80 m A B C →		Sound Level Coordinates Stational Grid Chainage
Samples and Tests			Strata			
Depth	Type	Date	Description	Depth / Level / Thickness	Legend	Bac fill Instruments
0.50	ES 1		1 (TOPSOIL) Grass over silty fine to coarse SAND with frequent roots and rootlets. (VO = 0,0)	(0.35) 0.35 <		

Trial Pit Log



Logged AW Checked AP	Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.85m. Unable to progress through cobbles.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C ➔	Ground Level Coordinates National Grid Chainage	- - -	
Samples and Tests			Strata			
Depth	Type	Notes Records	Description	Depth Level / Thickness	Legend	Backfill Instruments
0.50	ES 1		1 Brown silty fine to coarse SAND with frequent roots and rootlets. (VO = 0,0)	0.20		
			2 Brown slightly silty gravelly fine to coarse SAND with high cobble content. Gravel is subangular to subrounded fine to coarse of sandstone. Cobbles are subangular to subrounded of sandstone. (VO = 0,0)	(1.65)		
1.50	ES 2			1.85		
			EXPLORATORY HOLE ENDS AT 1.85 m			
Depth	Type	Notes ate				
Groundwater Entries Soil Structure Soil Strain Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Dry	
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4823/01/2015 15:18:49			Project Coedarcy Sitewide Trial Pitting Project for Stodwen Developments Limited Carried out for		Trial Pit SE Sheet 1 of 1	

Logged AW Checked AP	Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.1m Terminated on bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C ➔	Ground Level Coordinates Stational Grid Chainage
Samples and Tests			Strata	
Depth	Type	Notes	Description	Depth / Level / Thickness Legend Backfill Instrument
0.50	ES 1		1 TOPSOIL. (VO = 0,0) 2 Brown slightly silty gravelly, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone. Frequent cobbles of subangular to subrounded sandstone. (VO = 0,0)	0.20 (0.90)
			EXPLORATORY HOLE ENDS AT 1.10 m 1.10 m Sandstone bedrock.	1.10
Depth	Type	Notes		
Groundwater Entries Structure / Strata Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m	Stability Stable Shoring None Weather Dry, sunny
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4809/01/2015 09:16:09			Project Coedarcy Sitewide Trial Pitting Project Code Carried out for Stodwen Developments Limited	Trial Pit SE Sheet 1 of 1

Trial Pit Log



Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.30m Terminated on sandstone.	Dimensions and Orientation Width 1.50 m Length 3.60 m A B C		Ground Level Coordinates National Grid Chainage		- - -
Samples and Tests			Strata					
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Backfill Instruments		
0.30	ES1		1 Yellowish brown SANDSTONE. Recovered as: angular to subangular fine to coarse gravel with medium cobble content. Cobbles are subangular to subrounded. (VO = 0,0) EXPLORATORY HOLE ENDS AT 0.30 m	(0.30) 0.30				
Depth	Type	Remarks						
Groundwater Entries Soil Structure None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Dry, sunny			
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4820/01/2015 15:19:00 AGS			Project Co-Ordination Site-wide Trial Pitting Project Co-Ordination Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1			

Trial Pit Log



Logged AW Checked AP	Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.1m Terminated due to collapse.	Dimensions and Orientation Width 1.50 m Length 6.00 m A B C ➔	Ground Level Coordinates National Grid Chainage	- - - -
Samples and Tests			Strata		
Depth	Type	Notes	Description	Depth Level/Thickness	Legend
0.50	ES 1		1 Brown slightly silty, fine to coarse SAND with frequent roots. (TOPSOIL). (VO = 0,0)	(1.10)	
			EXPLORATORY HOLE ENDS AT 1.10 m	1.10	
Depth	Type	Records			
Groundwater Entries Soil Structure Soil Strata Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m	Stability Unstable Shoring None Weather Dry, sunny	
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4809/01/2015 09:16:12			Project Coedarcy Site-wide Trial Pitting Project Soils Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1

Trial Pit Log



Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.5m Terminated on bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C		Ground Level Coordinates National Grid Chainage	- - -
Samples and Tests			Strata				
Depth	Type	Date	Description	Depth Level/Thickness	Legend	Backfill Instruments	
0.50	ES 1		1 Brown slightly silty gravelly fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone. (VO = 0,0)	(0.50)			
			EXPLORATORY HOLE ENDS AT 0.50 m	0.50			
			Sandstone bedrock.				
Depth	Type	Date	Remarks				
Groundwater Entries Soil Structure None observed (see Key Sheet)			Depth Related Remarks From to m	Stability Stable Shoring None Weather Dry, sunny			
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4908/01/2015 16:00:59			Project Coedarcy Sitewide Trial Pitting Project Carried out for Stodwen Developments Limited	Trial Pit SE Sheet 1 of 1			

Trial it Log

Logged AW Checked AP		Start 05/11/2014 End 05/11/2014		Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.10m Unable to progress beyond 1.10m depth		Dimensions and Orientation Width 1.30 m Length 6.00 m A B C ➔		Round Level Coordinates Stational rid Chainage					
Samples and Tests				Strata									
Depth		Type		Notes		Description		Depth Level/ Thickness		Legend		Back fill Instruments	
0.50		ES 1				1 Brown slightly silty fine to coarse SAND with medium cobble content. Cobbles are angular of sandstone. (VO = 0,0)		(1.10)					

Trial Pit Log



Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.5m Terminated on sandstone bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C		Ground Level Coordinates National Grid Chainage	- - -
Samples and Tests			Strata				
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Backfill Instruments	
0.50	ES 1		1 TOPSOIL.				
			2 Orangish brown angular COBBLES of sandstone. (VO = 0,0)	0.20 (0.30)			
			EXPLORATORY HOLE ENDS AT 0.50 m Sandstone bedrock.	0.50			
Depth	Type	Notes					
Groundwater Entries Soil Structure Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Dry, clear		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4809/01/2015 15:12:41			Project Coedarcy Sitewide Trial Pitting Project O Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1		

Trial it Log

Logged AW Checked AP		Start 05/11/2014 End 05/11/2014		Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.40m Terminated on bedrock.		Dimensions and Orientation Width 1.30 m Length 6.00 m A B → C		Ground Level Coordinates Stational Grid Chainage		
Samples and Tests				Strata						
Depth		Type	Date Records	Description				Depth / Level Thickness	Legend	Bathymetric Instruments
0-40		ES 1		1 Brown slightly silty fine to coarse SAND with frequent roots. (VO = 0,0) 0.40 m Sandstone bedrock.				(0.40)		
				EXPLORATORY HOLE ENDS AT 0.40 m						
Depth		Type	Date Records							
Groundwater Entries Structure Soil Behaviour None observed (see Key Sheet)				Depth Related Remarks From To m				Stability Stable Shoring None Weather Dry		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.				Project Coedarcy Site-wide Trial Pitting Carried out for Stodwen Developments Limited				Trial Pit SE Sheet 1 of 1		

Trial it Log

Logged SP Checked AP		Start 28/11/2014 End 28/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.0m Terminated on bedrock.	Dimensions and Orientation Width 1.50 m Length 8.00 m A B C ➔		Ground Level Coordinates Stational Grid Chainage	- - -
Samples and Tests			Strata				
Depth	Type	Notes	Description	Depth Level/Thickness	Legend	Backfill Instruments	
0.50	ES 1		1 Dark greyish brown gravelly clayey, fine to coarse SAND with low cobble and boulder content. Gravel is subangular to well rounded, fine to coarse of sandstone and occasional siltstone. Cobbles are subangular to well rounded of sandstone and occasional siltstone. Boulders are angular to subrounded of sandstone. (VO = 1,0)	(1.00)			
			EXPLORATORY HOLE ENDS AT 1.00 m	1.00			
Depth	Type	Notes					
Groundwater Entries Structure, Soil Strata Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m	Stability Stable Shoring None Weather Sunny			
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4813/01/2015 15:02:32 			Project Coedarcy Sitewide Trial Pitting Conducted for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1		

Trial Pit Log



Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.90m Terminated on bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C		Ground Level Coordinates National Grid Chainage	- - -
Samples and Tests			Strata				
Depth	Type	Date Records	Description	Depth Level/ Thickness	Legend	Backfill Instruments	
0.50	ES 1		1 Brown slightly silty fine to coarse SAND with medium cobble and boulder content. Cobbles and boulders are angular to subangular of sandstone. (VO = 0,0)	(0.90)			
			EXPLORATORY HOLE ENDS AT 0.90 m	0.90 Sandstone bedrock.			
Depth	Type	Date Records					
Groundwater Entries Soil Structure Soil Striae Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Dry, sunny		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4908/01/2015 16:01:12 AGS			Project Coedarcy Sitewide Trial Pitting Project Coedarcy Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1		

Trial Pit Log



Logged AW Checked AP	Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.40m Terminated on bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C	Ground Level Coordinates National Grid Chainage	- - -
Samples and Tests			Strata		
Depth	Type	Notes	Description	Depth Level / Thickness	Legend
		*	1 Brown slightly silty fine to coarse SAND with frequent roots.	(0.40)	
			EXPLORATORY HOLE ENDS AT 0.40 m	0.40	
			Sandstone		
Depth	Type	Remarks			
Groundwater Entries Soil Structure Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m 0.00 No Samples Obtained.	Stability Stable Shoring None Weather Dry, sunny	
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.			Project Coedarcy Sitewide Trial Pitting Conducted by Stodwen Developments Limited	Trial Pit SE Sheet 1 of 1	



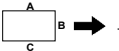
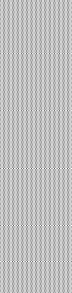
Trial it Log

Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from G1 to 1.20m Terminated on bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B → C		Ground Level Coordinates Stational Grid Chainage
Samples and Tests			Strata			
Depth	Type	Date	Description	Level / Thickness	Legend	Borehole Instruments
0.50	ES 1		1 (TOPSOIL) Light brown slightly silty fine to coarse SAND with frequent roots. (VO = 0,0)	0.20		
			2 Brown slightly silty gravelly fine to coarse SAND with medium cobble content. Gravel is subangular to subrounded, fine to coarse of sandstone. Cobbles are angular sandstone. (VO = 0,0)	(1.00)		
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20 m Sandstone bedrock.		
Depth	Type	Date				
Groundwater Entries Structure / Stratum Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Dry, sunny	
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.			Project Co-Ordinacy Site-wide Trial Pitting Carried out by Stoddart Developments Limited		Trial Pit SE Sheet 1 of 1	

Trial it Log

Logged AW Checked AP		Start 05/11/2014 End 05/11/2014		Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.50m Terminated on sandstone.		Dimensions and Orientation Width 1.30 m Length 6.00 m A ┌───┐ │ │ B → - └───┘ C		Ground Level Coordinates Stational Grid Chainage	
Samples and Tests			Strata						
Depth	Type	Date	Description				Depth / Level / Thickness	Legend	Borefill Instruments
0.50	ES 1		1 Brown slightly silty fine to coarse SAND with medium cobble content. Cobbles are angular to subangular of sandstone. (VO = 0,0) 0.50 m Sandstone.				(0.50)		
EXPLORATORY HOLE ENDS AT 0.50 m									
Depth	Type	Date							
Groundwater Entries Structure Soil Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m				Stability Stable Shoring None Weather Dry, sunny		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4808/01/2015 16.01.16 AGS			Project Coedarcy Site-wide Trial Pitting Conducted by Stodwen Developments Limited				Trial Pit SE Sheet 1 of 1		

Trial it Log

Logged SP Checked AP		Start 28/11/2014 End 28/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.0m Terminated on bedrock.	Dimensions and Orientation Width 1.50 m Length 3.00 m 		Ground Level Coordinates Stational ID Chainage
Samples and Tests			Strata			
Depth	Type	Date	Description	Level / Thickness	Legend	Bathymetry Instruments
0.50	ES 1		1 Light brown gravelly slightly clayey, fine to coarse SAND with low cobble content. Gravel is angular to well rounded, fine to coarse of mixed lithologies including sandstone and siltstone. Cobbles are subangular to well rounded, fine to coarse of mixed lithologies including sandstone and siltstone. Moderate rootlets. (VO = 0,0)	(1.00)		
			EXPLORATORY HOLE ENDS AT 1.00 m	1.00		
Depth	Type	Date				
Groundwater Entries Structure Soil Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Sunny	
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4820/01/2015 15:19:08 			Project Coedarcy Sitewide Trial Pitting Project No Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1	

Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.75m. Terminated in bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C		Ground Level Coordinates Stational Grid Chainage
Samples and Tests			Strata			
Depth	Type	Notes	Description	Depth Level/Thickness	Legend	Backfill Instruments
0.50	ES 1		1 (TOPSOIL) Brown slightly silty fine to coarse SAND with frequent roots and rootlets. (VO = 0,0) 2 Orangish brown SANDSTONE. Recovered as: angular to subrounded fine to coarse gravel with high cobble content. Cobbles are subangular to subrounded of sandstone. (VO = 0,0)	0.15 (0.60)		
			EXPLORATORY HOLE ENDS AT 0.75 m	0.75		
Depth	Type	Notes				
Groundwater Entries Structure / Strata Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Dry	
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4823/01/2015 15:18:53			Project Coedarcy Site-wide Trial Pitting Project Code Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1	

Logged NK Checked AP	Start 14/11/2014 End 14/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 3.1m Terminated on bedrock.	Dimensions and Orientation Width 1.00 m Length 5.00 m A B C B →	Ground Level Coordinates Stational Chainage	- - -	
Samples and Tests			Strata			
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Backfill Instrument
0.50	ES 1		1 Light brown slightly sandy slightly gravelly SILT. Sand is fine. Gravel is subangular to subrounded, fine to medium of sandstone. Occasional rootlets. (VO = 0,0)	(1.40)		
1.50	ES 2		2 Brown sandy gravelly SILT with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of sandstone. Cobbles are subangular to subrounded, fine to coarse of sandstone. Occasional gravel sized pockets of orange and grey medium sand. (VO = 0,0)	1.40 (1.70)		
2.50	ES 3					
			EXPLORATORY HOLE ENDS AT 3.10 m	3.10		
Depth	Type	Notes				
Groundwater Entries Structure Soil Strata Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Sunny	
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.			Project Co-ordinator: Site-wide Trial Pitting Project Officer: Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1	

(c) ESG www.esg.co.uk
426.4809/01/2015 09:00:08

Trial Pit Log



Logged AW Checked AP	Start 06/11/2014 End 06/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 2.0m Terminated on bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C	Ground Level Coordinates National Grid Chainage	- - -	
Samples and Tests			Strata			
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Backfill Instruments
0.50	ES 1		1 (TOPSOIL) Brown silty fine to coarse SAND with frequent roots.	0.20		
1.50	ES 2		2 Brown slightly silty gravelly, fine to coarse SAND with medium cobble content. Gravel is subangular to subrounded, fine to coarse of sandstone. Cobbles are angular to subangular of sandstone. (VO = 0,0)	(1.80)		
			EXPLORATORY HOLE ENDS AT 2.00 m Sandstone.	2.00		
Depth	Type	Records				
Groundwater Entries Soil Structure None observed (see Key Sheet)			Depth Related Remarks From to m	Stability Some collapse Shoring None Weather Rain		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4809/01/2015 15:11:50			Project Coedarcy Sitewide Trial Pitting Project Carried out for Stodwen Developments Limited	Trial Pit SE Sheet 1 of 1		

Trial Pit Log



Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 4.50m. Unable to progress through cobbles.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C		Ground Level Coordinates National Grid Chainage		- - -
Samples and Tests			Strata					
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Backfill Instruments		
0.50	ES 1		1 (TOPSOIL) Brown silty fine to coarse SAND with frequent roots.	0.20				
1.50	ES 2		2 Brown slightly silty gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone. (VO = 0,0)	(3.80)				
2.50	ES 3							
3.50	ES 4							
			3.60-4.00 m High cobble content. Cobbles are subangular to subrounded of sandstone.	4.00				
			EXPLORATORY HOLE ENDS AT 4.00 m					
Depth	Type	Notes						
Groundwater Entries Soil Structure Soil Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Overcast			
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4823/01/2015 15:18:30			Project Coedarcy Sitewide Trial Pitting Project Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1			

Trial it Log

Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 2.0m Terminated due to water ingress.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C ➔		Ground Level Coordinates National Grid Chainage
Samples and Tests			Strata			
Depth	Type	Notes	Description	Depth Level Thickness	Legend	Backfill Instruments
0.50	ES 1		1 (TOPSOIL) Brown silty fine to coarse SAND with frequent roots.	(0.30)		
			2 Brown slightly silty gravelly fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone. (VO = 0,0)	0.30		
1.50	ES 2			(1.70)		
			EXPLORATORY HOLE ENDS AT 2.00 m	2.00		
Depth	Type	Notes				
Groundwater Entries Structure 1 2.00 GW inflow			Depth Related Remarks From to m	Stability Stable Shoring None Weather Dry		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4818/01/2015 14:52:22 			Project Coedarcy Site-wide Trial Pitting Project Carried out for Stodwen Developments Limited	Trial Pit SE Sheet 1 of 1		

Trial it Log

[illegible]

Trial Pit Log

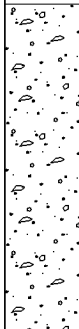


Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.0m Terminated due to water ingress.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C ➔		Ground Level Coordinates National Grid Chainage	
Samples and Tests			Strata				
Depth	Type	Notes	Description	Depth Level/Thickness	Legend	Backfill Instruments	
			1. Brown clayey, fine to coarse SAND with frequent roots. (VO = 0,0)	(1.00)			
			EXPLORATORY HOLE ENDS AT 1.00 m	1.00			
Depth	Type	Records					
Groundwater Entries Soil Structure 1 1.00 Fast inflow.			Depth Related Remarks From to m		Stability Collapsing Shoring None Weather Dry, sunny		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4809/01/2015 09:15:48			Project Coedarcy Sitewide Trial Pitting Project Carried out for Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1		

Trial Pit Log



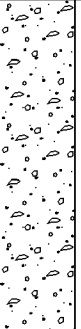
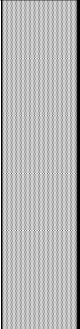
Logged AW Checked AP		Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 3.2m Terminated due to collapse.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C		Ground Level Coordinates National Grid Chainage	
Samples and Tests			Strata				
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Backfill Instruments	
0.50	ES 1		1 Brownish orange clayey, fine to coarse SAND with frequent roots and wood fragments. (VO = 0,0)	(1.00)			
1.50	ES 2		2 Brown slightly silty gravelly, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone. (VO = 0,0)	1.00 (2.20)			
2.50	ES 3						
			EXPLORATORY HOLE ENDS AT 3.20 m	3.20			
Depth	Type	Records					
Groundwater Entries No Structure 1 3.00 Groundwater.			Depth Related Remarks From to m			Stability Collapsing Shoring None Weather Dry, sunny	
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4809/01/2015 09:15:50			Project Coedarcy Sitewide Trial Pitting Project No Carried out for Stodwen Developments Limited			Trial Pit SE Sheet 1 of 1	

Logged AW Checked AP	Start 05/11/2014 End 05/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.3m Terminated on bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m A B C ➔	Ground Level Coordinates National Grid Chainage		
Samples and Tests			Strata			
Depth	Type No	Date Records	Description	Depth Level / Thickness Legend Backfill Instrument		
0.50	ES 1		1 Brown silty, fine to coarse SAND with frequent roots and rootlets. (TOPSOIL). (VO = 0,0)	0.20		
			2 Brown slightly silty gravelly, fine to coarse SAND with high cobble content. Gravel is subangular to subrounded, fine to coarse of sandstone. Cobbles are angular to subangular of sandstone. (VO = 0,0)	(1.10)		
			EXPLORATORY HOLE ENDS AT 1.30 m 1.30 m Sandstone bedrock.	1.30		
Depth	Type No	Date Records				
Groundwater Entries No Structural or Strain Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Dry	
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4809/01/2015 09:15:56 			Project Coedarcy Sitewide Trial Pitting Conducted by Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1	

Trial it Log

Logged AW Checked AP		Start 07/11/2014 End 07/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.3m Terminated on bedrock.		Dimensions and Orientation Width 1.30 m Length 6.00 m A B C ➡		Ground Level Coordinates Stational Grid Chainage	
Samples and Tests			Strata					
Depth	Type	Notes	Description			Depth Level/Thickness	Legend	Bathymetry Instruments
0.30	ES 1		1 (TOPSOIL) Brown silty fine to coarse SAND with frequent roots. EXPLORATORY HOLE ENDS AT 0.30 m 0.30 m Sandstone bedrock.			(0.30) 0.30		
Depth	Type	Remarks						
Groundwater Entries Structure / Strata Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m			Stability Stable Shoring None Weather Rain		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4809/01/2015 15:12:07 AGS			Project Coedarcy Site-wide Trial Pitting Project Coedarcy Carried out for Stodwen Developments Limited			Trial Pit SE Sheet 1 of 1		

Trial it Log

Logged JC Checked AP		Start 17/10/2014 End 17/10/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.10m Terminated on bedrock.	Dimensions and Orientation Width 1.60 m Length 3.90 m A B C ➔		Ground Level Coordinates Stational Chainage	- - -
Samples and Tests			Strata				
Depth	Type	Notes	Description	Depth Level/Thickness	Legend	Backfill Instruments	
0.50	ES 1		1 Light brown slightly silty SAND and GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of sandstone. Cobbles are angular to subangular of sandstone. (VO = 0,0)	(1.10)			
			EXPLORATORY HOLE ENDS AT 1.10 m	1.10			
Depth	Type	Notes					
Groundwater Entries Structure, Soil Strata Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Stable Shoring None Weather Cloudy		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4809/01/2015 15:13:25 			Project Coedarcy Sitewide Trial Pitting Project Code Carried out for Stodwen Developments Limited		Trial Pit S Sheet 1 of 1		

Trial it Log

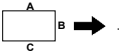
Logged SP Checked AP		Start 27/11/2014 End 27/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.5m Terminated on bedrock.	Dimensions and Orientation Width 1.50 m Length 3.00 m A B C ➔		Ground Level Coordinates National Grid Chainage	- - -
Samples and Tests			Strata				
Depth	Type	Notes	Description	Depth Level Thickness	Legend	Backfill Instruments	
0.50	ES-1		1 Dark brown gravelly clayey, fine to coarse SAND with low cobble content. Gravel is angular to well rounded, fine to coarse of sandstone. Cobbles are angular to well rounded of sandstone. (VO = 0,0) EXPLORARY HOLE ENDS AT 0.50 m	(0.50) 0.50			
Depth	Type	Notes					
Groundwater Entries Structure and Soil Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Shoring None Weather Cloudy		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4813/01/2015 15:06:49 			Project Coedarcy Sitewide Trial Pitting Project Code Carried out for Stodwen Developments Limited		Trial Pit S Sheet 1 of 1		

Trial it Log



Logged JC Checked AP	Start 14/10/2014 End 14/10/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.20m Unable to progress through cobbles.	Dimensions and Orientation Width 1.40 m Length 3.60 m A B C	Ground Level Coordinates National Grid Chainage	- - -	
Samples and Tests		Strata				
Depth	Type	Date Records	Description	Depth Level Thickness	Legend	Bac fill Instruments
0.20	ES 1		1 Brown silty slightly gravelly, fine to coarse SAND with low cobble content. Gravel is angular to subrounded, fine to coarse of sandstone. Cobbles are subangular to subrounded of sandstone. (VO = 0,0)	(0.40)		
0.80	ES 2		2 Light brown slightly silty SAND and GRAVEL with low to medium cobble content. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of sandstone. Cobbles are angular to subangular tabular of sandstone. (VO = 0,0)	(0.80)		
			EXPLORATORY HOLE ENDS AT 1.20 m	1.20		
Depth	Type	Date Records				
Groundwater Entries Soil Structure Soil Striae Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m	Stability Stable Shoring None Weather Cloudy,windy		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4808/01/2015 16:02:27 AGS			Project Coedarcy Sitewide Trial Pitting Project for Carried out for Stodwen Developments Limited	Trial Pit S Sheet 1 of 1		

Trial it Log

Logged SP Checked AP		Start 25/11/2014 End 25/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.5m Terminated on bedrock.		Dimensions and Orientation Width 1.50 m Length 3.00 m 		Ground Level Coordinates Stational Grid Chainage	
Samples and Tests			Strata					
Depth	Type	Notes	Description			Depth Level/Thickness	Legend	Backfill Instruments
0.50	ES 1		1 Soft brown sandy gravelly SILT. Gravel is subangular to well rounded, fine to coarse of sandstone. Sand is fine to coarse. Moderate rootlets. (VO = 0,0)			(0.50)		
			EXPLORATORY HOLE ENDS AT 0.50 m			0.50		
Depth	Type	Notes						
Groundwater Entries Structure Soil Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m			Stability Stable Shoring None Weather Rain		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4808/01/2015 16:05:25 			Project Coedarcy Site-wide Trial Pitting Project of Carried out for Stodwen Developments Limited			Trial Pit S Sheet 1 of 1		

Trial Pit Log



Logged JC Checked AJ		Start 07/10/2014 End 07/10/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 1.80m Terminated as no progress through cobbles.	Dimensions and Orientation Width 1.70 m Length 4.00 m A B C		Ground Level Coordinates National Grid Chainage		
Samples and Tests			Strata					
Depth	Type	Notes	Description	Depth Level Thickness	Legend	Backfill Instruments		
0.50	ES 1		1 Brown occasionally stained light grey slightly silty gravelly, fine to coarse SAND with low cobble content. Gravel is angular to subrounded, fine to coarse of sandstone. Cobbles are subangular to subrounded of sandstone. Faint hydrocarbon odour. (VO = 1,1)	(0.70)				
1.50	ES 2		2 Grey frequently stained dark grey slightly silty SAND and GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of sandstone. Cobbles are angular to subangular of sandstone. Strong hydrocarbon odour. (VO = 2,3)	0.70 (1.10)				
			EXPLORATORY HOLE ENDS AT 1.80 m	1.80				
Depth	Type	Notes						
Groundwater Entries Structure Strata Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m			Stability Stable Shoring None Weather Sunny, windy		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4829/01/2015 13:23:25			Project Coedarcy Sitewide Trial Pitting Project Carried out for Stodwen Developments Limited			Trial Pit S Sheet 1 of 1		

Trial Pit Log



Logged NK Checked AJ	Start 07/10/2014 End 07/10/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 2.5m Terminated on bedrock. Lip reached at 0.5m depth, 1m from Face D.	Dimensions and Orientation Width 1.00 m Length 4.00 m 	Ground Level Coordinates National Grid Chainage	- - -	
Samples and Tests			Strata			
Depth	Type	Notes	Description	Depth Level/Thickness	Legend	Backfill Instruments
0.50	ES 1		1 (MADE GROUND) Light brown sandy slightly gravelly SILT with low cobble content. Sand is fine to medium. Gravel is subangular to subrounded, fine to coarse of mixed lithologies including sandstone, clinker and brick. Cobbles are subangular to subrounded of sandstone. Rare rootlets. (VO = 0,0)	(1.00)		
1.50	ES 2		2 (MADE GROUND) Dark grey slightly sandy gravelly SILT with low cobble content. Sand is fine to medium. Gravel is subangular to subrounded, fine to coarse of mixed lithologies including sandstone, brick and clinker. Cobbles are subangular to subrounded, fine to coarse, occasionally tabular of sandstone. Occasional gravel sized pockets of orangish brown medium sand. Rare rootlets. (VO = 2,2)	(1.50)		
2.50	ES 3		EXPLORATORY HOLE ENDS AT 2.50 m	2.50		
Depth	Type	Notes				
Groundwater Entries Soil Structure Soil Behaviour			Depth Related Remarks From to m	Stability Stable Shoring None Weather Sunny		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4829/01/2015 13:24:27			Project Coedarcy Sitewide Trial Pitting Project Carried out for Stodwen Developments Limited	Trial Pit S Sheet 1 of 1		

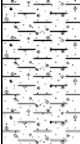
Trial Pit Log



Logged NK Checked AJ	Start 07/10/2014 End 07/10/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 2.0m Terminated on bedrock.	Dimensions and Orientation Width 1.00 m Length 5.00 m A B C	Ground Level Coordinates Stational Chainage	- - - -	
Samples and Tests			Strata			
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Backfill Instruments
0.50	ES 1		1 (MADE GROUND) Orangish brown slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of mixed lithologies including sandstone, clinker and wood. Frequent gravel sized pockets of medium sand. Occasional rootlets. (VO = 0,0)	(0.80)		
1.00	ES 2		2 Dark brown slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of mixed lithologies including sandstone. Frequent gravel sized pockets of orangish medium sand. Occasional rootlets. (VO = 1,2)	0.80 (0.50)		
1.50	ES 3		3 Greyish brown slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of mixed lithologies including sandstone. Cobbles are subangular to subrounded, occasionally tabular of sandstone. Frequent gravel sized pockets of medium sand. Rare rootlets. (VO = 2,2)	1.30 (0.70)		
			EXPLORATORY HOLE ENDS AT 2.00 m	2.00		
			2.00 m Bedrock			
Depth	Type	Notes				
Groundwater Entries Soil Structure Soil Striae Behaviour			Depth Related Remarks From to m	Stability Unstable Shoring None Weather Sunny		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. (c) ESG www.esg.co.uk 426.4829/01/2015 13:24:31			Project Co-ordination Project Co-ordination Carried out for Stodwen Developments Limited	Trial Pit S Sheet 1 of 1		

Trial it Log

[illegible]

				Trial Pit Log				Trialpit No A Sheet 1 of 1		
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Date 24/03/2015		
Location: Coed Darcy POS				Dimensions (m): Depth 0.50		m 		Scale 1:25		
Client: St Modwen								Logged AEM		
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria	
	Depth	Type	Results							
	0.30	ES		0.50			Brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0	
							----- End of pit at 0.50 m			
										1
										2
										3
										4
										5
Remarks: Pit terminated at 0.5m								Stability: GroundWater Remarks: 		



A

Sheet 1 of 1

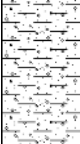
Date
24/03/2015

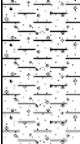
Scale
1:25

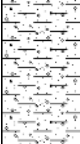
Logged
AEM

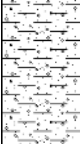
5

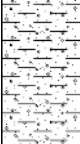
Stability:
GroundWater
Remarks:

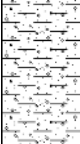
				Trial Pit Log				Trialpit No A	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Sheet 1 of 1	
Location: Coed Darcy POS				Dimensions (m):		Scale 1:25			
Client: St Modwen				Depth 0.50		Logged AEM			
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.30	ES		0.50			Brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0
							----- End of pit at 0.50 m		
1 2 3 4 5									
Remarks: Pit terminated at 0.5m									
Stability: GroundWater Remarks:									

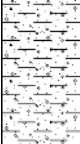
				Trial Pit Log				Trialpit No A	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Sheet 1 of 1	
Location: Coed Darcy POS				Dimensions (m):		Scale 1:25			
Client: St Modwen				Depth 0.50		Logged AEM			
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.30	ES		0.50			Brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0
							----- End of pit at 0.50 m		
1 2 3 4 5									
Remarks: Pit terminated at 0.5m									
Stability: GroundWater Remarks:									

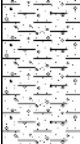
				Trial Pit Log				Trialpit No A	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Sheet 1 of 1	
Location: Coed Darcy POS				Dimensions (m):		Scale 1:25			
Client: St Modwen				Depth 0.50		Logged AEM			
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.30	ES		0.50			Brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0
							----- End of pit at 0.50 m		
1 2 3 4 5									
Remarks: Pit terminated at 0.5m									
Stability: GroundWater Remarks:									

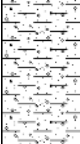
				Trial Pit Log				Trialpit No A	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Sheet 1 of 1	
Location: Coed Darcy POS				Dimensions (m):		Scale 1:25			
Client: St Modwen				Depth 0.50		Logged AEM			
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.30	ES		0.50			Brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0
							----- End of pit at 0.50 m		
1 2 3 4 5									
Remarks: Pit terminated at 0.5m									
Stability: GroundWater Remarks:									

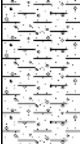
				Trial Pit Log				Trialpit No A	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Sheet 1 of 1	
Location: Coed Darcy POS				Dimensions (m):		Scale 1:25			
Client: St Modwen				Depth 0.50		Logged AEM			
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.30	ES		0.50			Brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0
							----- End of pit at 0.50 m		
1 2 3 4 5									
Remarks: Pit terminated at 0.5m									
Stability: GroundWater Remarks:									

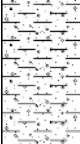
				Trial Pit Log				Trialpit No A	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Sheet 1 of 1	
Location: Coed Darcy POS				Dimensions (m):		Scale 1:25			
Client: St Modwen				Depth 0.50		Logged AEM			
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.30	ES		0.50			Brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0
							----- End of pit at 0.50 m		
1 2 3 4 5									
Remarks: Pit terminated at 0.5m									
Stability: GroundWater Remarks:									

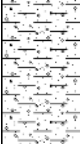
				Trial Pit Log				Trialpit No A Sheet 1 of 1		
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Date 24/03/2015		
Location: Coed Darcy POS				Dimensions (m): Depth 0.50		m 		Scale 1:25		
Client: St Modwen								Logged AEM		
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria	
	Depth	Type	Results							
	0.30	ES		0.50			Brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0	
							----- End of pit at 0.50 m			
										1
										2
										3
										4
										5
Remarks: Pit terminated at 0.5m								Stability: GroundWater Remarks: 		

				Trial Pit Log				Trialpit No A Sheet 1 of 1		
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Date 24/03/2015		
Location: Coed Darcy POS				Dimensions (m): Depth 0.50		m 		Scale 1:25		
Client: St Modwen								Logged AEM		
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria	
	Depth	Type	Results							
	0.30	ES		0.50			Brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0	
							----- End of pit at 0.50 m			
										1
										2
										3
										4
										5
Remarks: Pit terminated at 0.5m								Stability: GroundWater Remarks: 		

				Trial Pit Log				Trialpit No A	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Sheet 1 of 1	
Location: Coed Darcy POS				Dimensions (m):		Date 24/03/2015			
Client: St Modwen				Depth 0.50		Scale 1:25			
		Logged AEM							
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.30	ES		0.50			Orange brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0
							End of pit at 0.50 m		
1 2 3 4 5									
Remarks: Pit terminated at 0.5m									
Stability: GroundWater Remarks:									

				Trial Pit Log				Trialpit No A	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Sheet 1 of 1	
Location: Coed Darcy POS				Dimensions (m):		Scale 1:25			
Client: St Modwen				Depth 0.50		Logged AEM			
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.30	ES		0.50			Orange brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0
							End of pit at 0.50 m		
1 2 3 4 5									
Remarks: Pit terminated at 0.5m									
Stability: GroundWater Remarks:									

				Trial Pit Log				Trialpit No A	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Sheet 1 of 1	
Location: Coed Darcy POS				Dimensions (m):		Date 24/03/2015			
Client: St Modwen				Depth 0.50		Scale 1:25			
		Logged AEM							
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.30	ES		0.50			Orange brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0
							End of pit at 0.50 m		
1 2 3 4 5									
Remarks: Pit terminated at 0.5m									
Stability: GroundWater Remarks:									

				Trial Pit Log				Trialpit No A	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Sheet 1 of 1	
Location: Coed Darcy POS				Dimensions (m):		Scale 1:25			
Client: St Modwen				Depth 0.50		Logged AEM			
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.30	ES		0.50			Orange brown sandy gravelly CLAY. Coarse gravel of sandstone	0	0
							End of pit at 0.50 m		
1 2 3 4 5									
Remarks: Pit terminated at 0.5m									
Stability: GroundWater Remarks:									

				Trial Pit Log				Trialpit No os Sheet 1 of 1	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Date 02/04/2015	
Location: Coed Darcy POS						Dimensions (m):		Scale 1:25	
Client: St Modwen						Depth 1.70		Logged JH	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.50	ES					Firm greyish brown slightly sandy gravelly SILT. Coarse gravel of SA-SR sandstone. Occasional cobbles of sandstone	0	0
	1.50	ES		1.65 1.70				Sandstone bedrock End of pit at 1.70 m	0
1 2 3 4 5									
Remarks: Pit terminated on bedrock									
Stability: GroundWater Remarks:									



OS

Sheet 1 of 1

Date
02/04/2015

Logged
JH

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria	
	Depth	Type	Results							
	0.50	ES		0.30			Soft brown slightly sandy slightly gravelly SILT. Coarse gravel of SA-SR sandstone. Occasional cobbles of sandstone	0	0	1
							Firm greyish brown slightly sandy gravelly SILT. Coarse gravel of SA-SR sandstone. Occasional cobbles of sandstone (Petrol odour noted)	1	2	
	1.50	ES		1.55 1.60			Sandstone bedrock	0	0	2
End of pit at 1.60 m									3	
										4

Stability:
GroundWater
Remarks:





OS

Sheet 1 of 1

Date
02/04/2015

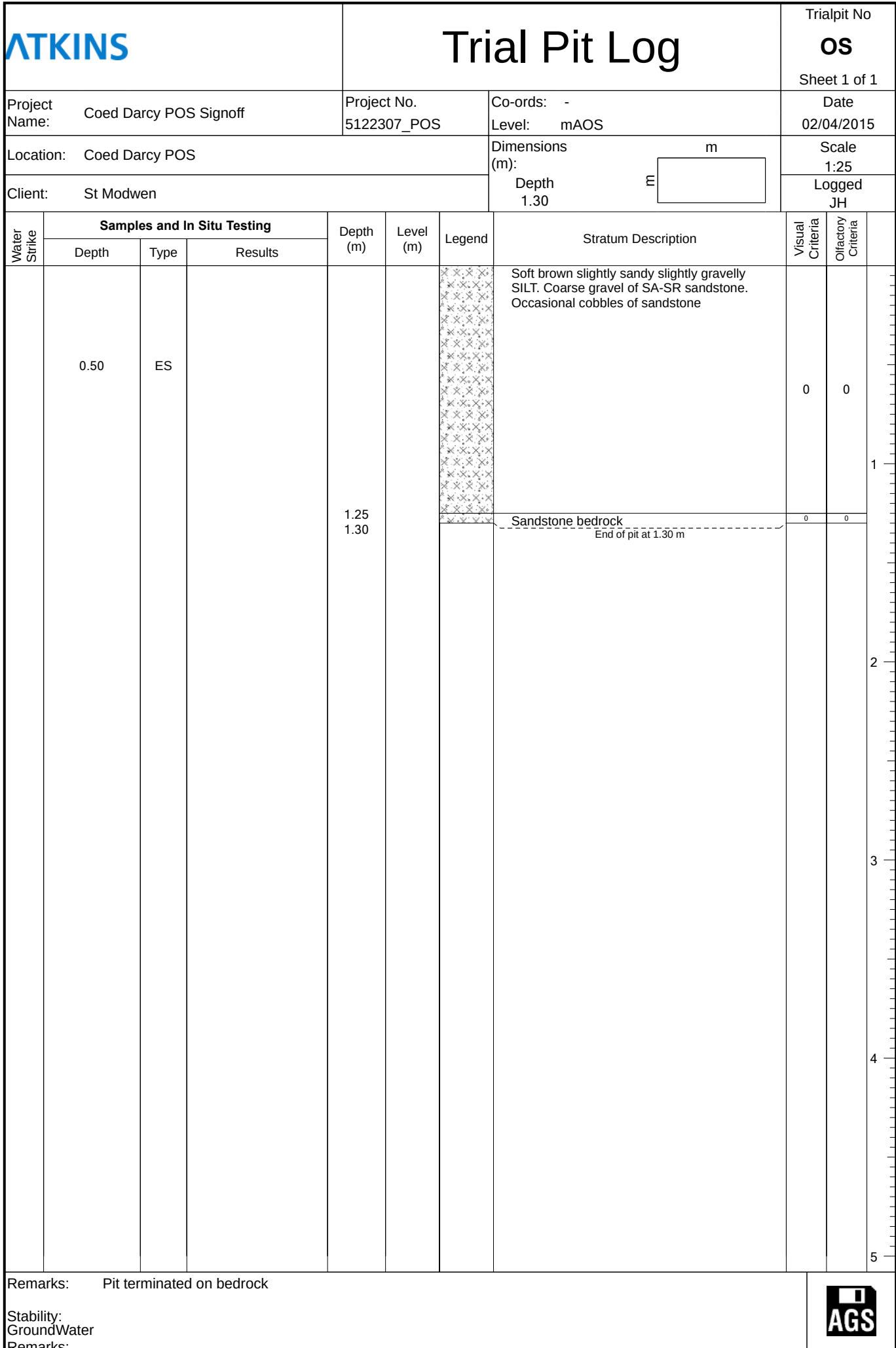
Scale
1:25

Logged
JH

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria	
	Depth	Type	Results							
	0.50	ES		1.05 1.10			Soft brown slightly sandy slightly gravelly SILT. Coarse gravel of SA-SR sandstone. Occasional cobbles of sandstone	0	0	1
							Sandstone bedrock	0	0	2
						End of pit at 1.10 m				3
										4
										5

Stability:
GroundWater
Remarks:





Trial Pit Log

Trialpit No

os

Sheet 1 of 1

Project Name: Coed Darcy POS Signoff

Project No. 5122307_POS

Co-ords: -

Level: mAOS

Date

02/04/2015

Location: Coed Darcy POS

Client: St Modwen

Dimensions (m):

m

E

Depth 1.20

Scale 1:25

Logged JH

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria	
	Depth	Type	Results							
	0.50	ES					Soft brown occasional grey slightly sandy slightly gravelly SILT. Coarse gravel of SA-SR sandstone. Occasional cobbles of sandstone	2	0	1
				1.15 1.20			Sandstone bedrock ----- End of pit at 1.20 m	0	0	2
										3
										4
										5

Remarks: Pit terminated on bedrock

Stability:

GroundWater

Remarks:

ATKINS				Trial Pit Log				Trialpit No os Sheet 1 of 1		
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Date 02/04/2015		
Location: Coed Darcy POS				Dimensions (m): Depth 0.20		m 		Scale 1:25		
Client: St Modwen								Logged JH		
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria	
	Depth	Type	Results							
				0.15 0.20			Soft brown slightly sandy SILT	0	0	1
							Concrete slab	0	0	
							End of pit at 0.20 m			
										2
										3
										4
										5

Remarks: Pit terminated on concrete

Stability:
GroundWater
Remarks:

Trial Pit Log

Trialpit No

os

Sheet 1 of 1

Project Name: Coed Darcy POS Signoff

Project No. 5122307_POS

Co-ords: -

Level: mAOS

Date

02/04/2015

Location: Coed Darcy POS

Client: St Modwen

Dimensions (m):

m

E

Depth 1.20

Scale 1:25

Logged JH

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria	
	Depth	Type	Results							
▼	0.50	ES					Soft brown occasional grey slightly sandy slightly gravelly SILT. Coarse gravel of SA-SR sandstone. Occasional cobbles of sandstone	2	1	1
				1.15 1.20			Sandstone bedrock ----- End of pit at 1.20 m	0	0	
										2
										3
										4
										5

Remarks: Pit terminated on bedrock

Stability:

GroundWater

Remarks:



OS

Sheet 1 of 1

Co-ords:	-
Level:	mAOS

Date
02/04/2015

Dimensions (m):

Scale
1:25

Depth	1.00
-------	------

Logged
JH

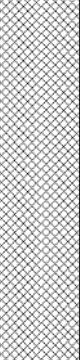
[illegible]

Remarks:	Pit terminated on bedrock
----------	---------------------------

Stability:
GroundWater

Remarks:



				Trial Pit Log				Trialpit No os Sheet 1 of 1	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Date 02/04/2015	
Location: Coed Darcy POS						Dimensions (m):		Scale 1:25	
Client: St Modwen						Depth 2.90		Logged JH	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
	0.50	ES		1.20			MADE GROUND. Blackish brown slightly sandy silty GRAVEL. Coarse gravel of concrete and sandstone. Occasional cobbles of concrete and sandstone. Occasional boulders of sandstone	3	3
	1.50	ES					MADE GROUND. Brown slightly silty gravelly SAND. Coarse gravel of sandstone and concrete. Occasional cobbles of sandstone	0	1
	2.50	ES		2.85 2.90			Sandstone bedrock	0	0
	End of pit at 2.90 m								
Remarks: Pit terminated due to collapse									
Stability: GroundWater Remarks:									

				Trial Pit Log				Trialpit No os Sheet 1 of 1	
Project Name: Coed Darcy POS Signoff				Project No. 5122307_POS		Co-ords: - Level: mAOS		Date 02/04/2015	
Location: Coed Darcy POS						Dimensions (m):		Scale 1:25	
Client: St Modwen						Depth 1.30		Logged JH	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Visual Criteria	Olfactory Criteria
	Depth	Type	Results						
▼	0.50	ES		1.25			MADE GROUND. Soft blackish grey slightly sandy gravelly SILT. Coarse gravel of sandstone and concrete. Occasional cobbles of sandstone. Frequent boulders of concrete	4	3
	End of pit at 1.30 m								
Remarks: Pit terminated on concrete obstruction Stability: GroundWater Remarks: 									

Appendix E – Recent Laboratory Analysis

Contamination analysis results

		Determinand	Arsenic as As, dry weight	Cadmium as Cd, dry weight	Chromium as Cr, dry weight	Copper as Cu, dry weight	Lead as Pb, dry weight	Mercury as Hg, dry weight	Nickel as Ni, dry weight	Selenium as Se, dry weight	Vanadium as V, dry weight	Zinc as Zn, dry weight	VPH >C5 - C6, aliphatic	VPH >C6 - C8, aliphatic	VPH >C8 - C10, aliphatic	EPH >C10 - C12, aliphatic	EPH >C12 - C16, aliphatic	EPH >C16 - C21, aliphatic	EPH >C21 - C35, aliphatic	EPH >C16 - C35, aliphatic	VPH >C5 - C7, aromatic	VPH >C7 - C8, aromatic	VPH >C8 - C10, aromatic	EPH >C10 - C12, aromatic	EPH >C12 - C16, aromatic	EPH >C16 - C21, aromatic	EPH >C21 - C35, aromatic	Petroleum Hydrocarbo ns		
Sample No	ZONE	Depth	nits mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NSE009	A	1.50-	14.10	<0.02	16.00	17.00	16.80	<0.14	28.30	<1	20.60	71.10	<40	<40	<40	<40	<100	<100	<100		<10	<10	<10	<10	<10	17.30	189.00	383.00		
NSE010	A	1.50-	15.80	<0.02	17.50	8.84	18.40	<0.14	45.10	<1	18.70	89.20	<40	<40	<40	<40	<100	<100	<100		<40	<40	<40	0.09	<100	2.55	5.23			
NSE011	A	1.50-	10.80	<0.02	14.10	12.00	16.60	<0.14	32.00	<1	15.40	72.90	<40	<40	<40	<40	<100	<100	<100		<40	<40	<40	0.31	0.70	13.60	96.90	153.00		
NSE013	A	1.50-	7.22	0.16	12.40	6.35	11.70	<0.14	23.70	<1	13.10	57.80	<40	<40	<40	<40	<100	<100	<100		<40	<40	0.17	0.34	<100	4.62	12.40			
NSE038	A	1.50-	9.27	0.11	13.60	11.30	13.60	<0.14	23.70	<1	13.30	65.30	<40	<40	<40	<40	<100	<100	<100		<40	<40	8.39	3.97	0.37	5.80	4.13			
NSE39	A	1.50-	8.79	<0.02	13.20	15.60	9.82	<0.14	24.00	<1	12.80	64.90	<40	<40	<40	<40	<100	<100	<100		<40	<40	0.18	0.14	1.82	11.60	14.70			
NSE44	A	1.50-	9.44	<0.02	12.80	16.30	11.30	<0.14	22.80	<1	12.00	69.80	<40	<40	<40	<40	<100	<100	<100		<40	<40	<40	<40	<100	<100	<100			
NSE45	A	1.50-	8.04	<0.02	11.00	13.90	8.76	<0.14	20.30	<1	11.10	58.60	<40	<40	<40	<40	<100	<100	<100		<40	<40	0.20	0.22	<100	0.27	4.34			
NSE78	A	1.50-	9.75	<0.02	11.60	13.70	10.10	<0.14	20.90	<1	12.40	58.30	<40	<40	<40	<40	<100	<100	<100		0.20	<40	72.00	6.30	5.65	8.40	18.90			
NSW353	A	1.50-	12.10	1.59	16.80	8.63	20.50	<0.14	40.00	<1	15.60	84.10	<40	0.17	3.76	19.7	486	5.44	2.9		<40	<40	1.96	2.08	<100	<100	<100			
NSW407	A	1.50-	9.59	0.26	14.70	18.10	40.40	<0.14	28.20	<1	15.70	105.00	<40	0.39	14.50	41.30	373.00	4.99	74.40		<40	<40	1.86	0.81	<100	<100	5.75			
NSE009	A	2.50-	13.70	<0.02	17.20	12.80	12.20	<0.14	20.90	<1	20.40	66.30	<40	<40	<40	<40	<100	<100	<100		<40	<40	5.22	0.92	<100	<100	17.10			
NSE010	A	2.50-	12.10	<0.02	13.80	12.30	16.10	<0.14	37.20	<1	17.70	90.40	<40	<40	<40	<40	<100	<100	<100		<40	<40	0.20	0.10	3.84	2.01	4.18			
NSE011	A	2.50-	8.01	<0.02	13.40	7.09	14.50	<0.14	41.40	<1	14.30	73.10	<40	<40	<40	<40	<100	<100	<100		<40	<40	<40	<40	<100	<100	<100			
NSE39	A	2.50-	9.83	0.09	12.60	14.70	14.00	<0.14	23.30	<1	13.70	64.00	<40	<40	<40	<40	<100	<100	<100		<40	<40	<40	<40	<100	<100	<100			
NSE78	A	2.50-	12.20	0.18	12.10	16.10	15.20	<0.14	22.10	<1	12.60	65.50	<40	<40	<40	<40	<100	<100	<100		<40	<40	<40	<40	<100	<100	0.74			
NSE009	A	3.50-	9.49	<0.02	13.00	11.90	9.85	<0.14	23.90	<1	15.00	68.50	<40	<40	<40	<40	<100	<100	<100		<40	<40	<40	<40	<100	<100	<100			
NSE010	A	3.50-	11.40	<0.02	16.00	11.60	17.50	<0.14	37.60	<1	18.20	83.80	<40	<40	<40	<40	0.59	1.02	5.19		<40	<40	<40	<40	<100	0.32	2.28			
NSE011	A	3.50-	9.72	<0.02	17.80	5.42	12.50	<0.14	56.60	<1	18.60	73.20	<40	<40	<40	<40	<100	<100	<100		<40	<40	<40	<40	<40	0.84	5.86	42.50		
NSE39	A	3.50-	14.00	<0.02	12.80	13.80	8.82	<0.14	25.50	<1	11.60	70.90	<40	<40	<40	<40	<100	<100	<100		<40	<40	0.24	0.15	<100	10.90	70.00			
POS001	A	1.50-	13.60	0.66	14.30	35.20	27.60	<0.14	24.00	<1	17.00	106.00	<40	3.40	14.00	53.10	252.00	144.00	199.00		<40	<40	10.20	35.40	5.87	23.70	81.80			
POS002	A	1.50-	9.62	0.54	13.30	16.40	16.50	<0.14	24.20	<1	14.50	68.90	<40	1.06	9.44	30.00	450.00	320.00	319.00		<40	<40	6.29	20.00	15.90	61.40	104.00			
POS009	A	1.50-	147.00	2.52	14.70	356.00	1400.00	0.55	30.40	<1	30.60	1880.00	<40	0.07	0.41	1.78	357.00	759.00	927.00		<40	<40	0.29	1.19	81.90	387.00	549.00			
POS009	A	2.50-	92.00	2.03	14.40	274.00	817.00	0.15	31.40	<1	35.00	1680.00	<40	0.05	0.26	1.16	335.00	756.00	1010.00		<40	<40	0.17	0.77	13.10	106.00	299.00			
SO eep AR S			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	432	-	-	-	-	-	-	-	-	
SO eep AR S			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	828	-	-	-	-	-	-	-	-	

VOCS BTEX

Contamination analysis results

[illegible]

Asbestos

Location		Depth	Asbestos	Type	
NSE009	A	1.50-	-		
NSE010	A	1.50-	-		
NSE011	A	1.50-	-		
NSE013	A	1.50-	-		
NSE038	A	1.50-	-		
NSE39	A	1.50-	-		
NSE44	A	1.50-	-		
NSE45	A	1.50-	-		
NSE78	A	1.50-	-		
NSW353	A	1.50-	-		
NSW407	A	1.50-	-		
NSE009	A	2.50-	-		
NSE010	A	2.50-	-		
NSE011	A	2.50-	-		
NSE39	A	2.50-	-		
NSE78	A	2.50-	-		
NSE009	A	3.50-	-		
NSE010	A	3.50-	-		
NSE011	A	3.50-	-		
NSE39	A	3.50-	-		

Contamination analysis results

		Determinand	Arsenic as As, dry weight	Cadmium as Cd, dry weight	Chromium as Cr, dry weight	Copper as Cu, dry weight	Lead as Pb, dry weight	Mercury as Hg, dry weight	Nickel as Ni, dry weight	Selenium as Se, dry weight	Vanadium as V, dry weight	Zinc as Zn, dry weight	VPH >C5 - C6, aliphatic	VPH >C6 - C8, aliphatic	VPH >C8 - C10, aliphatic	EPH >C10 - C12, aliphatic	EPH >C12 - C16, aliphatic	EPH >C16 - C21, aliphatic	EPH >C21 - C35, aliphatic	EPH >C16 - C35, aliphatic	VPH >C5 - C7, aromatic	VPH >C5 - C8, aromatic	VPH >C8 - C10, aromatic	EPH >C10 - C12, aromatic	EPH >C12 - C16, aromatic	EPH >C16 - C21, aromatic	EPH >C21 - C35, aromatic	Petroleum Hydrocarbons	
		nits	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample No	ZONE	Depth																											
NSE012	A	0.10-	77.00	1.89	12.40	158.00	48.50	<0.14	15.10	1.40	18.20	187.00	<40	<40	<40	<40	<100	0.35	9.72		<0.04	<0.04	<0.04	<0.04	0.117	<0.1	<0.1		
NSW241	A	0.20-	52.20	1.42	15.90	112.00	116.00	<0.14	20.30	<1	25.00	237.00	<40	<40	<40	<40	1.50	8.00	38.30		<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.1		
NSE012	A	0.30-	13.60	0.39	15.40	19.80	25.10	<0.14	17.70	<1	19.20	93.00	<40	<40	<40	<40	<100	<100	<100		<0.04	<0.04	<0.04	<0.04	<0.1	0.505	4		
NSE009	A	0.50-	11.10	0.18	15.90	12.20	17.00	<0.14	7.86	<1	26.50	45.10	<40	<40	<40	<40	<100	<100	<100		<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.1		
NSE010	A	0.50-	10.80	0.16	15.20	18.20	15.50	<0.14	24.40	<1	18.20	72.80	<40	<40	<40	<40	<100	<100	<100		<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	2.95		
NSE011	A	0.50-	10.40	<0.02	14.10	14.80	12.70	<0.14	25.00	1.02	17.00	62.70	<40	<40	<40	<40	<100	<100	<100		<0.04	<0.04	<0.04	<0.04	1.24	1.22	4.61		
NSE013	A	0.50-	9.67	<0.02	13.40	12.50	13.70	<0.14	24.00	<1	13.80	65.00	<40	<40	<40	0.11	<100	<100	<100		<50	<50	9.29	51	126	8.7	2.6		
NSE105	A	0.50-	19.40	0.29	16.80	32.30	18.40	<0.14	14.30	1.32	25.30	100.00	<40	<40	<40	<40	<100	<100	<100		<0.04	<0.04	5.99	35	95.4	4.89	1.8		
NSE108	A	0.50-	35.50	0.75	18.40	66.50	40.00	<0.14	30.70	1.41	23.70	143.00	<40	<40	<40	<40	<100	<100	8.61		<0.04	<0.04	5.82	37.3	43.2	3.18	1.77		
NSE109	A	0.50-	16.40	0.19	18.70	45.90	89.50	<0.14	30.90	<1	19.70	161.00	<40	<40	<40	<40	<100	<100	<100		<0.04	<0.04	<0.04	801	1150	590			
NSE127	A	0.50-	11.90	<0.02	11.90	19.10	12.20	<0.14	18.80	1.28	13.50	73.70	<40	<40	<40	<40	<100	<100	0.52		<0.04	<0.04	<0.04	0.295	0.72	1.59	11		
NSE128	A	0.50-	8.50	<0.02	15.40	11.70	9.83	<0.14	21.20	<1	17.80	52.30	<40	<40	<40	<40	<100	<100	<100		<0.04	<0.04	<0.04	1.75	10.3	90.7	4.02	<0.1	
NSE131	A	0.50-	11.70	<0.02	18.00	23.70	27.40	<0.14	21.50	<1	22.40	127.00	<40	<40	<40	<40	<100	<100	0.82		<0.04	<0.04	0.0472	0.0614	<0.1	<0.1	<0.1		
NSE132	A	0.50-	13.70	<0.02	15.50	24.20	12.30	<0.14	22.00	1.70	19.40	76.70	<40	<40	<40	<40	<100	<100	<100		<0.04	<0.04	1.92	4.79	0.349	0.39	8.24		
NSE143	A	0.50-	10.20	<0.02	18.60	17.10	15.40	<0.14	25.20	<1	22.30	72.90	<40	<40	<40	0.05	<100	<100	<100		<0.04	<0.04	2.27	2.83	7.38	12.2	3.02		
NSE144	A	0.50-	18.50	0.35	16.50	34.80	23.90	<0.14	25.70	<1	19.70	99.40	<40	<40	<40	<40	<100	<100	<100		<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.1		
NSE145	A	0.50-	46.20	1.56	15.50	94.50	47.10	<0.14	20.70	1.67	26.00	214.00	<40	<40	<40	<40	<100	<100	<100		<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.1		
NSE147	A	0.50-	41.20	1.17	17.00	75.90	40.10	<0.14	23.10	<1	25.70	206.00	<40	<40	<40	<40	<100	<100	<100		<10	<10	0.0406	0.0302	0.406	<0.1	<0.1		
NSE149	A	0.50-	12.40	0.07	17.10	20.00	18.40	<0.14	20.90	<1	20.60	70.80	<40	<40	<40	<40	<100	<100	0.86		<10	<10	0.0296	0.0132	<0.1	<0.1	<0.1		
NSE157	A	0.50-	7.84	<0.02	10.50	11.30	7.78	<0.14	17.60	1.57	10.80	102.00	<40	<40	<40	<40	<100	<100	<100		<10	<10	<10	<10	<0.1	<0.1	<0.1		
NSE158	A	0.50-	10.50	<0.02	13.60	15.50	15.50	<0.14	24.80	1.09	16.10	71.40	<40	<40	<40	<40	<100	<100	4.39		<10	<10	<10	<10	<0.1	<0.1	<0.1		
NSE75	A	0.50-	10.10	0.16	12.80	14.50	13.90	<0.14	9.30	<1	16.40	56.80	<40	<40	<40	<40	<100	<100	<100		<10	<10	<10	<10	<0.1	<0.1	<0.1		
NSW183	A	0.50-	9.08	<0.02	13.40	14.90	14.30	<0.14	22.70	<1	14.10	66.30	<40	<40	<40	<40	<100	<100	8.92		<10	<10	<10	<10	<0.1	<0.1	<0.1		
NSW240	A	0.50-	13.00	0.19	13.30	24.70	16.40	<0.14	25.70	<1	16.40	82.20	<40	<40	0.09	0.07	0.91	<100	<100		<10	<10	<10	<10	<0.1	<0.1	<0.1		
NSW298	A	0.50-	12.80	<0.02	14.00	21.10	15.60	<0.14	23.40	<1	14.60	71.30	<40	<40	<40	<40	<100	<100	<100		<10	<10	<10	<10	<0.1	<0.1	1.17		
NSW353	A	0.50-	27.20	0.69	16.70	85.60	248.00	<0.14	25.80	1.21	21.80	470.00	<200	<200	<200	0.38	14.30	51.60	117.00		<10	<10	<10	<10	<0.1	<0.1	<0.1		
NSW407	A	0.50-	21.00	1.22	15.30	43.70	103.00	<0.14	24.30	<1	20.10	273.00	<40	<40	<40	<40	1.32	1.47	12.1		<10	<10	<10	<10	<0.1	<0.1	<0.1		
NSW407	A	0.50-	13.10	<0.02	14.70	17.60	20.00	<0.14	23.90	<1	17.20	68.40	<40	0.05	0.34	4.93	0.916	<100	7		<10	<10	<10	<10	<0.1	<0.1	<0.1		
NSW511	A	0.50-	27.10	0.74	17.30	97.30	105.00	<0.14	30.50	<1	19.10	256.00	<40	<40	0.52	1.47	34	39.7	91.9		<10	<10	<10	<10	<0.1	<0.1	<0.1		
NSW241	A	0.80-	9.02	<0.02	13.50	14.50	14.30	<0.14	23.40	<1	13.50	62.90	<40	<40	<40	<40	<100	<100	<100		<10	<10	<10	<10	<0.1	<0.1	<0.1		
NSW407	A	1.00-	10.40	0.19	12.30	18.50	25.60	<0.14	22.10	<1	13.80	77.40	<40	0.07	6.85	32.80	372.00	3.05	16.70		<10	<10	<10	<10	<0.1	<0.1	<0.1		
ZAHP1	A	0.5	25.20	1.26	14.30	74.30	103.00	0.77	26.20	<1	22.60	222.00	<0.04	<0.04	<0.04	<0.04	68.10	190.00	312.00		<0.04	<0.04	<0.04	<0.04	7.32	76.5	275		
ZAHP10	A	0.5	67.40	3.60	16.20	154.00	79.90	<0.14	25.10	<1	25.50	280.00	<0.04	<0.04	<0.04	<0.04	<0.1	1.15	12.30		<0.04	<0.04	<0.04	<0.04	<0.1	0.545	7.89		
ZAHP11	A	0.5	81.10	2.95	19.30	172.00	88.60	<0.14	26.30	1.19	36.10	228.00	<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	1.34		<0.04	<0.04	<0.04	<0.04	<0.1	0.427	4.13		
ZAHP12	A	0.5	80.80	2.34	19.90	154.00	80.90	<0.14	22.70	1.29	36.50	222.00	<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.1		<0.04	<0.04	<0.04	<0.04	<0.1	0.548	6.47		
ZAHP13	A	0.5	94.70	2.49	20.10	201.00	115.00	<0.14	28.00	1.26	37.80	281.00	<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	6.13		<0.04	<0.04	<0.04	<0.04	<0.1	1.11	11		
ZAHP14	A	0.5	118.00	3.61	24.20	269.00	136.00	<0.14	34.20	1.57	43.90	404.00	<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	9.76		<0.04	<0.04	<0.04	<0.04	<0.1	1.21	11.1		
ZAHP2	A	0.5	25.70	1.28	14.90	61.60	77.70	<0.14	23.60	<1	22.10	203.00	<0.04	<0.04	<0.04	<0.04	3.47	33.10	91.50		<0.04	<0.04	<0.04	<0.04	2.99	12.3	82.9		
ZAHP3	A	0.5	32.00	0.55	14.70	69.20	58.00	<0.14	24.50	<1	20.10	187.00	<0.04	<0.04	<0.04	<0.04	11.80	73.10	99.30		<0.04	<0.04	<0.04	<0.04	<0.1	11.8	69.5		
ZAHP4	A	0.5	32.50	1.65	15.90	69.50	93.60	<0.14	23.30	<1	23.30	209.00	<0.04	<0.04	<0.04	<0.04	4.85	34.10	80.90		<0.04	<0.04	<0.04	<0.04	2.97	11.5	74.8		
ZAHP5	A	0.5	68.40	4.74	19.80	109.00	3650.00	<0.14	28.80	<1	24.70	826.00	<0.04	<0.04	<0.04	<0.04	10.50	35.70	90.10		<0.04	<0.04	<0.04	<0.04	1.88	9.79	62.3		
ZAHP6	A	0.5	39.70	1.51	18.30	86.90	160.00	<0.14	31.10	<1	24.30	238.00	<0.04	<0.04	<0.04	<0.04	7.36	25.60	81.80		<0.04	<0.04	<0.04	<0.04	1.73	8.24	59.4		
ZAHP7	A	0.5	32.80	1.62	16.80	74.60	159.00	<0.14	25.40	<1	24.20	300.00																	

Contamination analysis results

		Determinand	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)Anthracene	Chrysene	Benzo(B)Fluoranthene	Ben o fluoranthene	Benzo(e)Pyrene	Indeno(123-cd)Pyrene	Dibenzo(ah)Anthracene	Benzo(ghi)Perylene	Total of A s	Phenol
Sample	one	epth	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NSE012	A	0.10-	0.011	<12	<8	<10	0.0457	<16	0.04	0.03	0.02	0.03	0.04	<14	0.02	<18	<23	<24		
NSW241	A	0.20-	0.0268	<12	<8	<10	0.147	<16	0.181	0.15	0.09	0.15	0.12	0.06	0.09	0.06	<23	0.07		
NSE012	A	0.30-	<9	<12	<8	<10	<15	<16	<17	<15	<14	<10	<15	<14	<15	<18	<23	<24		
NSE009	A	0.50-	<9	<12	<8	<10	<15	<16	<17	<15	<14	<10	<15	<14	<15	<18	<23	<24		
NSE010	A	0.50-	<9	<12	<8	<10	0.0609	<16	<17	<15	<14	<10	0.02	<14	<15	<18	<23	<24		
NSE011	A	0.50-	<9	<12	<8	<10	0.07	<16	<17	<15	<14	0.03	0.03	<14	<15	<18	<23	<24		
NSE013	A	0.50-	<9	<12	<8	<10	0.05	<16	<17	<15	<14	<10	<15	<14	<15	<18	<23	<24		
NSE105	A	0.50-	<9	<12	<8	<10	0.0271	<16	<17	<15	<14	0.015	0.0186	<14	<15	<18	<23	<24		
NSE108	A	0.50-	0.0479	<12	<8	<10	0.649	<16	0.123	0.0768	0.0668	0.34	0.237	<14	0.0458	0.0408	0.0363	0.0479		
NSE109	A	0.50-	<9	<12	<8	<10	0.09	<16	<17	<15	0.02	0.02	0.03	<14	<15	<18	<23	<24		
NSE127	A	0.50-	<9	<12	<8	<10	0.07	<16	<17	<15	0.03	0.04	0.03	<14	<15	<18	<23	<24		
NSE128	A	0.50-	<9	<12	<8	<10	0.04	<16	<17	<15	0.02	0.02	0.02	<14	<15	<18	<23	<24		
NSE131	A	0.50-	<9	<12	<8	<10	0.04	<16	<17	<15	0.03	0.02	0.02	<14	<15	<18	<23	<24		
NSE132	A	0.50-	0.01	<12	<8	<10	0.05	<16	0.02	<15	0.04	0.03	0.03	<14	<15	<18	<23	<24		
NSE143	A	0.50-	<9	<12	<8	<10	0.06	<16	<17	<15	<14	0.02	0.03	<14	<15	<18	<23	<24		
NSE144	A	0.50-	<9	<12	<8	<10	0.06	<16	0.02	<15	<14	0.04	0.05	<14	<15	<18	<23	<24		
NSE145	A	0.50-	<9	<12	<8	<10	0.08	<16	0.08	0.06	<14	0.06	0.07	0.02	0.03	<18	<23	<24		
NSE147	A	0.50-	0.01	<12	<8	<10	0.07	<16	0.04	0.03	<14	0.04	0.06	<14	<15	<18	<23	<24		
NSE149	A	0.50-	<9	<12	<8	<10	0.07	<16	<17	<15	<14	0.02	0.04	<14	<15	<18	<23	<24		
NSE157	A	0.50-	<9	<12	<8	<10	0.09	<16	<17	<15	<14	0.04	0.03	<14	<15	<18	<23	<24		
NSE158	A	0.50-	0.01	<12	<8	<10	0.20	<16	0.02	<15	<14	0.02	0.05	<14	<15	<18	<23	<24		
NSE75	A	0.50-	<9	<12	<8	<10	<15	<16	<17	<15	<14	<10	<15	<14	<15	<18	<23	<24		
NSW183	A	0.50-	0.0797	<12	<8	<10	0.0773	<16	<17	<15	0.0177	0.0414	0.0421	<14	<15	<18	<23	<24		
NSW240	A	0.50-	<9	<12	<8	<10	0.0629	<16	<17	<15	<14	0.0156	0.0203	<14	<15	<18	<23	<24		
NSW298	A	0.50-	<9	<12	<8	<10	0.03	<16	<17	<15	<14	0.02	<15	<14	<15	<18	<23	<24		
NSW353	A	0.50-	0.0744	<12	0.02	0.02	0.25	0.03	0.26	0.24	0.14	0.21	0.31	0.11	0.19	0.13	0.05	0.16		
NSW407	A	0.50-	0.11	<12	0.03	0.02	0.71	0.20	3.65	3.22	1.85	1.80	2.77	1.07	2.02	0.98	0.34	1.16		
NSW407	A	0.50-	0.0168	<12	<8	<10	0.07	<16	0.05	0.03	0.03	0.05	0.06	<14	0.03	<18	<23	<24		
NSW511	A	0.50-	0.0461	<12	0.01	0.02	0.12	0.03	0.13	0.14	0.09	0.11	0.18	0.06	0.11	0.08	0.03	0.11		
NSW241	A	0.80-	<9	<12	<8	<10	0.08	<16	<17	<15	<14	0.04	0.03	<14	<15	<18	<23	<24		
NSW407	A	1.00-	0.117	<12	<8	<10	0.11	<16	0.03	0.02	0.04	0.05	0.08	<14	<15	<18	<23	<24		
ZAHP1	A	0.5	0.0666	<12	<8	<10	0.12	0.14	0.06	0.10	<14	0.08	0.08	0.03	0.05	0.05	<23	0.07		
ZAHP10	A	0.5	<9	<12	<8	<10	0.08	<16	0.09	0.07	<14	0.06	0.06	0.02	0.03	<18	<23	<24		
ZAHP11	A	0.5	0.0262	<12	0.01	<10	0.16	<16	0.21	0.15	0.09	0.14	0.18	0.05	0.08	0.06	<23	0.07		
ZAHP12	A	0.5	0.0191	<12	<8	<10	0.10	<16	0.12	0.09	0.05	0.07	0.10	0.03	0.04	0.03	<23	0.04		
ZAHP13	A	0.5	0.0246	<12	<8	<10	0.15	<16	0.21	0.16	0.09	0.15	0.20	0.07	0.09	0.07	<23	0.08		
ZAHP14	A	0.5	0.0435	<12	0.01	<10	0.25	0.03	0.36	0.26	0.16	0.24	0.32	0.11	0.15	0.11	0.04	0.12		
ZAHP2	A	0.5	0.0372	<12	<8	<10	0.07	0.02	0.05	0.05	<14	0.06	0.09	0.03	0.05	0.04	<23	0.06		
ZAHP3	A	0.5	0.0363	<12	<8	<10	0.09	<16	0.05	0.05	<14	0.05	0.06	<14	0.03	0.02	<23	0.03		
ZAHP4	A	0.5	0.0816	<12	<8	<10	0.14	<16	0.10	0.12	<14	<10	0.10	0.03	0.05	0.04	<23	0.06		
ZAHP5	A	0.5	0.104	<12	<8	<10	0.10	<16	0.10	0.11	0.05	0.09	0.13	0.05	0.06	0.05	<23	0.06		
ZAHP6	A	0.5	0.117	<12	<8	<10	0.21	0.03	0.27	0.26	0.16	0.20	0.25	0.10	0.13	0.09	0.04	0.13		
ZAHP7	A	0.5	0.124	<12	<8	<10	0.16	<16	0.19	0.18	0.11	0.17	0.24	0.09	0.12	0.09	0.03	0.10		
ZAHP8	A	0.5	0.017	<12	<8	<10	0.06	<16	0.03	0.03	<14	0.04	0.04	<14	<15	<18	<23	<24		
ZAHP9	A	0.5	0.12	<12	<8	<10	0.21	0.06	0.16	0.16	0.10	0.15	0.29	0.12	0.20	0.29	0.07	0.43		
POS001	A	0.5	0.0572	<12	<8	0.02	0.09	<16	<17	0.03	<14	0.03	0.03	<14	<15	<18	<23	<24		
POS002	A	0.50-	0.114	0.02	0.04	0.10	0.25	0.08	0.08	0.13	0.09	0.09	0.14	0.04	0.09	0.06	<23	0.09		
POS003	A	0.50-	0.224	<12	0.03	0.06	0.50	0.12	0.73	0.52	0.53	0.47	0.68	0.22	0.40	0.24	0.11	0.27		
POS004	A	0.50-	0.0527	<12	<8	<10	0.08	0.03	0.07	0.08	0.07	0.06	0.10	0.03	0.07	0.06	<23	0.09		
POS005	A	0.50-	0.0911	<12	0.02	0.03	0.29	0.07	0.52	0.52	0.44	0.45	0.78	0.27	0.54	0.36	0.13	0.48		
POS007	A	0.50-	0.176	<12	0.01	0.04	0.25	0.03	0.13	0.15	0.10	0.16	0.21	0.06	0.11	0.08	0.03	0.10		
POS008	A	0.50-	0.0716	<12	0.02	0.05	0.27	0.06	0.25	0.25	0.15	0.17	0.24	0.06	0.13	0.07	0.03	0.09		
POS009	A	0.50-	0.154	<12	0.06	0.13	0.35	0.22	0.23	0.32	0.16	0.16	0.37	0.10	0.22	0.22	0.08	0.32		
POS010	A	0.50-	0.157	<12	0.06	0.17	0.70	0.62	0.41	1.17	0.26	0.22	0.45	0.11	0.32	0.18	0.08	0.25		
		Shallow par s	955	-	5340	3570	-	26800	3570	2680	20.8	2090	21.3	215	0.9	21.2	2.16	218	-	859
		Shallow par s	1340	-	5350	3570	-	26800	3570	2680	21.1	2090	21.3	215	0.9	21.2	2.16	218	-	859

VOCS BTEX

Contamination analysis results

CE Ben ene Toluene Etylben ene m p ylene O ylene ylene total									
		Determinand	1,2 DCE	Benzene	Toluene	Etylbenzene	m&p Xylene	O Xylene	Xylene total
Sample	one	epth	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
NSE012	A	0.10-		<40	<8	<12	<24	<12	<9
NSW241	A	0.20-		<40	<8	<12	<24	<12	<9
NSE012	A	0.30-		<40	<8	<12	<24	<12	<9
NSE009	A	0.50-		<40	<8	<12	<24	<12	<9
NSE010	A	0.50-		<40	<8	<12	<24	<12	<9
NSE011	A	0.50-		<40	<8	<12	<24	<12	<9
NSE013	A	0.50-		<50	<10	<15	<30	<15	<9
NSE105	A	0.50-		<40	<8	<12	<24	<12	<9
NSE108	A	0.50-		<40	<8	<12	<24	<12	<9
NSE109	A	0.50-		<40	<8	<12	<24	<12	<9
NSE127	A	0.50-		<40	<8	<12	<24	<12	<9
NSE128	A	0.50-		<40	<8	<12	<24	<12	<9
NSE131	A	0.50-		<40	<8	<12	<24	<12	<9
NSE132	A	0.50-		<40	<8	<12	<24	<12	<9
NSE143	A	0.50-		<40	<8	<12	<24	<12	<9
NSE144	A	0.50-		<40	<8	<12	<24	<12	<9
NSE145	A	0.50-		<40	<8	<12	<24	<12	<9
NSE147	A	0.50-		<10	5.80	<3	<6	<3	<9
NSE149	A	0.50-		<10	2.19	<3	<6	<3	<9
NSE157	A	0.50-		<10	<2	<3	<6	<3	<9
NSE158	A	0.50-		<10	<2	<3	<6	<3	<9
NSE75	A	0.50-		<10	<2	<3	<6	<3	<9
NSW183	A	0.50-		<10	<2	<3	<6	<3	<9
NSW240	A	0.50-		<10	<2	<3	<6	<3	<9
NSW298	A	0.50-		<10	<2	<3	<6	<3	<9
NSW353	A	0.50-		<10	<2	<3	<6	<3	<9
NSW407	A	0.50-		<10	<2	<3	<6	<3	<9
NSW407	A	0.50-		<10	<2	<3	<6	<3	<9
NSW511	A	0.50-		<10	<2	<3	<6	<3	<9
NSW241	A	0.80-		<10	<2	<3	<6	<3	<9
NSW407	A	1.00-		<10	<2	<3	<6	<3	<9
ZAHP1	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP10	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP11	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP12	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP13	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP14	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP2	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP3	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP4	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP5	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP6	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP7	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP8	A	0.5		<40	<8	<12	<24	<12	<9
ZAHP9	A	0.5		<40	<8	<12	<24	<12	<9
POS001	A	0.5		<40	<8	<12	<24	<12	<9
POS002	A	0.50-		<40	<8	<12	<24	<12	<9
POS003	A	0.50-		<40	<8	<12	<24	<12	<9
POS004	A	0.50-		<40	<8	<12	<24	<12	<9
POS005	A	0.50-		<40	<8	<12	<24	<12	<9
POS007	A	0.50-		<40	<8	<12	<24	63.80	63.8
POS008	A	0.50-		<40	<8	45.60	<24	203.00	203
POS009	A	0.50-		<40	9.76	<12	<24	<12	<9
POS010	A	0.50-		<40	31.30	28.80	50.00	50.00	100
	Shallow par s		4500	13000	8110000	4740000	-	-	7940000
	Shallow par s		4500	13000	8110000	4740000	-	-	7940000

Asbestos

Location	Zone	Depth	Asbestos	Type
NSE012	A	0.10-	Not Detected	
NSW241	A	0.20-	Not Detected	
NSE012	A	0.30-	Not Detected	
NSE009	A	0.50-	Not Detected	
NSE010	A	0.50-	Not Detected	
NSE011	A	0.50-	Not Detected	
NSE013	A	0.50-	-	
NSE105	A	0.50-	-	
NSE108	A	0.50-	Not Detected	
NSE109	A	0.50-	-	
NSE127	A	0.50-	-	
NSE128	A	0.50-	-	
NSE131	A	0.50-	-	
NSE132	A	0.50-	-	
NSE143	A	0.50-	-	
NSE144	A	0.50-	-	
NSE145	A	0.50-	-	
NSE147	A	0.50-	-	
NSE149	A	0.50-	-	
NSE157	A	0.50-	-	
NSE158	A	0.50-	Not Detected	
NSE75	A	0.50-	Not Detected	
NSW183	A	0.50-	Not Detected	
NSW240	A	0.50-	Not Detected	
NSW298	A	0.50-	Not Detected	
NSW353	A	0.50-	Not Detected	
NSW407	A	0.50-	Not Detected	
NSW407	A	0.50-	Not Detected	
NSW511	A	0.50-	Not Detected	
NSW241	A	0.80-	Not Detected	
NSW407	A	1.00-	Not Detected	
ZAHP1	A	0.5	Loose fibres in soil	0.0013
ZAHP10	A	0.5	Loose fibres in soil	Trace
ZAHP11	A	0.5	0	
ZAHP12	A	0.5	0	
ZAHP13	A	0.5	0	
ZAHP14	A	0.5	Loose fibres in soil	<0.001
ZAHP2	A	0.5	Loose fibres in soil	0.0029
ZAHP3	A	0.5	Soil containing loose	0.0104
ZAHP4	A	0.5	Soil containing loose	0.0062
ZAHP5	A	0.5	Soil containing loose	0.0083
ZAHP6	A	0.5	Loose fibres in soil	<0.001
ZAHP7	A	0.5	Soil containing loose	0.0016
ZAHP8	A	0.5	0	
ZAHP9	A	0.5	0	
POS001	A	0.5	Loose fibres in soil	<0.001
POS002	A	0.50-	Loose fibres in soil	0.0013
POS003	A	0.50-	Loose fibres in soil	0.0024
POS004	A	0.50-	0	
POS005	A	0.50-	Loose fibres in soil	<0.001
POS007	A	0.50-	Loose fibres in soil	0.0105
POS008	A	0.50-	Loose fibres in soil	0.0019
POS009	A	0.50-	0	
POS010	A	0.50-	Loose fibres in soil	0.0032



Atkins Global Ltd
Project Jonah site office
Llan Coed House
Suite 24
Coed Darcy
Llandarcy
SA10 6HJ

Attention: Jack Lowrie

CERTIFICATE OF ANALYSIS

Date: 21 April 2015
Customer: H_ATKINS_LDC
Sample Delivery Group (SDG): 150407-5
Your Reference: North Site POS TP
Location: Coed Darcy
Report No: 309873

We received 13 samples on Tuesday April 07, 2015 and 13 of these samples were scheduled for analysis which was completed on Tuesday April 21, 2015. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager





SDG:	150407-5	Location:	Coed Darcy	Order Number:	CD1176
Job:	H_ATKINS_LDC-334	Customer:	Atkins Global Ltd	Report Number:	309873
Client Reference:	North Site POS TP	Attention:	Jack Lowrie	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
11135987	POS001		0.50	02/04/2015
11136048	POS001		1.50	02/04/2015
11136059	POS002		0.50	02/04/2015
11136067	POS002		1.50	02/04/2015
11136075	POS003		0.50	02/04/2015
11136081	POS004		0.50	02/04/2015
11136088	POS005		0.50	02/04/2015
11136094	POS007		0.50	02/04/2015
11136100	POS008		0.50	02/04/2015
11136013	POS009		0.50	02/04/2015
11136023	POS009		1.50	02/04/2015
11136032	POS009		2.50	02/04/2015
11136041	POS010		0.50	02/04/2015

Only received samples which have had analysis scheduled will be shown on the following pages.



SDG: 150407-5
Job: H_ATKINS_LDC-334
Client Reference: North Site POS TP

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Jack Lowrie

Order Number: CD1176
Report Number: 309873
Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
	11136041	POS010		0.50	60g VOC (ALE215) 400g Tub (ALE214)
	11136032	POS009		2.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11136023	POS009		1.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11136013	POS009		0.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11136100	POS008		0.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11136094	POS007		0.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11136088	POS005		0.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11136081	POS004		0.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11136075	POS003		0.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11136067	POS002		1.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11136059	POS002		0.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11136048	POS001		1.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
	11135987	POS001		0.50	250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214)
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 9			
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 13			
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 13			
GRO by GC-FID (S)	All	NDPs: 0 Tests: 13			
Metals in solid samples by OES	All	NDPs: 0 Tests: 13			
PAH by GCMS	All	NDPs: 0 Tests: 13			
pH	All	NDPs: 0 Tests: 13			
Sample description	All	NDPs: 0 Tests: 12			
Total Organic Carbon	All	NDPs: 0 Tests: 4			
TPH CWG GC (S)	All	NDPs: 0 Tests: 13			



SDG:	150407-5	Location:	Coed Darcy	Order Number:	CD1176
Job:	H_ATKINS_LDC-334	Customer:	Atkins Global Ltd	Report Number:	309873
Client Reference:	North Site POS TP	Attention:	Jack Lowrie	Superseded Report:	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
11135987	POS001	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
11136048	POS001	1.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	Vegetation
11136059	POS002	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
11136067	POS002	1.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	Vegetation
11136075	POS003	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	Vegetation
11136081	POS004	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	Brick
11136088	POS005	0.50	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Vegetation	Stones
11136094	POS007	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
11136100	POS008	0.50	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11136013	POS009	0.50	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Plastic	Brick
11136023	POS009	1.50	Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Crushed Brick	Stones
11136032	POS009	2.50	Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Stones	Vegetation
11136041	POS010	0.50	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Brick

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Order Number: CD1176
Report Number: 309873
Superseded Report:

Page 5 of 18

CERTIFICATE OF ANALYSIS

SDG: 150407-5
Job: H_ATKINS_LDC-334
Client Reference: North Site POS TP

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Jack Lowrie

Order Number: CD1176
Report Number: 309873
Superseded Report:

[illegible]

CERTIFICATE OF ANALYSIS

SDG: 150407-5
Job: H_ATKINS_LDC-334
Client Reference: North Site POS TP

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Jack Lowrie

Order Number: CD1176
Report Number: 309873
Superseded Report:

[illegible]

Order Number: CD1176
Report Number: 309873
Superseded Report:

Page 8 of 18

Order Number: CD1176
Report Number: 309873
Superseded Report:

Page 9 of 18

Order Number: CD1176
Report Number: 309873
Superseded Report:

Page 10 of 18



CERTIFICATE OF ANALYSIS

SDG: 150407-5
Job: H_ATKINS_LDC-334
Client Reference: North Site POS TP

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Jack Lowrie

Order Number: CD1176
Report Number: 309873
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample R						
#	ISO17025 accredited.		POS001		POS002		POS003	
M	mCERTS accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50	1.50	0.50	1.50	0.50	0.50
aq	Aqueous / settled sample.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
diss.filt	Dissolved / filtered sample.		02/04/2015	02/04/2015	02/04/2015	02/04/2015	02/04/2015	02/04/2015
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		07/04/2015	07/04/2015	07/04/2015	07/04/2015	07/04/2015	07/04/2015
(F)	Trigger breach confirmed		150407-5	150407-5	150407-5	150407-5	150407-5	150407-5
1-5&*\$@	Sample deviation (see appendix)		11135987	11136048	11136059	11136067	11136075	11136081
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	88	124	118	113	89	94
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	2180	116000	32100	66900	<176	<176
			M	M	M	M	M	M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<20	23.9	<20	<20	<20	<20
			M	M	M	M	M	M
Benzene	<10 µg/kg	TM089	<40	<40	<40	<40	<40	<40
			M	M	M	M	M	M
Toluene	<2 µg/kg	TM089	<8	<8	<8	<8	<8	<8
			M	M	M	M	M	M
Ethylbenzene	<3 µg/kg	TM089	<12	443	<12	<12	<12	<12
			M	M	M	M	M	M
m,p-Xylene	<6 µg/kg	TM089	<24	<24	<24	<24	<24	<24
			M	M	M	M	M	M
o-Xylene	<3 µg/kg	TM089	<12	459	<12	<12	<12	<12
			M	M	M	M	M	M
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	459	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	902	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	<40	<40	62.2	<40	<40	<40
Aliphatics >C6-C8	<10 µg/kg	TM089	115	3400	1010	1060	<40	<40
Aliphatics >C8-C10	<10 µg/kg	TM089	294	14000	5900	9440	<40	<40
Aliphatics >C10-C12	<10 µg/kg	TM089	914	53100	12700	30000	<40	<40
Aliphatics >C12-C16	<100 µg/kg	TM173	117000	252000	300000	450000	24900	30700
Aliphatics >C16-C21	<100 µg/kg	TM173	132000	144000	265000	320000	96000	93400
Aliphatics >C21-C35	<100 µg/kg	TM173	184000	199000	400000	319000	201000	96200
Aliphatics >C35-C44	<100 µg/kg	TM173	29300	34700	67600	28000	25800	8550
Total Aliphatics >C12-C44	<100 µg/kg	TM173	463000	629000	1030000	1120000	348000	229000
Aromatics >EC5-EC7	<10 µg/kg	TM089	<40	<40	<40	<40	<40	<40
Aromatics >EC7-EC8	<10 µg/kg	TM089	<40	<40	<40	<40	<40	<40
Aromatics >EC8-EC10	<10 µg/kg	TM089	211	10200	3930	6290	<40	<40
Aromatics >EC10-EC12	<10 µg/kg	TM089	609	35400	8460	20000	<40	<40
Aromatics >EC12-EC16	<100 µg/kg	TM173	3480	5870	27400	15900	4960	6170
Aromatics >EC16-EC21	<100 µg/kg	TM173	21700	23700	110000	61400	42000	35500
Aromatics >EC21-EC35	<100 µg/kg	TM173	74800	81800	218000	104000	169000	97500
Aromatics >EC35-EC44	<100 µg/kg	TM173	28300	30700	51100	30000	53800	32300
Aromatics >EC40-EC44	<100 µg/kg	TM173	12100	13400	20500	11700	22000	12900
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	128000	142000	406000	212000	269000	172000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	594000	888000	1470000	1400000	617000	400000



CERTIFICATE OF ANALYSIS

SDG: 150407-5
Job: H_ATKINS_LDC-334
Client Reference: North Site POS TP

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Jack Lowrie

Order Number: CD1176
Report Number: 309873
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample R		POS005	POS007	POS008	POS009	POS009
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted test.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-5&\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		80	92	118	66	37	37
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<176 M	7450 M	19900 M	3990 M	3790 M	2440 M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<20 M	<20 M	<20 M	<20 M	<20 M	<20 M
Benzene	<10 µg/kg	TM089		<40 M	<40 M	<40 M	<40 M	<40 M	<40 M
Toluene	<2 µg/kg	TM089		<8 M	<8 M	<8 M	9.76 M	12.3 M	<8 M
Ethylbenzene	<3 µg/kg	TM089		<12 M	<12 M	45.6 M	<12 M	<12 M	<12 M
m,p-Xylene	<6 µg/kg	TM089		<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
o-Xylene	<3 µg/kg	TM089		<12 M	63.8 M	203 M	<12 M	<12 M	<12 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	63.8	203	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	63.8	249	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		<40	<40	<40	<40	<40	<40
Aliphatics >C6-C8	<10 µg/kg	TM089		<40	149	139	91.5	70.1	50.4
Aliphatics >C8-C10	<10 µg/kg	TM089		<40	1180	3440	360	411	255
Aliphatics >C10-C12	<10 µg/kg	TM089		<40	3140	8230	1950	1780	1160
Aliphatics >C12-C16	<100 µg/kg	TM173		43200	5950	97900	301000	357000	335000
Aliphatics >C16-C21	<100 µg/kg	TM173		203000	7660	74500	587000	759000	756000
Aliphatics >C21-C35	<100 µg/kg	TM173		366000	24500	122000	924000	927000	1010000
Aliphatics >C35-C44	<100 µg/kg	TM173		83400	3870	13300	377000	140000	256000
Total Aliphatics >C12-C44	<100 µg/kg	TM173		696000	42000	308000	2190000	2180000	2360000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<40	<40	<40	<40	<40	<40
Aromatics >EC7-EC8	<10 µg/kg	TM089		<40	<40	<40	<40	<40	<40
Aromatics >EC8-EC10	<10 µg/kg	TM089		<40	858	2540	245	285	170
Aromatics >EC10-EC12	<10 µg/kg	TM089		<40	2100	5490	1300	1190	774
Aromatics >EC12-EC16	<100 µg/kg	TM173		2360	<100	15000	14500	81900	13100
Aromatics >EC16-EC21	<100 µg/kg	TM173		25200	5000	45000	106000	387000	106000
Aromatics >EC21-EC35	<100 µg/kg	TM173		211000	24300	107000	354000	549000	299000
Aromatics >EC35-EC44	<100 µg/kg	TM173		99200	7200	22700	165000	106000	103000
Aromatics >EC40-EC44	<100 µg/kg	TM173		38100	3190	7350	66600	43000	39600
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		338000	36500	190000	639000	1120000	521000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		1030000	85900	517000	2830000	3310000	2880000



CERTIFICATE OF ANALYSIS

SDG: 150407-5
Job: H_ATKINS_LDC-334
Client Reference: North Site POS TP

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Jack Lowrie

Order Number: CD1176
Report Number: 309873
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample R		POS010			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 Soil/Solid 02/04/2015 . 07/04/2015 150407-5 11136041				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-5&*\$@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	57				
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	11700	M			
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<20	M			
Benzene	<10 µg/kg	TM089	<40	M			
Toluene	<2 µg/kg	TM089	31.3	M			
Ethylbenzene	<3 µg/kg	TM089	28.8	M			
m,p-Xylene	<6 µg/kg	TM089	50	M			
o-Xylene	<3 µg/kg	TM089	50	M			
sum of detected mpo xylene by GC	<9 µg/kg	TM089	100				
sum of detected BTEX by GC	<24 µg/kg	TM089	160				
Aliphatics >C5-C6	<10 µg/kg	TM089	66.3				
Aliphatics >C6-C8	<10 µg/kg	TM089	474				
Aliphatics >C8-C10	<10 µg/kg	TM089	1620				
Aliphatics >C10-C12	<10 µg/kg	TM089	4950				
Aliphatics >C12-C16	<100 µg/kg	TM173	423000				
Aliphatics >C16-C21	<100 µg/kg	TM173	1110000				
Aliphatics >C21-C35	<100 µg/kg	TM173	1420000				
Aliphatics >C35-C44	<100 µg/kg	TM173	208000				
Total Aliphatics >C12-C44	<100 µg/kg	TM173	3160000				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<40				
Aromatics >EC7-EC8	<10 µg/kg	TM089	<40				
Aromatics >EC8-EC10	<10 µg/kg	TM089	1210				
Aromatics >EC10-EC12	<10 µg/kg	TM089	3300				
Aromatics >EC12-EC16	<100 µg/kg	TM173	80200				
Aromatics >EC16-EC21	<100 µg/kg	TM173	441000				
Aromatics >EC21-EC35	<100 µg/kg	TM173	765000				
Aromatics >EC35-EC44	<100 µg/kg	TM173	167000				
Aromatics >EC40-EC44	<100 µg/kg	TM173	66500				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	1450000				
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	4630000				



CERTIFICATE OF ANALYSIS

SDG:	150407-5	Location:	Coed Darcy	Order Number:	CD1176
Job:	H_ATKINS_LDC-334	Customer:	Atkins Global Ltd	Report Number:	309873
Client Reference:	North Site POS TP	Attention:	Jack Lowrie	Superseded Report:	

Asbestos Identification - Solid Samples

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	POS001 0.50 SOLID 02/04/2015 00:00:00 13/04/2015 10:28:34 150407-5 11135987 TM048	20/4/15	Chris Swindells	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	POS002 0.50 SOLID 02/04/2015 00:00:00 13/04/2015 10:40:25 150407-5 11136059 TM048	20/4/15	Simon Postlewhite	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	POS003 0.50 SOLID 02/04/2015 00:00:00 13/04/2015 10:33:55 150407-5 11136075 TM048	20/4/15	Chris Swindells	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	POS004 0.50 SOLID 02/04/2015 00:00:00 13/04/2015 10:36:05 150407-5 11136081 TM048	20/4/15	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	POS005 0.50 SOLID 02/04/2015 00:00:00 13/04/2015 10:38:09 150407-5 11136088 TM048	20/4/15	Simon Postlewhite	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

SDG: 150407-5
Job: H_ATKINS_LDC-334
Client Reference: North Site POS TP

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Jack Lowrie

Order Number: CD1176
Report Number: 309873
Superseded Report:

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	POS007 0.50 SOLID 02/04/2015 00:00:00 13/04/2015 10:25:30 150407-5 11136094 TM048	20/4/15	Chris Swindells	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	POS008 0.50 SOLID 02/04/2015 00:00:00 13/04/2015 10:31:39 150407-5 11136100 TM048	20/4/15	Chris Swindells	Loose fibres in soil	Not Detected (#)	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	POS009 0.50 SOLID 02/04/2015 00:00:00 11/04/2015 10:30:46 150407-5 11136013 TM048	20/4/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	POS010 0.50 SOLID 02/04/2015 00:00:00 08/04/2015 03:29:15 150407-5 11136041 TM048	20/4/15	Simon Postlewhite	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



SDG:	150407-5	Location:	Coed Darcy	Order Number:	CD1176
Job:	H_ATKINS_LDC-334	Customer:	Atkins Global Ltd	Report Number:	309873
Client Reference:	North Site POS TP	Attention:	Jack Lowrie	Superseded Report:	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



SDG: 150407-5
Job: H_ATKINS_LDC-334
Client Reference: North Site POS TP

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Jack Lowrie

Order Number: CD1176
Report Number: 309873
Superseded Report:

Test Completion Dates

Lab Sample No(s)	11135987	11136048	11136059	11136067	11136075	11136081	11136088	11136094	11136100	11136013
Customer Sample Ref.	POS001	POS001	POS002	POS002	POS003	POS004	POS005	POS007	POS008	POS009
AGS Ref.										
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50	0.50	0.50
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	21-Apr-2015		21-Apr-2015		21-Apr-2015	21-Apr-2015	21-Apr-2015	21-Apr-2015	21-Apr-2015	21-Apr-2015
EPH CWG (Aliphatic) GC (S)	20-Apr-2015	20-Apr-2015	17-Apr-2015	20-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015
EPH CWG (Aromatic) GC (S)	18-Apr-2015	18-Apr-2015	17-Apr-2015	18-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015
GRO by GC-FID (S)	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015
Metals in solid samples by OES	15-Apr-2015	09-Apr-2015	15-Apr-2015	09-Apr-2015	16-Apr-2015	16-Apr-2015	17-Apr-2015	15-Apr-2015	15-Apr-2015	17-Apr-2015
PAH by GCMS	16-Apr-2015	20-Apr-2015	16-Apr-2015	18-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015
pH	17-Apr-2015	18-Apr-2015	17-Apr-2015	18-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015
Sample description	11-Apr-2015	07-Apr-2015	11-Apr-2015	07-Apr-2015	11-Apr-2015	11-Apr-2015	13-Apr-2015	11-Apr-2015	11-Apr-2015	11-Apr-2015
Total Organic Carbon	17-Apr-2015				17-Apr-2015			20-Apr-2015		
TPH CWG GC (S)	20-Apr-2015	20-Apr-2015	17-Apr-2015	20-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015	17-Apr-2015

Lab Sample No(s)	11136023	11136032	11136041
Customer Sample Ref.	POS009	POS009	POS010
AGS Ref.			
Depth	1.50	2.50	0.50
Type	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples			21-Apr-2015
EPH CWG (Aliphatic) GC (S)	17-Apr-2015	20-Apr-2015	17-Apr-2015
EPH CWG (Aromatic) GC (S)	17-Apr-2015	18-Apr-2015	17-Apr-2015
GRO by GC-FID (S)	17-Apr-2015	17-Apr-2015	17-Apr-2015
Metals in solid samples by OES	17-Apr-2015	14-Apr-2015	17-Apr-2015
PAH by GCMS	16-Apr-2015	17-Apr-2015	18-Apr-2015
pH	17-Apr-2015	17-Apr-2015	18-Apr-2015
Sample description	07-Apr-2015	07-Apr-2015	11-Apr-2015
Total Organic Carbon			17-Apr-2015
TPH CWG GC (S)	17-Apr-2015	20-Apr-2015	17-Apr-2015



SDG: 150407-5
Job: H_ATKINS_LDC-334
Client Reference: North Site POS TP

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Jack Lowrie

Order Number: CD1176
Report Number: 309873
Superseded Report:

Appendix General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill /made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than :
 - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Atkins Global Ltd
Project Jonah site office
Llan Coed House
Suite 24
Coed Darcy
Llandarcy
SA10 6HJ

Attention: Alex Mann

CERTIFICATE OF ANALYSIS

Date: 16 April 2015
Customer: H_ATKINS_LDC
Sample Delivery Group (SDG): 150326-118
Your Reference: POS Zone A
Location: Coed Darcy
Report No: 309380

We received 14 samples on Thursday March 26, 2015 and 14 of these samples were scheduled for analysis which was completed on Thursday April 16, 2015. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager





SDG:	150326-118	Location:	Coed Darcy	Order Number:	CD1164
Job:	H_ATKINS_LDC-329	Customer:	Atkins Global Ltd	Report Number:	309380
Client Reference:	POS Zone A	Attention:	Alex Mann	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
11078536	ZAHP1			24/03/2015
11078537	ZAHP2			24/03/2015
11078538	ZAHP3			24/03/2015
11078539	ZAHP4			24/03/2015
11078540	ZAHP5			24/03/2015
11078541	ZAHP6			24/03/2015
11078542	ZAHP7			24/03/2015
11078544	ZAHP8			24/03/2015
11078546	ZAHP9			24/03/2015
11078549	ZAHP10			24/03/2015
11078553	ZAHP11			24/03/2015
11078554	ZAHP12			24/03/2015
11078555	ZAHP13			24/03/2015
11078556	ZAHP14			24/03/2015

Only received samples which have had analysis scheduled will be shown on the following pages.



SDG: 150326-118
Job: H_ATKINS_LDC-329
Client Reference: POS Zone A

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Alex Mann

Order Number: CD1164
Report Number: 309380
Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		Customer Sample Reference	AGS Reference	Depth (m)	Container
	11078556		ZAHP14			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078555		ZAHP13			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078554		ZAHP12			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078553		ZAHP11			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078549		ZAHP10			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078546		ZAHP9			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078544		ZAHP8			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078542		ZAHP7			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078541		ZAHP6			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078540		ZAHP5			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078539		ZAHP4			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078538		ZAHP3			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078537		ZAHP2			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
	11078536		ZAHP1			250g Amber Jar (AL 60g VOC (ALEE15) 400g Tub (ALEE14)
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 14				
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 14				
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 14				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 14				
Metals in solid samples by OES	All	NDPs: 0 Tests: 14				
PAH by GCMS	All	NDPs: 0 Tests: 14				
pH	All	NDPs: 0 Tests: 14				
Sample description	All	NDPs: 0 Tests: 14				
Total Organic Carbon	All	NDPs: 0 Tests: 14				
TPH CWG GC (S)	All	NDPs: 0 Tests: 14				



SDG:	150326-118	Location:	Coed Darcy	Order Number:	CD1164
Job:	H_ATKINS_LDC-329	Customer:	Atkins Global Ltd	Report Number:	309380
Client Reference:	POS Zone A	Attention:	Alex Mann	Superseded Report:	

SOLID
Results Legend

- X

 Test
- N

 No Determination Possible

Lab Sample No(s)

11078556

Customer
Sample Reference

Z4HP14

AGS Reference

Depth (m)

Container

60g VOC (ALE215)
400g Tub (ALE214)

Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 14	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 14	X
pH	All	NDPs: 0 Tests: 14	X



SDG:	150326-118	Location:	Coed Darcy	Order Number:	CD1164
Job:	H_ATKINS_LDC-329	Customer:	Atkins Global Ltd	Report Number:	309380
Client Reference:	POS Zone A	Attention:	Alex Mann	Superseded Report:	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
11078536	ZAHP1		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078537	ZAHP2		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Crushed Brick	Stones
11078538	ZAHP3		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078539	ZAHP4		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078540	ZAHP5		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078541	ZAHP6		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078542	ZAHP7		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Crushed Brick	Stones
11078544	ZAHP8		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078546	ZAHP9		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078549	ZAHP10		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078553	ZAHP11		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078554	ZAHP12		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078555	ZAHP13		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
11078556	ZAHP14		Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Order Number: CD1164
Report Number: 309380
Superseded Report:

Page 6 of 20

Order Number: CD1164
Report Number: 309380
Superseded Report:

Page 7 of 20



CERTIFICATE OF ANALYSIS

SDG:	150326-118	Location:	Coed Darcy	Order Number:	CD1164
Job:	H_ATKINS_LDC-329	Customer:	Atkins Global Ltd	Report Number:	309380
Client Reference:	POS Zone A	Attention:	Alex Mann	Superseded Report:	

Results Legend		Customer Sample R	ZAHP13		ZAHP14					
#	ISO17025 accredited.									
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted test.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-5&*\$@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Moisture Content Ratio (% of as received sample)	%	PM024	26		22					
Organic Carbon, Total	<0.2 %	TM132	3.28		4.85					
			M		M					
pH	1 pH Units	TM133	5.9		5.93					
			M		M					
Arsenic	<0.6 mg/kg	TM181	94.7		118					
			M		M					
Cadmium	<0.02 mg/kg	TM181	2.49		3.61					
			M		M					
Chromium	<0.9 mg/kg	TM181	20.1		24.2					
			M		M					
Copper	<1.4 mg/kg	TM181	201		269					
			M		M					
Lead	<0.7 mg/kg	TM181	115		136					
			M		M					
Mercury	<0.14 mg/kg	TM181	<0.14		<0.14					
			M		M					
Nickel	<0.2 mg/kg	TM181	28		34.2					
			M		M					
Selenium	<1 mg/kg	TM181	1.26		1.57					
			#		#					
Vanadium	<0.2 mg/kg	TM181	37.8		43.9					
			#		#					
Zinc	<1.9 mg/kg	TM181	281		404					
			M		M					
							</			

Order Number: CD1164
Report Number: 309380
Superseded Report:

Page 9 of 20

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Alex Mann

Order Number: CD1164
Report Number: 309380
Superseded Report:

[illegible]

Order Number: CD1164
Report Number: 309380
Superseded Report:

Page 11 of 20



CERTIFICATE OF ANALYSIS

SDG: 150326-118
Job: H_ATKINS_LDC-329
Client Reference: POS Zone A

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Alex Mann

Order Number: CD1164
Report Number: 309380
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample R		ZAHP1	ZAHP2	ZAHP3	ZAHP4	ZAHP5	ZAHP6
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
M	mCERTS accredited.				24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted test.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-5&\$@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
GRO Surrogate % recovery**	%	TM089			79	83	89	88	90	81
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089			<176 M	<176 M	<176 M	<176 M	<176 M	<176 M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089			<20 M	<20 M	<20 M	<20 M	<20 M	<20 M
Benzene	<10 µg/kg	TM089			<40 M	<40 M	<40 M	<40 M	<40 M	<40 M
Toluene	<2 µg/kg	TM089			<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Ethylbenzene	<3 µg/kg	TM089			<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
m,p-Xylene	<6 µg/kg	TM089			<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
o-Xylene	<3 µg/kg	TM089			<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089			<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089			<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089			<40	<40	<40	<40	<40	<40
Aliphatics >C6-C8	<10 µg/kg	TM089			<40	<40	<40	<40	<40	<40
Aliphatics >C8-C10	<10 µg/kg	TM089			<40	<40	<40	<40	<40	<40
Aliphatics >C10-C12	<10 µg/kg	TM089			<40	<40	<40	<40	<40	<40
Aliphatics >C12-C16	<100 µg/kg	TM173			68100	3470	11800	4850	10500	7360
Aliphatics >C16-C21	<100 µg/kg	TM173			190000	33100	73100	34100	35700	25600
Aliphatics >C21-C35	<100 µg/kg	TM173			312000	91500	99300	80900	90100	81800
Aliphatics >C35-C44	<100 µg/kg	TM173			52700	10600	11600	9190	25500	24600
Total Aliphatics >C12-C44	<100 µg/kg	TM173			623000	139000	196000	129000	162000	139000
Aromatics >EC5-EC7	<10 µg/kg	TM089			<40	<40	<40	<40	<40	<40
Aromatics >EC7-EC8	<10 µg/kg	TM089			<40	<40	<40	<40	<40	<40
Aromatics >EC8-EC10	<10 µg/kg	TM089			<40	<40	<40	<40	<40	<40
Aromatics >EC10-EC12	<10 µg/kg	TM089			<40	<40	<40	<40	<40	<40
Aromatics >EC12-EC16	<100 µg/kg	TM173			7320	2990	<100	2970	1880	1730
Aromatics >EC16-EC21	<100 µg/kg	TM173			76500	12300	11800	11500	9790	8240
Aromatics >EC21-EC35	<100 µg/kg	TM173			275000	82900	69500	74800	62300	59400
Aromatics >EC35-EC44	<100 µg/kg	TM173			74100	32300	23100	29600	29900	21300
Aromatics >EC40-EC44	<100 µg/kg	TM173			26000	12100	7030	10700	7890	6690
Total Aromatics >EC12-EC44	<100 µg/kg	TM173			433000	131000	104000	119000	104000	90700
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173			1060000	269000	300000	248000	266000	230000



CERTIFICATE OF ANALYSIS

SDG: 150326-118
Job: H_ATKINS_LDC-329
Client Reference: POS Zone A

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Alex Mann

Order Number: CD1164
Report Number: 309380
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample R		ZAHP7	ZAHP8	ZAHP9	ZAHP10	ZAHP11	ZAHP12
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Soil/Solid 24/03/2015	Soil/Solid 24/03/2015	Soil/Solid 24/03/2015	Soil/Solid 24/03/2015	Soil/Solid 24/03/2015	Soil/Solid 24/03/2015
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted test.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery				26/03/2015 150326-118 11078542	26/03/2015 150326-118 11078544	26/03/2015 150326-118 11078546	26/03/2015 150326-118 11078549	26/03/2015 150326-118 11078553	26/03/2015 150326-118 11078554
(F)	Trigger breach confirmed									
1-5&\$@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
GRO Surrogate % recovery**	%	TM089	87	94	76	100	74	88		
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<176 M	<176 M	<176 M	<176 M	<176 M	<176 M	<176 M	<176 M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<20 M	<20 M	<20 M	<20 M	<20 M	<20 M	<20 M	<20 M
Benzene	<10 µg/kg	TM089	<40 M	<40 M	<40 M	<40 M	<40 M	<40 M	<40 M	<40 M
Toluene	<2 µg/kg	TM089	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Ethylbenzene	<3 µg/kg	TM089	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
m,p-Xylene	<6 µg/kg	TM089	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
o-Xylene	<3 µg/kg	TM089	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	<40	<40	<40	<40	<40	<40	<40	<40
Aliphatics >C6-C8	<10 µg/kg	TM089	<40	<40	<40	<40	<40	<40	<40	<40
Aliphatics >C8-C10	<10 µg/kg	TM089	<40	<40	<40	<40	<40	<40	<40	<40
Aliphatics >C10-C12	<10 µg/kg	TM089	74.4	<40	<40	<40	<40	<40	<40	<40
Aliphatics >C12-C16	<100 µg/kg	TM173	13200	3640	6710	<100	<100	<100	<100	<100
Aliphatics >C16-C21	<100 µg/kg	TM173	16100	9330	75900	1150	<100	<100	<100	<100
Aliphatics >C21-C35	<100 µg/kg	TM173	75700	23600	191000	12300	1340	<100	<100	<100
Aliphatics >C35-C44	<100 µg/kg	TM173	6780	2340	28100	<100	<100	<100	<100	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173	112000	39000	302000	13500	1340	<100	<100	<100
Aromatics >EC5-EC7	<10 µg/kg	TM089	<40	<40	<40	<40	<40	<40	<40	<40
Aromatics >EC7-EC8	<10 µg/kg	TM089	<40	<40	<40	<40	<40	<40	<40	<40
Aromatics >EC8-EC10	<10 µg/kg	TM089	<40	<40	<40	<40	<40	<40	<40	<40
Aromatics >EC10-EC12	<10 µg/kg	TM089	49.6	<40	<40	<40	<40	<40	<40	<40
Aromatics >EC12-EC16	<100 µg/kg	TM173	3650	<100	3830	<100	<100	<100	<100	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173	9860	2460	25300	545	427	548		
Aromatics >EC21-EC35	<100 µg/kg	TM173	76100	16700	191000	7890	4130	6470		
Aromatics >EC35-EC44	<100 µg/kg	TM173	13800	2970	64700	1920	114	928		
Aromatics >EC40-EC44	<100 µg/kg	TM173	4350	<100	22000	100	<100	<100	<100	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	103000	22100	285000	10400	4670	7950		
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	215000	61100	587000	23800	6010	7950		



CERTIFICATE OF ANALYSIS

SDG: 150326-118
Job: H_ATKINS_LDC-329
Client Reference: POS Zone A

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Alex Mann

Order Number: CD1164
Report Number: 309380
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample R	ZAHPI3	ZAHPI4				
#	ISO17025 accredited.							
M	mCERTS accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Soil/Solid 24/03/2015 26/03/2015 150326-118 11078555	Soil/Solid 24/03/2015 26/03/2015 150326-118 11078556				
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	75	64				
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<176 M	<176 M				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<20 M	<20 M				
Benzene	<10 µg/kg	TM089	<40 M	<40 M				
Toluene	<2 µg/kg	TM089	<8 M	<8 M				
Ethylbenzene	<3 µg/kg	TM089	<12 M	<12 M				
m,p-Xylene	<6 µg/kg	TM089	<24 M	<24 M				
o-Xylene	<3 µg/kg	TM089	<12 M	<12 M				
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9				
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24				
Aliphatics >C5-C6	<10 µg/kg	TM089	<40	<40				
Aliphatics >C6-C8	<10 µg/kg	TM089	<40	<40				
Aliphatics >C8-C10	<10 µg/kg	TM089	<40	<40				
Aliphatics >C10-C12	<10 µg/kg	TM089	<40	<40				
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	<100				
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	<100				
Aliphatics >C21-C35	<100 µg/kg	TM173	6130	9760				
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100				
Total Aliphatics >C12-C44	<100 µg/kg	TM173	6130	9760				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<40	<40				
Aromatics >EC7-EC8	<10 µg/kg	TM089	<40	<40				
Aromatics >EC8-EC10	<10 µg/kg	TM089	<40	<40				
Aromatics >EC10-EC12	<10 µg/kg	TM089	<40	<40				
Aromatics >EC12-EC16	<100 µg/kg	TM173	<100	<100				
Aromatics >EC16-EC21	<100 µg/kg	TM173	1110	1210				
Aromatics >EC21-EC35	<100 µg/kg	TM173	11000	11100				
Aromatics >EC35-EC44	<100 µg/kg	TM173	2090	2340				
Aromatics >EC40-EC44	<100 µg/kg	TM173	<100	321				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	14200	14700				
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	20300	24400				



SDG:	150326-118	Location:	Coed Darcy	Order Number:	CD1164
Job:	H_ATKINS_LDC-329	Customer:	Atkins Global Ltd	Report Number:	309380
Client Reference:	POS Zone A	Attention:	Alex Mann	Superseded Report:	

Asbestos Identification - Solid Samples

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP1 SOLID 24/03/2015 00:00:00 03/04/2015 03:41:48 150326-118 11078536 TM048	16/04/15	Kevin Gill	Loose fibres in soil	Not Detected (#)	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP2 SOLID 24/03/2015 00:00:00 09/04/2015 20:02:23 150326-118 11078537 TM048	16/04/15	Kevin Gill	Loose fibres in soil	Not Detected (#)	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP3 SOLID 24/03/2015 00:00:00 09/04/2015 19:54:38 150326-118 11078538 TM048	16/04/15	Kevin Gill	Soil containing loose fibres and ACM debris	Not Detected (#)	Trace (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP4 SOLID 24/03/2015 00:00:00 09/04/2015 19:56:18 150326-118 11078539 TM048	16/04/15	Kevin Gill	Soil containing loose fibres and ACM debris	Not Detected (#)	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP5 SOLID 24/03/2015 00:00:00 09/04/2015 20:00:40 150326-118 11078540 TM048	16/04/15	Kevin Gill	Soil containing loose fibres and ACM debris	Not Detected (#)	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

SDG: 150326-118
Job: H_ATKINS_LDC-329
Client Reference: POS Zone A

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Alex Mann

Order Number: CD1164
Report Number: 309380
Superseded Report:

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP6 SOLID 24/03/2015 00:00:00 09/04/2015 19:53:10 150326-118 11078541 TM048	16/04/15	Kevin Gill	Loose fibres in soil	Not Detected (#)	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP7 SOLID 24/03/2015 00:00:00 09/04/2015 19:47:32 150326-118 11078542 TM048	16/04/15	Kevin Gill	Soil containing loose fibres and ACM debris	Not Detected (#)	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP8 SOLID 24/03/2015 00:00:00 09/04/2015 19:42:10 150326-118 11078544 TM048	16/04/15	Kevin Gill	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP9 SOLID 24/03/2015 00:00:00 09/04/2015 19:58:07 150326-118 11078546 TM048	16/04/15	Kevin Gill	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP10 SOLID 24/03/2015 00:00:00 09/04/2015 20:04:40 150326-118 11078549 TM048	16/04/15	Kevin Gill	Loose fibres in soil	Not Detected (#)	Trace (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP11 SOLID 24/03/2015 00:00:00 09/04/2015 19:49:35 150326-118 11078553 TM048	16/04/15	Kevin Gill	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

SDG: 150326-118
Job: H_ATKINS_LDC-329
Client Reference: POS Zone A

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Alex Mann

Order Number: CD1164
Report Number: 309380
Superseded Report:

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP12 SOLID 24/03/2015 00:00:00 03/04/2015 03:44:53 150326-118 11078554 TM048	16/04/15	Kevin Gill	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP13 SOLID 24/03/2015 00:00:00 09/04/2015 19:40:17 150326-118 11078555 TM048	16/04/15	Kevin Gill	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	ZAHP14 SOLID 24/03/2015 00:00:00 09/04/2015 19:51:27 150326-118 11078556 TM048	16/04/15	Kevin Gill	Loose fibres in soil	Not Detected (#)	Detected (#)	Trace (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



SDG:	150326-118	Location:	Coed Darcy	Order Number:	CD1164
Job:	H_ATKINS_LDC-329	Customer:	Atkins Global Ltd	Report Number:	309380
Client Reference:	POS Zone A	Attention:	Alex Mann	Superseded Report:	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



SDG: 150326-118
Job: H_ATKINS_LDC-329
Client Reference: POS Zone A

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Alex Mann

Order Number: CD1164
Report Number: 309380
Superseded Report:

Test Completion Dates

Lab Sample No(s)	11078536	11078537	11078538	11078539	11078540	11078541	11078542	11078544	11078546	11078549
Customer Sample Ref.	ZAHP1	ZAHP2	ZAHP3	ZAHP4	ZAHP5	ZAHP6	ZAHP7	ZAHP8	ZAHP9	ZAHP10
AGS Ref.										
Depth										
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015
EPH CWG (Aliphatic) GC (S)	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015
EPH CWG (Aromatic) GC (S)	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015
GRO by GC-FID (S)	06-Apr-2015	06-Apr-2015	06-Apr-2015	06-Apr-2015	06-Apr-2015	06-Apr-2015	06-Apr-2015	06-Apr-2015	06-Apr-2015	06-Apr-2015
Metals in solid samples by OES	10-Apr-2015	10-Apr-2015	08-Apr-2015	08-Apr-2015	10-Apr-2015	10-Apr-2015	08-Apr-2015	10-Apr-2015	10-Apr-2015	10-Apr-2015
PAH by GCMS	07-Apr-2015	07-Apr-2015	07-Apr-2015	07-Apr-2015	07-Apr-2015	07-Apr-2015	07-Apr-2015	07-Apr-2015	07-Apr-2015	07-Apr-2015
pH	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015
Sample description	03-Apr-2015	03-Apr-2015	03-Apr-2015	03-Apr-2015	03-Apr-2015	03-Apr-2015	03-Apr-2015	03-Apr-2015	03-Apr-2015	03-Apr-2015
Total Organic Carbon	13-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015	13-Apr-2015	13-Apr-2015	16-Apr-2015	13-Apr-2015	15-Apr-2015	13-Apr-2015
TPH CWG GC (S)	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015

Lab Sample No(s)	11078553	11078554	11078555	11078556
Customer Sample Ref.	ZAHP11	ZAHP12	ZAHP13	ZAHP14
AGS Ref.				
Depth				
Type	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015
EPH CWG (Aliphatic) GC (S)	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015
EPH CWG (Aromatic) GC (S)	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015
GRO by GC-FID (S)	06-Apr-2015	06-Apr-2015	06-Apr-2015	06-Apr-2015
Metals in solid samples by OES	08-Apr-2015	10-Apr-2015	08-Apr-2015	08-Apr-2015
PAH by GCMS	07-Apr-2015	07-Apr-2015	07-Apr-2015	07-Apr-2015
pH	16-Apr-2015	16-Apr-2015	16-Apr-2015	16-Apr-2015
Sample description	03-Apr-2015	03-Apr-2015	03-Apr-2015	03-Apr-2015
Total Organic Carbon	16-Apr-2015	13-Apr-2015	16-Apr-2015	16-Apr-2015
TPH CWG GC (S)	15-Apr-2015	15-Apr-2015	15-Apr-2015	15-Apr-2015



SDG: 150326-118
Job: H_ATKINS_LDC-329
Client Reference: POS Zone A

Location: Coed Darcy
Customer: Atkins Global Ltd
Attention: Alex Mann

Order Number: CD1164
Report Number: 309380
Superseded Report:

Appendix General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill /made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

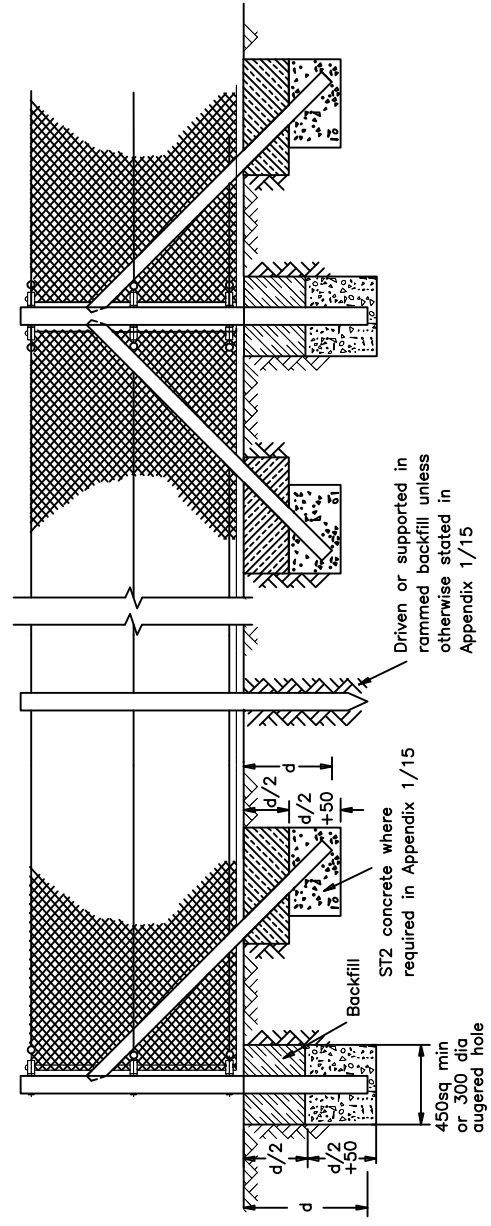
Estimation of fibre content is not permitted as part of our UKAS accredited test other than :
 - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

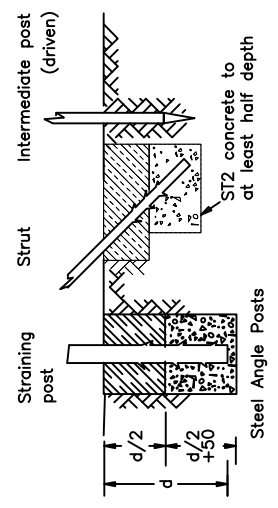
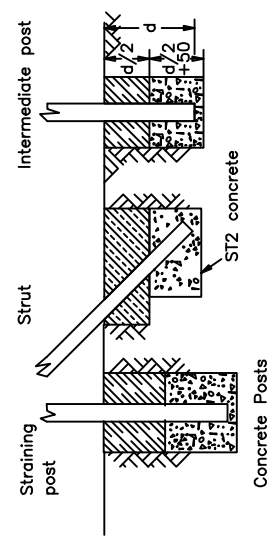
The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix F – Typical Fencing Details

NOTE: TYPICAL FENCING DETAIL ONLY< ALL PROPOSED FENCING IS SUBJECT TO
PRIOR AGREEMENT WITH THE LOCAL PLANNING AUTHORITY



DETAIL FOR TIMBER POSTS



VARIATIONS FOR POSTS OF MATERIALS OTHER THAN TIMBER

NOTES

1. B.S.1722 Part 1 applies unless otherwise stated.
2. Dimensions of foundation, type and size of posts, struts and mesh, etc. shall be taken from B.S.1722 Part 1 appropriate to the height and with any other requirement described in Appendix 1/15 and on the Drawings.
3. Plastic coating when required in Appendix 1/15 shall comply with Specification Clauses 2604 and 2605.
4. Plastic coating material shall not be acceptable where serious damage has occurred to the coating before or during erection. Minor defects must be sprayed with an approved plastic paint within 24 hours of erection.
5. All timber shall comply with Specification Clause 304 unless otherwise stated in Appendix 1/15.
6. Where a fence forms a boundary between the highway and private property the wire shall be fixed to the highway side unless otherwise stated in Appendix 1/15.
7. Timber posts and struts may be supported in rammed backfill unless otherwise stated in Appendix 1/15.
8. ALL DIMENSIONS ARE IN MILLIMETRES.

HIGHWAY CONSTRUCTION DETAILS		FENCES, STILES & GATES		ACCOMMODATION WORKS CHAIN LINK FENCES		Drawing No.
						H11
D	MAY 04					
C	MAR 98					
B	AUG 93					
A	DEC 91					
Issue		Date				

Appendix G – East Bay Shoreline Improvement

Subject: East Bay Bank Works – October 2015

Reference: 5041216-REM-TN-001462

Revision: 1

Author: Mike Poland

Checker: Barney Irlam

Issued to: Rhys Mander - Aecom

Reviewer: Michelle Lee

Date: 8/10/15

Authoriser: Mike Poland

The following Technical Note provides an update as of October 2015 on works to manage residual hydrocarbon seeps and sheens at East Bay. The purpose of the note is to provide additional data to the Monitor to allow production of a Remediation Completion Works Certificate for this area.

East Bay Observations

East Bay comprises Monitor Phase 10. A remediation sign-off report has been provided previously (Atkins Ref 5041216-REM-TN-1402, May 2015). This report indicated that remediation works were complete although a small area of moderate impact was still present in the form of slight sheening and evidence of staining around the south east bank of East Bay (adjacent to a small stone wall which formed part of the former oil interceptor). The location of this area is shown on Atkins drawing 5041216-REM-DWG-1960. Photo 1 is taken of this area in May 2015.



Photo 1 - May 2015 – Location of residual staining.

A site visit undertaken to East Bay in September 2015 confirmed the continued presence of localised soil impact which, when disturbed, was confirmed as a soft oil stained clay which released a slight water/oil seepage from the base of the wall (Photo 2). However, there were no visual indications of oily free phase, sheening or iridescence on the surface of the water adjacent. Similarly, disturbance of the silt at the waters edge along this area of bank did not liberate any notable sheens or iridescence (Photo 3). The conclusion was reached that although impacted locally the presence of residual hydrocarbons materials did not appear to be having a significant detrimental impact on water quality in East Bay.



Photo 2 – September 2015, area of residual hydrocarbon staining adjacent stone wall



Photo 3 – Waters edge adjacent impacted area, no free phase or iridescence noted during the inspection

The Works

Notwithstanding the likelihood of 'low impact', materials displaying the residual impact were removed by mechanical excavator on 2nd October 2015. The works also included the removal of the stone wall which fronted the old separator including impacted materials at the base which was the source of the water/oil seepage noted during the previous inspection. Works extended beyond the ends of the wall section to ensure all impacted materials were recovered. On removal a base of visibly clean clay was observed. Approximately

25m³ of soil was removed from the area and taken to the North Site treatment pad. During the works the opportunity was also taken to remove some redundant surface pipework and a rusted empty barrel which had been discarded at the surface. Photos 4 to 7 provide a visual record of the works.



Photo 4 – works area prior to commencement



Photo 5 – Excavator positioned and excavating in front of former interceptor wall



Photo 6 – Excavations stirring waters edge – note lack of release oil or iridescence



Photo 7 – Excavation adjacent the former interceptor wall, note clean underlying clay and residual oil/water seepage from the base of the interceptor wall (removed during the works)



Photo 8 – Typical spoil removed from site to the treatment pad



Photo 9 – Base of excavation on completion



Photo 10 – Works area on completion

On completion localised iridescence and some minor residual oil released during the works was noted. On inspection following the works on 7th October pockets of residual oil had still to disperse (Photo 11) and will be removed manually by oil absorbent pad.



Photo 11 – residual oily residues to be monitored and removed as required

Summary and Conclusion

The works to remove the impacted soil were commenced and completed on 2nd October 2015. The works are considered to have satisfactorily removed residual surface materials from the area of the former separator. As with other water bodies across the Coed Darcy site Easy Bay will continue to be monitored for 'seeps and sheens' although the likelihood of significant impacts in this respect is considered low.

As a general observation, around East Bay plant re-growth is well established following remediation works in 2010/11 (Photo 12). Former operational areas such as the oil interceptor (Photo 13) are also well vegetated with no visual evidence of hydrocarbons impacts at the surface or on standing water.



Photo 12 – Abundant vegetation re-growth around East Bay

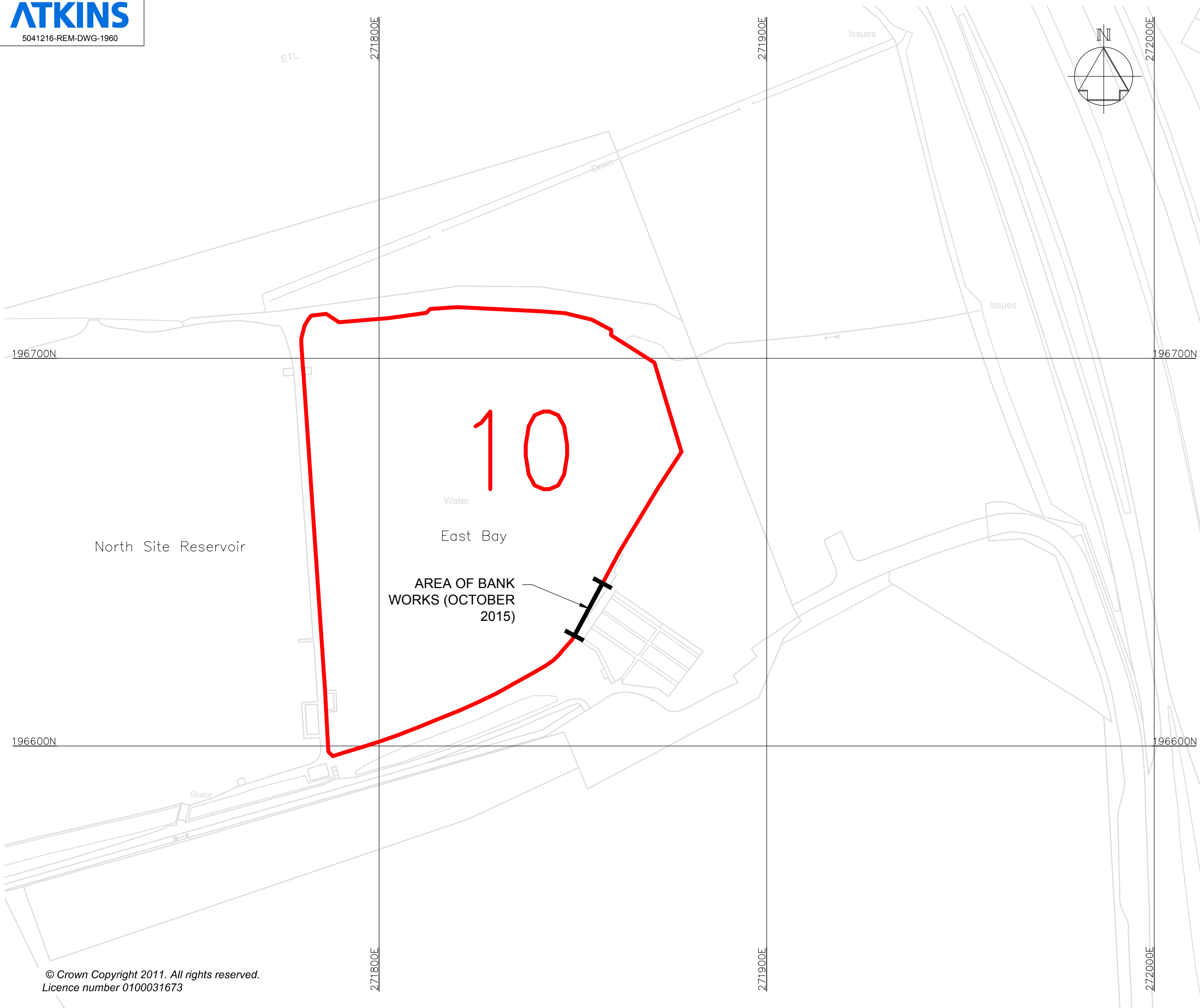


Photo 13 – Area of former oil separator

Drawing

5041216-REM-DWG-1960

Site Plan and Works Area



Key

Phase boundary

REVISIONS				Drawn By	Checked By	Date
PURPOSE OF ISSUE				Rev.	Authorised for issue	Date
Atkins Limited						
Telford Office				Birmingham Office		
Cornerstone House				The Axis, 10 Holliday Street		
Stafford Park 13				Birmingham		
Telford TF3 3AZ				West Midlands B1 1TF		
Tel 01952 201234				Tel 0121 483 5000		
Fax 01952 200981				Fax 0121 483 5252		
THIS DRAWING IS NOT TO BE SCALED						
CLIENT						
ST.MODWEN						
PROJECT						
Coed Darcy Urban Village						
DRAWING TITLE						
Monitor Phase 10						
East Bay RAP Works						
SCALES	DRAWN	CHECKED	CO-ORD CHECK			
1:1000	MJ	RW				
	DATE	DATE	DATE			
	21.07.11	21.07.11				
0			SHEET	PLOT DATE		
DRAWING NO			A3	08.10.15		
5041216-REM-DWG-1960			REV	-		

Appendix B. South Site Reservoir Woodland (Zone B)

Technical Note 1384

Subject:	Coed Darcy – Open Space Zone B (South Site Reservoir Woodland)		
Reference:	5041216-REM-TN-1384	Revision:	A
Author:	Alex Mann	Checker:	Matthew Timmins
Issued to:	Rhys Mander (AECOM)	Reviewer:	Michelle Lee
Date:	October 2015	Authoriser:	Mike Poland

1. Introduction

This Technical Note relates to the assessment and validation of an area of open space known as the ‘South Site Reservoir Woodland’, which forms one part of Monitor Phase 39 (refer to Atkins Drawing 5041216-REM-DWG-1661 P4) within the former Llandarcy Oil Refinery, Neath. Based on the current Masterplan, this area is shown to remain as Open Space (woodland) within the final development.

For ease of reference, the ‘South Site Reservoir Woodland’ is referred to as ‘Zone B’ to correspond with the areas set out in the overarching Monitor Phase 39 report (5041216-REM-RPT-1340 Rev A).

2. The Site

Zone B is an irregular shaped parcel of land covering 6.65ha (hectares) and forms part of a swathe of existing green space along the north eastern boundary of the former refinery. The extent of the area under consideration is shown on Atkins Drawing 5041216-REM-DWG-1786 P2.

Zone B is split in to two main areas by the presence of a live railway which lies in a cutting and bisects the site from north west to south east (Atkins Drawing 5041216-REM-DWG-1786 P2). The northern section of the site is bound to the north by existing residential housing and the Crymlyn Road, to the east by the North Site Reservoir (NSR), to the south by the live railway and the west by existing woodland.

The southern section of the site is bound to the west by Crymlyn Bog SSSI, the south by proposed open space (Zone C), to the east by proposed residential phases of the wider Coed Darcy site and to the north by the live railway. The site also surrounds, but does not include, the South Site Reservoir (SSR) in the centre of the site which is to be retained and will be subject to separate sign off for an open space end use.

Existing vegetation within this area comprises grassland, dense semi mature and mature woodland with scrub rough grasses and gorse dominating the remaining areas. The topography in Zone B varies due to the presence of former railway embankments and the NSR dam which govern the high points of Zone B. The levels in the northern section of the site generally fall towards the west from approximately 32 metres above ordnance datum (mAOD) to the lowest point of approximately 27.5m AOD. The levels in the southern section of the site generally fall towards the west from approximately 30m AOD to 15m AOD. Selected photographs are attached for reference (Appendix A).

The final design for this area has not yet been defined but is anticipated to remain as an area of proposed woodland with a potential small playing field in the south of the site. Strategic proposals for these woodland and heathland areas, within the final development, are discussed in Atkins report 5041216-ECO-RPT-486.

3. Site History

Construction of Llandarcy Oil refinery commenced in 1917 but was temporarily suspended during the war due to the lack of men and resources. Construction started again in 1919 with production beginning in 1921. The refinery was officially opened in 1922.

The purpose of the refinery was to produce motor spirit, kerosene, gas fuel oil, fuel residue and lubricating oil and wax from imported crude oil. Between the wars, the oil industry developed rapidly. By 1939, the refinery had little of the original plant in operation.

In the mid 1980's a number of rationalisations occurred with the closure of the refinery being formally announced in 1997.

Based on the desk study for the former refinery (URS Report BRRP0001), historical activities within Zone B included two pump houses (and ancillary concrete culverts) which were associated with the balancing of water between the SSR and NSR. Zone B also encompasses a thin strip of land along the NSR reservoir wall and part of the southern end of the buttress which remains unchanged from historical plans to present day.

The desk study shows Zone B had two sections of railway sidings, forming a triangular rail line feature, which allowed rail access and egress from the north and south of the former refinery. Historical plans show backfilling along these areas to form the embankments which are still present today.

A brick constructed oil water separator, which continues to be operational, is shown to be located within the triangular rail feature which historically took effluent from the NSR and subsequently discharged it in to the SSR via a tunnel and spillway. A small pump house and above ground storage tank is also known to be present immediately adjacent to the separator feature but is no longer operational.

The site boundary, does not include but, wraps around the SSR (RAP Feature 21) which was drained to allow removal of hydrocarbon impacted sludge from the base of the water body. The de-sludging works were undertaken between January to July 2011 by Celtic Technologies Ltd (see Atkins report 5041216-RAP-TN-677). A draft RAP works certificate was issued by the monitor in October 2011 for these works.

The walkway around the SSR is shown to have had very little historical operations with the exception of the small brick built separator feature located on the northern edge of the SSR, along an unnamed stream flowing towards Crymlyn Bog in the west.

Historical plans show Tal y Fedw Farm to be located in the far west of the site and comprising a series of farm buildings and paddocks. The fields to the south of the farm remain unchanged from historical plans.

The location of known historical refinery activities within Zone B is shown on Drawing 5041216-REM-DWG-1821 P2.

4. Site Walkover

Atkins undertook a site walkover of Zone B in February 2015 to assess the potential for any proposed ground investigation and to also look for any obvious visual indicators of contamination or possible sources of contamination. A selection of photographs, taken during the walkover, are presented as Appendix A and the corresponding location drawing is shown as 5041216-REM-DWG-1786 P2.

During the walkover, approximately 65 percent of the site area within Zone B was found to be inaccessible for ground investigation due to proximity to open water and/or dense vegetation. The remainder of Zone B comprises mainly overgrown scrub and gravelly disturbed ground.

Details of all constraints to any proposed investigation within Zone B are highlighted on drawing 5041216-REM-DWG-1795 P2. Breakouts of ochre were identified in two places and on the discharge route (tunnel/spillway) from the separators to SSR as shown on drawing 5041216-REM-DWG-1796 P2.

A number of free product recovery sumps were identified within this Zone during the walkover. These features form part of the Remedial Action Plan (RAP) features 3 and 4, as defined within Schedule 7 of the S106. Details relating to these features are provided in Atkins report 5041216-RAP-RPT-770. The result of ground investigation carried out as part of the assessment of these features is summarised in Section 5.1.

No obvious evidence of gross contamination (excluding what was collected in the separators) was noted within this area during the walkover.

5. Historical Ground Investigation

Historical ground investigation data for Zone B (URS Report FR1287) suggests a total of 43 exploratory hole locations (6 locations with multiple installations) within this area, as shown on drawing 5041216-REM-DWG-1805 P2. Copies of available exploratory hole logs for these locations are collated in Appendix B. Nine logs were not found in the desk study appendices but are shown on the ground investigation drawings and monitoring data. The missing logs relate to MSTP195&A, RHRW033A&B, RHRW034B, RHRW035, RHRW041, MSTP256 and MSTP249.

A review of the available logs indicate Made Ground was present overlying natural soils in 29 locations, which is consistent with the historical uses of these locations (bunds, railway sidings and infrastructure). The Made Ground is reported to generally comprise soft to firm clays and loose gravels/sands of ash, clinker, coal, wood, and brick fragments. The depth of Made Ground was not proven in 5 locations, with depths recorded to >3.5mbgl. Where the thickness of Made Ground was proven, it ranged from 0.15m in RHRW027 to 2.5m in MSTP257.

Underlying the Made Ground (where present), the near surface soils comprised varying sequences of silts, clays, sands and gravels which extended, where proven, to depths between 1.4 (RHRW030c) and 9.3m bgl (MSMW108d).

Bedrock is reported in five locations where the base of near surface soils was proven, however, gravelly horizons were encountered at a number of locations above the bedrock which may be considered to represent weathered bedrock. The bedrock comprised interbedded sandstones and siltstones.

A review of the available logs indicates that strong to very strong hydrocarbon odours were encountered in 16 locations within Zone B. Free product was noted to have been encountered in the following exploratory holes:

RHRW043 (2 to 2.2m bgl) – Described as ‘*Strong heavy hydrocarbon odour and staining and product*’

RHRW045 (0.9 to 1.5m bgl) – Described as ‘*black staining*’ with ‘*Less product*’ from 1.5m bgl.

MSTP221 (0.9m bgl) – Described as ‘*Possible product oozing from side b at approx.. 0.9 mbgl*’

A summary of the results of historical laboratory analysis on thirteen samples from Zone B (7 shallow and 6 deep) is presented in Appendix C. The analysis indicates that there were no exceedances of the adopted thresholds for retention at shallow depth within in area of Public Open Space.

Reference to historic borehole monitoring in URS Report FR1287 indicates that groundwater levels are recorded to lie at approximate depths of between 0.107m bgl (MSMW103s) to 5.509m bgl (MSMW104). Product was noted to have been recorded in thirteen wells with thicknesses generally 0.001m with a maximum thickness of 0.478m in RHRW049d. Subsequent monitoring rounds undertaken by URS (FR1287) on this hole saw a reduction in product thickness to 0.059. RAP monitoring undertaken by Atkins in 2010 identified evidence of product in three wells with only one well (RHRW035) where it was measureable at 0.02m in thickness.

5.1 Atkins Works Associated with RAP Features 3 and 4

A number of subsequent investigations and product recovery works have been undertaken in Zone B following the initial ground investigation (section 5) and are more specifically discussed in the following Atkins reports and technical notes.

- RAP Features 2,3,4 & 5, Western Margin RAP Works Assessment Report. 5041216-RAP-RPT-770. April 2012.

The performance criteria for RAP Features 3 and 4 within the S106 states the following:

- *Install permanent measures to prevent free product from crossing the site boundary and entering Crymlyn Bog to the satisfaction of the Environment Agency (EA) and Countryside Council for Wales (CCW), (RAP 2, 3 & 5)*
- *Install permanent system to prevent free product migration to railhead to satisfaction of EA and NPT (RAP 4)*

Following a review of the available historical data for the RAP features, Atkins undertook a series of trial pits (5041216-REM-DWG-1805 P2). Copies of available exploratory hole logs for these locations are collated in Appendix B.

5.1.1 Investigation and Monitoring 2009

A series of trial pits were excavated in each of the respective RAP features to further investigate the areas of contamination in Zone B as described below. Draw down tests were also carried out in two existing historical exploratory holes (RHRW029 and RHRW035) with product returning to both of them. A second monitoring round of these boreholes was undertaken two weeks later which showed no change in RHRW035 with a product thickness of 0.01m, however, RHRW029 recorded no product.

RAP 3 Trench (MP301-306)

- Trial pits MP301-306 were positioned along the proposed location of RAP 3 trench and recorded a thin layer of Made Ground to depths of between 0.3m (MP301, 302 & 304) and 0.5m (MP303). The Made Ground predominantly comprised coarse gravel of sandstone.
- Glacial Deposits underlie the Made Ground in the six trial pits but was not proven beyond 2.8m (MP303). Hydrocarbon staining and odours were noted throughout the Glacial Deposits underlying the Made Ground in trial pits MP301-306. These monitoring pits are localised and are adjacent to RAP Feature 3. No recoverable mobile free phase was observed.
- Evidence of a hydrocarbon sheen was recorded within trial pits MP302, MP303 and MP304 for the duration of the monitoring programme. Ocherous discolouration was also noted in the groundwater within MP302 but absent in MP303 and MP304.
- Trial pits MP305 and 306 were excavated on 9 July 2008 and remained open for one monitoring round on the 10 July 2009. Evidence of hydrocarbon was not recorded within MP305 but an ocherous discolouration was noted whilst MP306 remained clear.
- Ocherous discolouration was noted in MP301 during the monitoring visits.
- Three monitoring sumps (WMS9-WMS11) were installed adjacent to the SSR and were monitored once a week for 13 weeks from February 2010 for the presence/absence of free product

RAP Feature 4 (MP401-404)

- The trial pits recorded Made Ground to depths of between 0.3m (MP401) and 0.5m (MP402), comprising 0.2m layer of coarse sandstone gravel which was in turn underlain by between 0.1m to 0.3m thickness of black ashy gravel.
- Glacial Deposits were found to underlie the Made Ground in the four trial pits but was not proven beyond 2.5m (MP403). Hydrocarbon odours and staining were noted within the underlying Glacial Deposits within trial pits MP401-404. No recoverable mobile free phase was observed.
- Trial pits along RAP Feature 4 were excavated on 9 July 2009 and remained open for one monitoring round on the 15 July 2009.
- Hydrocarbon droplets and a sheen were noted on trial pits MP401-MP404 during the monitoring visit.
- Three monitoring sumps (WMS12 and WMS13) were installed along the proposed location of RAP 4 trench and were monitored once a week for 13 weeks from February 2010 for the presence/absence of free product.

5.1.2 Monitoring 2010 to 2012

The monitoring programme comprised twenty five rounds over a 24 month period between 25th February 2010 and 26th January 2012.

RAP 3 Trench (WMS9-WMS11)

- Product droplets were observed on the surface of groundwater within WMS10 on one occasion in March 2010, with a sheen recorded on one other occasion in September 2010. The sump has remained clear of free product or sheen during the subsequent fifteen months of monitoring.
- Product droplets or a slight sheen were recorded on the surface of WMS11 on six of the first seven occasions, however, groundwater quality improved and only a slight sheen was recorded on two of the nineteen remaining visits with no evidence of hydrocarbon recorded in the last six visits between March 2011 and January 2012.
- Monitoring sump WMS9 remained dry with no product observed within the sump for the duration of the monitoring program.

RAP 4 Trench (WMS12-WMS13)

- Droplets of free product or product sheen were observed within WMS12 on two occasions with no recorded evidence of free product or ochre during the subsequent 20 months of monitoring.
- Occasional droplets of product were observed on the surface of WMS13 when monitored on 17 February 2010. On subsequent monitoring visits the quantity of free product decreased with a sheen recorded on the surface of the groundwater. No product or sheen was observed on the visit undertaken in mid May 2010. WMS13 predominantly remained dry from this point with no evidence of free product recorded on the shallow groundwater when present.

RAP features 3 & 4 received formal sign-off by the Monitor verifying the compliance to the RAP requirements detailed within the S106 for the Coed Darcy development in August 2013.

6. S106 Remediation Redevelopment Requirements

The existing S106 (Dewey and LeBoeuf, GNP/NJR/13773-2) does not provide specific details for remediation requirements for areas of proposed Open Space, but states the following:

The Developer shall remediate areas of Property which will not be developed for residential or commercial end-uses based on those areas falling into one of the following three broad categories of land-use:

Well managed parks and public gardens;

More lightly managed areas where public access is encouraged;

Areas to which access is discouraged but occasional access and/or trespassing is possible.

Assuming the retention of existing topography within the final development, it is considered that Zone B falls within the both the first and last categories. The first category relates to the field to the south of Tal y Fedw farm which is shown on the masterplan to be a potential playing field. The remainder of the site is envisaged to fall within the latter category where public access will be generally restricted.

In line with the absence of specific details relating to remediation requirements for proposed areas of open space, the S106 states the following with regard to the scope of remedial and/or mitigation works in these areas:

The degree of protection that will need to be afforded to people will be largely dependent upon how the access to these areas is encouraged/discouraged and managed. For guidance only, access may be discouraged by physical barriers such as fencing, or vegetation or actively managed by the provision of walkways along which controlled access is encouraged. The topography of the site may encourage children to use bikes, potentially causing rutting of the ground surface and exposing soils at depth. Detailed designs in this regard will be prepared by the Developer approved by CDL and agree with the Environmental Authorities to (i) protect human health considering the reasonably anticipatable use of the land (ii) achieve the relevant RBSLs (recreational RBSLs being provided in Table 1 above) to an appropriate depth and (iii) include an appropriate scheme of validation testing.

The Risk Based Screening Levels (RBSLs), listed in the S106 for the site, have been combined with Atkins derived Risk Target Concentrations (RTCs) for an open space end use, to assess chemical results in these areas. Details of the adopted thresholds are shown/presented in Appendix I of the overarching Monitor Phase 39 Report, Site wide open space validation, 5041216-REM-RPT-1340.

The general validation sampling frequency agreed with the monitor for Zone B (Table 1) is based upon the absence of significant historic refinery activities across much of this area (See drawing 5041216-REM-DWG-1923 P2).

Table 1 –Agreed Validation Frequency

Sampling Strategy	Exploratory Hole	Frequency
Areas of Historical Process Operations and Storage*	Trial Pits/Hand Dug Pits	1 per 400m ²
Areas of little or no development*	Hand Dug Pits	1 per 2500m ²

**only where safe access and egress is possible*

7. Recent Ground Investigations

With the aim of supplementing and updating the limited historical investigation within Zone B, a total of 7 machine excavated trial pits and 24 hand excavated pits were undertaken by Atkins during April 2015. In line with the site walkover and the presence of dense semi mature/mature woodland and proximity to open water bodies to Zone B, trial pits were only excavated where safe access and egress was possible as shown on drawing 5041216-REM-DWG-1821 P2. Copies of all relevant exploratory holes logs are presented in Appendix D.

Ground conditions encountered during the recent ground investigations were similar to that found in previous investigations and generally confirm Zone B to have varying thicknesses of Made Ground underlain by natural soils (silts, sands and gravels). Topsoil was found in 10 locations.

Made Ground, comprising reworked natural soils containing ash, clinker, brick, concrete, wood and occasional slag, was identified in 22 locations. The locations were located in, or immediately adjacent to, railway sidings, infrastructure or the immediate vicinity of SSR as shown on Drawing 5041216-REM-DWG-1821 P2.

The maximum recorded VO class noted during recent investigation was a VO class 2 in Made Ground (POS13 and POS15). Generally, however, soils encountered in Zone B had no visual or olfactory indicators of hydrocarbon contamination.

A total of 40 environmental samples (32 shallow and 8 deep) were taken from in situ soils within these exploratory holes during the Atkins investigation. The results of the chemical analysis relating to the recent investigation in Zone B are presented in Appendix E. These indicate the following exceedances of the adopted thresholds for retention at shallow depth within in area of Public Open Space.

The depth of relevant samples beneath the current surface is given in brackets for reference.

- Arsenic – 4 no. up to a maximum of 97.1 mg/kg from ZBHP20 @ 0.3m bgl (64 mg/kg)
- Cadmium – 10 no. up to a maximum of 5.75 mg/kg from ZBHP20 @ 0.3m bgl (2.6 mg/kg)
- Copper – 7 no. up to a maximum of 358 mg/kg from POS16 @ 0.2m bgl (143 mg/kg)
- Lead – 1 no. with a concentration of 876 mg/kg from ZBHP17 @ 0.3m bgl (337 mg/kg)
- Zinc – 5 no. up to a maximum of 2630 mg/kg from ZBHP17 @ 0.3m bgl (478 mg/kg)
- Benzo (a) Pyrene – 3 no. with a concentration of 6.39 mg/kg from ZBHP18 @ 0.3m bgl (0.9 mg/kg)

Asbestos was detected in five of the samples tested from across Zone B and were subsequently scheduled for quantitative assessment. The highest analysed concentration was 0.0028% in ZBHP 3 (0.5m bgl) which lies below the asbestos RBSL threshold (0.02%) for retention in the top metre below finished floor level in an open space end use.

7.1 Tal y Fedw Separators

The tank located with the ancillary buildings adjacent to the Tal y Fedw separators was removed in May 2015. Prior to removal, the tank was emptied by Hydrock using a vacuum bowser with the contents taken for recovery in their processing site on the Containment Area.

A series of investigations to ascertain the quality of silt material contained within the individual compartments of the existing separator was been undertaken by Atkins between September and October 2015. Following initial investigative results, which confirmed a minor amount of free product droplets within a grey fine silt, in situ silts have been removed from this feature using a vacuum bowser. The removed material was transported to the biopad and mixed with some material undergoing bioremediation in order to help improve the workability of the materials due to the high water content.

Samples were taken on 19th October 2015 to provide certainty of water quality from the water entering the separator and the effluent entering the South Site reservoir following the works. Low concentrations of hydrocarbons were detected with maximum total TPH of 88 µg/l entering the separators and 70 µg/l recorded in the effluent. However, the majority of the results were generally below detection limits and are collated in Appendix G.

Further to the removal of the basal silts and the quality of water confirmed by laboratory testing, the level of remaining risk posed by the retention of this feature is considered low. Photographs of the investigation and works are collated in Appendix G.

8. Validation

Based on the presence or absence of historical operations, Tables 2 and 3 detail the validation frequencies using the corresponding samples/exploratory holes from each area as discussed in section 6 (See drawing 5041216-REM-DWG-1923 P2).

Table 2 –Exploratory Hole Validation Frequency

Sampling Strategy	Agreed Frequency	Area within Zone B	Number of Exploratory Holes	Validation Frequency
Areas of Historical Process Operations and Storage	1 per 400m ²	13,687m ²	17	1 per 805m ²
Areas of little or no development	1 per 2500m ²	52,839m ²	14	1 per 3,774m ²

Table 3 –Sampling Validation Frequency

Sampling Strategy	Area within Zone B	Number of Samples	Validation Frequency
Areas of Historical Process Operations and Storage	13,687m ²	22	1 per 622m ²
Areas of little or no development	52,839m ²	18	1 per 2,935m ²

The validation frequencies for both the areas with little or no previous refinery history, and the areas of historical process operations and storage, is below the agreed value. As previously indicated (section 4), access to much of Zone B was found to be restricted by the presence of dense semi mature/mature woodland and proximity to open water bodies, thus the extent of the area available for further investigation was limited. The total extent of restricted access for the area with previous refinery history equates to approximately 3,050m². When subtracted from the total area (13,687m²) for this historical use, the validation frequency equates to 1 exploratory hole per 626m².

A comparison of the results of recent laboratory analysis with the permitted thresholds for Parks and Open Spaces, indicate exceedances of the adopted thresholds for a number of inorganic and organic determinands as listed in Section 7.

9. Conceptual Site Model (CSM)

Zone B lies in the northern part of the former Llandarcy refinery and comprises grassland, dense semi mature and mature woodland with scrub rough grasses and gorse dominating the remaining areas. The eastern parcel of the site lies downslope of the NSR and North Site API separators and in turn, lies upslope of the active railway. The western parcel of the site lies downslope of the main refinery site and in turn, lies upslope of Crymlyn Bog SSSI.

Historical refinery operations, including the storage of hydrocarbons, were located upslope of the site whilst a historical oil water separator (still operational) and two pumping stations (removed) are indicated to have been present within the site (refer to Drawing 5041216-REM-DWG-1821 P2). In line with RAP works defined in the S106, interception trenches and surface water monitoring grips have been installed within the site (Section 5.1) to investigate the potential for migration of mobile free product from these upslope storage areas. Works undertaken as part of RAP phase 3 and 4 targeted areas of free product and monitored a steady decline over a number of monitoring rounds. Continued monitoring of these RAP features is ongoing.

Historical ground investigation (refer to section 5) confirms the presence of natural soils underlying this zone with the presence of localised Made Ground associated with former historical uses, predominantly in the southern part of Zone B. Recent ground investigation recorded elevated concentrations of inorganic metals/metalloids (arsenic, cadmium, copper, lead and zinc), three exceedances of benzo(a)pyrene and the presence of asbestos fibres within the near surface soils (section 7).

Key exposure pathways to the anticipated receptors, based on an ongoing Public Open Space end use, include:

- Dermal contact with contaminants in soil, soil-derived dust and entrained surface water run-off from any areas where soil (and contaminants) is exposed at the surface or in perched water/ groundwater if excavation takes place;
- Ingestion of contaminants in soil, soil-derived dust and entrained surface water run-off from any areas where soil (and contaminants) is exposed at the surface or in perched water/ groundwater if excavation takes place;
- Inhalation of contaminants in soil-derived dust from any areas where soil (and contaminants) is exposed at the surface or excavation takes place;
- Migration and inhalation of outdoor and indoor vapours
- Migration of contaminants and permeation into plastic drinking water pipes.
- Passive and active uptake through roots of contaminants in migrating perched water/ groundwater and leaf contact with contaminants in windblown, soil-derived dust.

Detailed proposals relating to the final design for this area are not yet defined although outline designs to use the triangular piece of land between the active and redundant rail sidings for surface water attenuation are currently in progress. Due to the proposed use of this area for surface water attenuation, presence of dense vegetation, the SSR, NSR, Crymlyn Bog SSSI and the active railway, it is anticipated that the majority of this area will need to be fenced from the adjacent development and will, therefore, fall within '*Areas to which access is discouraged but occasional access and/or trespassing is possible*', as defined in the S106.

The field to the south of Tal y Fedw farm is proposed as an open space which, based on the absence of existing dense vegetation in this area, is likely to come under the category '*Well managed parks and public gardens*'. It is envisaged that, as part of these proposals, this field will undergo some reprofiling using imported clean soils with a minimum placed thickness of at least 600mm, possibly in conjunction with the removal shallow surface soils in order to retain current ground levels. The placement of such a thickness of suitable shallow soils will help to minimise the potential exposure to final users of this area with the inorganic exceedances highlighted in section 7. It is envisaged that access to this field would be via the use of formal, surfaced pathways through the adjacent woodland.

Localised free product was identified during the historical ground investigations. Recent investigations, however, confirm a maximum of visual and olfactory class 2 soils within soils across this area. The three benzo(a)pyrene exceedances lie in areas where future planting will enhance the existing landscaping and

dense vegetation/woodland will be used as a buffer to protect the adjacent SSSI and around South Site Reservoir which is to be retained in the final development. As such, these areas are considered to represent areas where 'occasional access and/or trespassing' is possible. The presence of ochre within the site is not deemed to be an issue and will be considered in future drainage proposals for the site

The risk to receptors in the short term is deemed to be mitigated by the presence of 24hour security, secure site perimeter fencing, live railway and the wet and marshy ground associated with Crymlyn Bog SSSI. However, to mitigate the risk to long term receptors, the proposed fencing works and new planting is likely to significantly reduce the frequency of receptors entering the site. The works proposed to protect long term receptors will be required upon the development of Zone B.

The above CSM, current access restrictions and envisaged low frequency of use within the final development, suggests the reduced sampling frequency is sufficient for this assessment and the remaining risk to present and future receptors is considered low.

10. Conclusions

Atkins Limited has been commissioned by St. Modwen Developments Ltd to provide a summary of information relating to an area of proposed Open Space known as Zone B of Monitor Phase 39.

Planning condition 41 of the Outline Planning Permission for the redevelopment of the former refinery states that:

No works shall commence on each development area until a scheme detailing the temporary means of enclosure for each development phase as agreed under Condition 9 of this consent (including details of the means to prevent unauthorised access to a service track or restricted access point) together with full details of temporary protective fencing to safeguard trees, hedgerows and habitat and ecological areas of importance giving full consideration to measures which will allow or restrict wildlife access to areas have been submitted to and approved in writing by the Local Planning Authority. The submitted details shall have due regard for the Environmental Management Plan and include the specifications of the fencing; details of signage stating that the fencing should not be removed; together with plans showing the location of the fencing and the extent of the areas to be protected. The approved details shall be fully implemented on site and shall be retained as such for the duration of the works within these areas.

In line with the above, details of fencing etc relating to any proposed redevelopment within the vicinity of Zone B would need to be agreed with the relevant regulatory authorities prior to any proposed construction. Within the current site, unauthorised access to this area is restricted by ongoing 24hr security at the site perimeter. Ongoing reclamation works to remove remnant structures within this zone is subject to an engineers watching brief to ensure compliance with the S106 requirements.

Subject to receipt of additional testing and the removal of existing structures within this area, Zone B is considered suitable for ongoing use as Open Space (Woodland) in line with the requirements of the S106.

Drawings

5041216-REM-DWG-1661 (P4)

5041216-REM-DWG-1786 P2

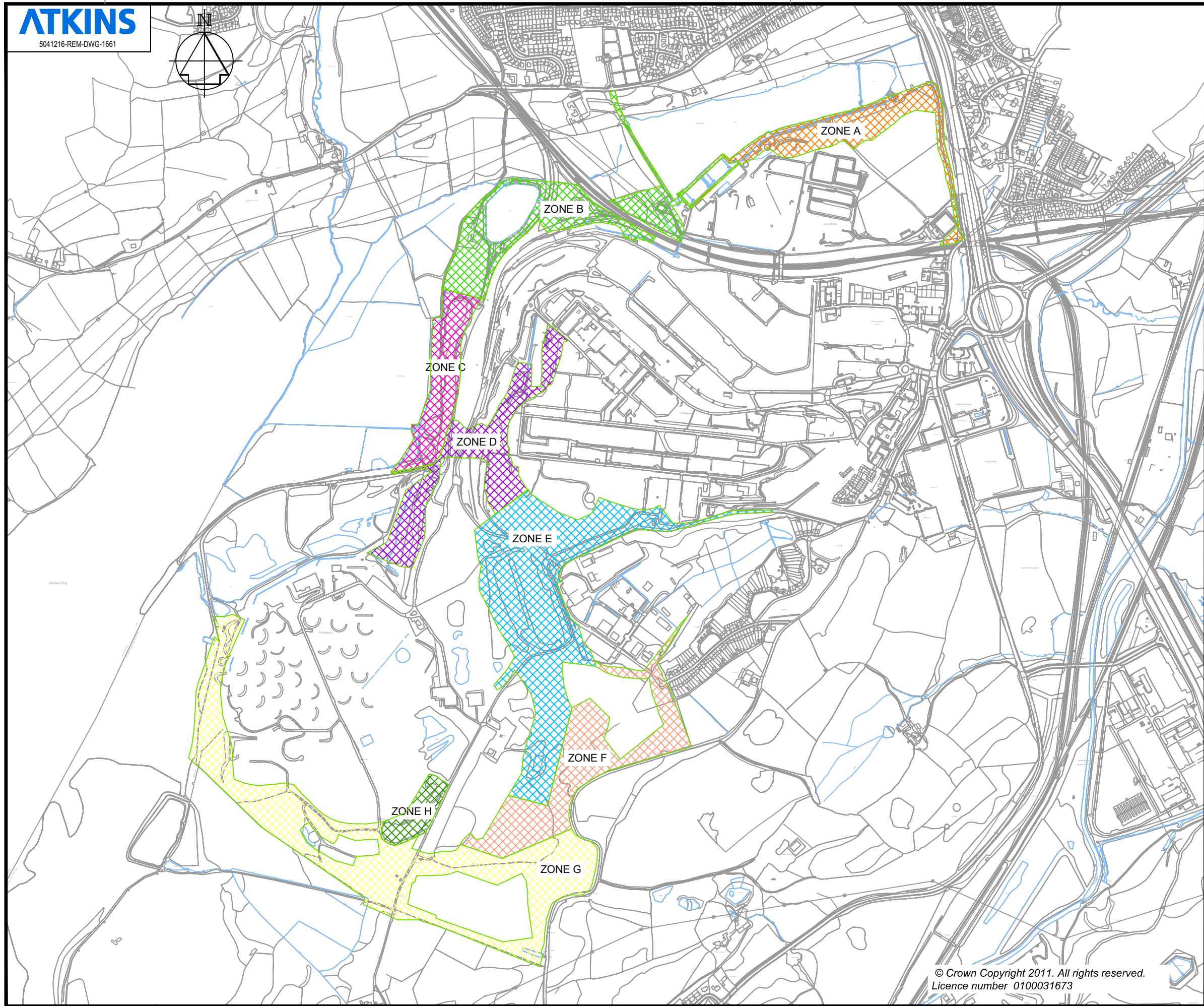
5041216-REM-DWG-1796 P2

5041216-REM-DWG-1805 P2

5041216-REM-DWG-1821 P2

5041216-REM-DWG-1923 P2

5041216-ATK-DR-C-REM-2015



KEY

P4	BOUNDARY AMENDMENT	HS	MT	26.10.15
P3	REVISED BOUNDARIES	NR	MT	19.08.15
P2	REVISED BOUNDARIES	MB	MT	31.03.15
P1	FIRST ISSUE	MJ	MT	23.02.15

REVISIONS	Drawn By	Checked By	Date
-----------	----------	------------	------

PURPOSE OF ISSUE	Rev.	Authorised for issue	Date
------------------	------	----------------------	------

Atkins Limited
Telford Office
Cornerstone House
Stafford Park 13
Telford TF3 3AZ
Tel 01952 201234
Fax 01952 200981

Birmingham Office
The Axis, 10 Holliday Street
Birmingham
West Midlands B1 1TF
Tel 0121 483 5000
Fax 0121 483 5252

THIS DRAWING IS NOT TO BE SCALED

CLIENT
ST.MODWEN

PROJECT
COED DARCY

DRAWING TITLE
MONITOR PHASE 39

SCALES 1:10,000	DRAWN MB	CHECKED MT	CO-ORD CHECK
	DATE 27.03.15	DATE 27.03.15	DATE

0	SHEET A3	PLOT DATE 29.10.15
---	-------------	-----------------------

DRAWING NO 5041216-REM-DWG-1661	REV P4
------------------------------------	-----------



KEY

PUBLIC OPEN SPACE ZONE B

P2	BOUNDARY AMENDMENT	HS	MT	26.10.15
P1	FIRST ISSUE	MJ	MT	23.02.15

REVISIONS	Drawn By	Checked By	Date
-----------	----------	------------	------

PURPOSE OF ISSUE	Rev.	Authorised for issue	Date
------------------	------	----------------------	------

Atkins Limited

Telford Office
Cornerstone House
Stafford Park 13
Telford TF3 3AZ
Tel 01952 201234
Fax 01952 200981

Birmingham Office
The Axis, 10 Holliday Street
Birmingham
West Midlands B1 1TF
Tel 0121 483 5000
Fax 0121 483 5252

THIS DRAWING IS NOT TO BE SCALED

CLIENT
ST.MODWEN

PROJECT
COED DARCY

DRAWING TITLE
PUBLIC OPEN SPACE ZONE B
PHOTOGRAPH LOCATIONS

SCALES 1:2,500	DRAWN MJ	CHECKED MT	CO-ORD CHECK
	DATE 23.02.15	DATE 23.02.15	DATE

0	SHEET A3	PLOT DATE 28.10.15
---	-------------	-----------------------

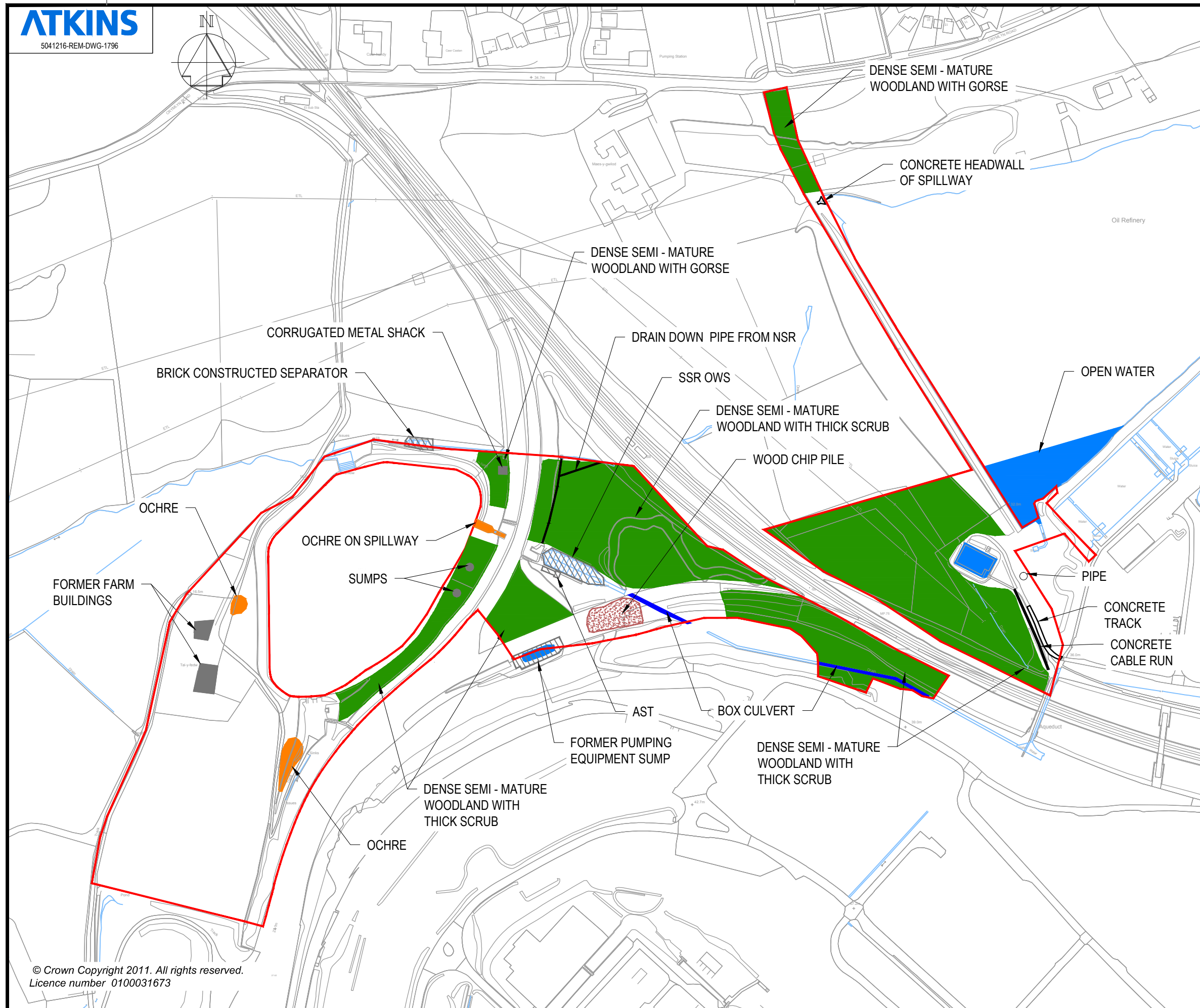
DRAWING NO 5041216-REM-DWG-1786	REV P2
------------------------------------	-----------



KEY



PUBLIC OPEN SPACE ZONE B



P2	BOUNDARY AMENDMENT	HS	MT	26.10.15
P1	FIRST ISSUE	MJ	MT	23.02.15

REVISIONS	Drawn By	Checked By	Date
-----------	----------	------------	------

PURPOSE OF ISSUE	Rev.	Authorised for issue	Date
------------------	------	----------------------	------

Atkins Limited

Telford Office
Cornerstone House
Stafford Park 13
Telford TF3 3AZ

Tel 01952 201234
Fax 01952 200981

Birmingham Office
The Axis, 10 Holliday Street
Birmingham
West Midlands B1 1TF

Tel 0121 483 5000
Fax 0121 483 5252

THIS DRAWING IS NOT TO BE SCALED

CLIENT	ST.MODWEN
--------	------------------

PROJECT	COED DARCY
---------	------------

DRAWING TITLE	PUBLIC OPEN SPACE ZONE B CONSTRAINTS PLAN
---------------	--

SCALES	DRAWN	CHECKED	CO-ORD CHECK
1:2,500	MJ	MT	
DATE	DATE	DATE	DATE
23.02.15	23.02.15		

DRAWING NO	5041216-REM-DWG-1796	SHEET	A3	PLOT DATE	28.10.15
------------	----------------------	-------	----	-----------	----------

REV	P2
-----	----