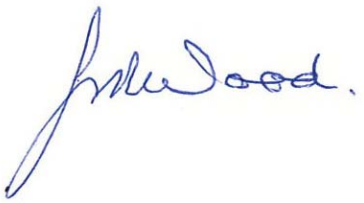
CONCLUSIONS

1. The site is not in an area at risk of flooding.
2. Further intrusive site investigation and percolation testing are required.
3. If infiltration type SUDS are viable surface water disposal will be via soakaways and/or detention basins. However, it is doubtful that such disposal methods will be viable.
4. If infiltration type SUDS are not viable surface water disposal will be to Scout Dike/Scout Dam reservoir or to the public sewer.
5. A full drainage survey is recommended, prior to any demolition, to establish existing connections.
6. The permitted discharge rate to the watercourse or the public sewer is subject to agreement with the relevant statutory bodies.
7. For surface water discharge to the watercourse or public sewer, flow balancing and on-site storage are likely to be required. Storage will be in the form of oversize sewer pipes, tanks or box culverts.
8. The level of risk and safeguards available are considered appropriate to this class of development.



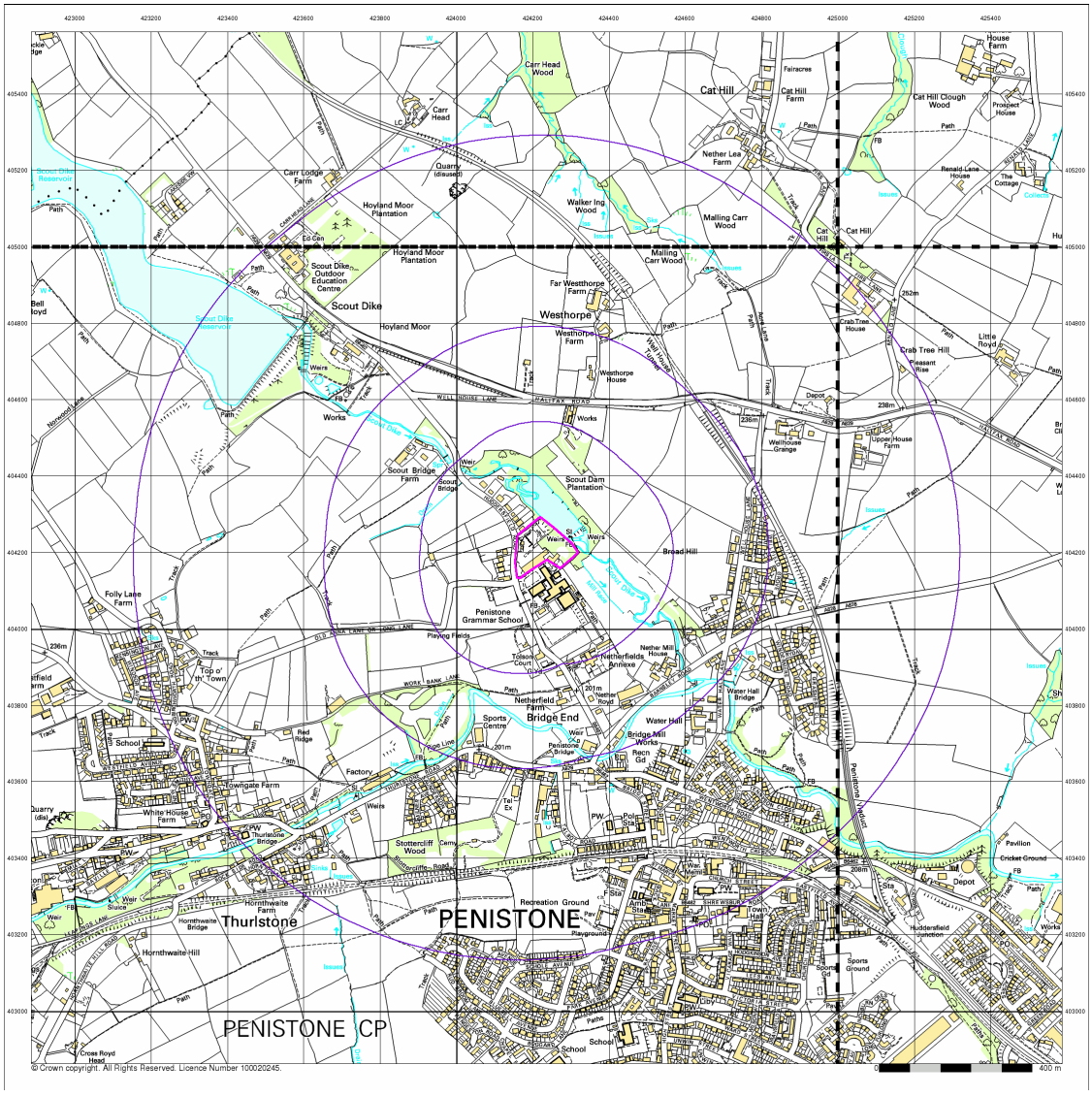
J M Wood
Director

APPENDICES

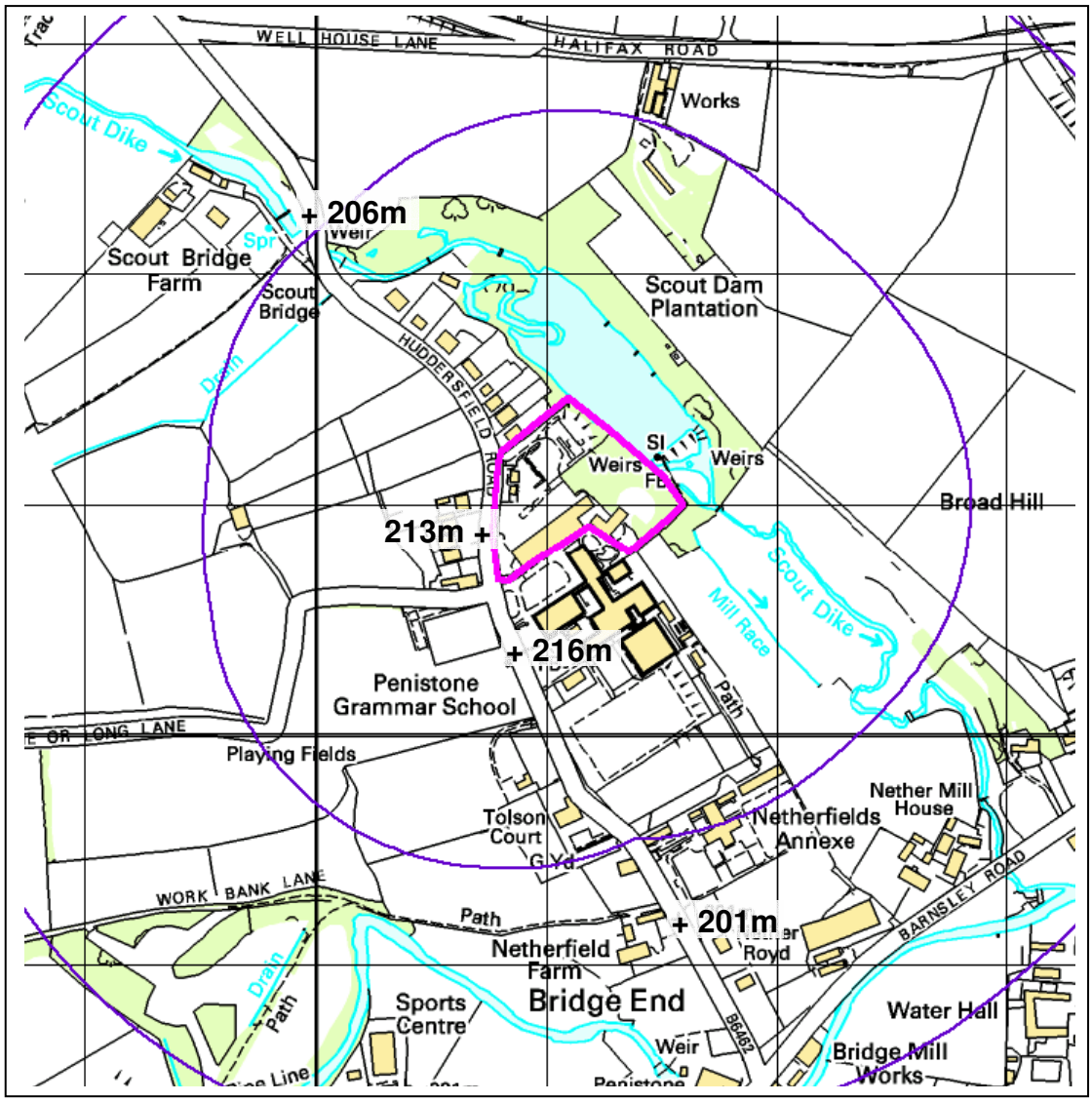
- Location plan
- Existing site plan
- Environment Agency
  Flood zone map
- Yorkshire Water
  Sewer record map
  Correspondence dated 26 October 2010

Location Plan

Penistone Grammar School, Penistone

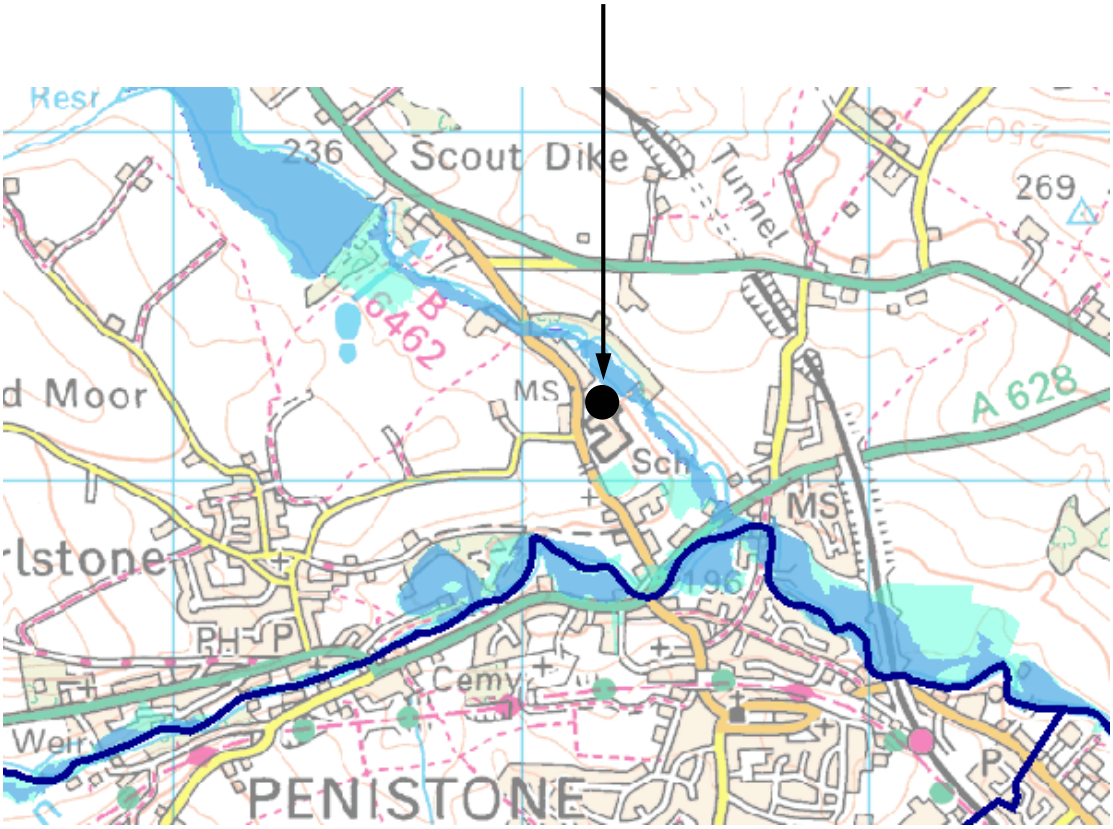


Site plan showing spot levels to Ordnance Datum



Environment Agency Flood Map

Penistone Grammar School, Penistone



	Flooding from rivers or sea without defences
	Extent of extreme flood
	Flood defences
	Areas benefiting from flood defences

YorkshireWater

Yorkshire Water Services
Developer Services
Sewerage Technical Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0845 120 8482
Fax: (01274) 372 834

Email:
Planning.Sewerage@yorkshirewater.co.uk

For telephone enquiries ring:

Kashif Khan on (0845)120 8482

Eastwood & Partners Consulting Engineers
St Andrew's House
23 Kingfield Road
Sheffield
S11 9AS

FAO Ms Linda Mee

Eastwood & Partners
29 OCT 2010
Rec'd

Your Ref:
Our Ref: L006924

26th October 2010

Dear Madam,

Penistone Grammar School, 106 Huddersfield Road, Penistone - Pre-Planning Sewerage Enquiry - Educational

Thank you for your enquiry received 11th October 2010. Our charge of £60.00 (plus VAT) will be added to your account with us, reference EPL039. You will receive an invoice for your account in due course. Please find enclosed a complimentary extract from the Statutory Sewer Map. This indicates the recorded position of the public sewers. The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site:

There is a 150 mm diameter public combined sewer recorded crossing the site. No buildings are to be erected within 3 (three) metres, nor trees planted within 5 (five) metres of this public sewer. It may not be acceptable to raise or lower ground levels over the sewer, nor to restrict access to the manholes on the sewer. If you wish to have this sewer diverted under Section 185 of the Water Industry Act 1991 an application should be made in writing. To discuss this matter, please telephone 0845 120 84 82.

Development of the site should take place with separate systems for foul and surface water drainage. The separate system should preferably extend to the public sewer.

Foul water domestic waste should discharge to the 150 mm diameter public foul sewer recorded crossing/within the site.

Foul water from kitchens and/or food preparation areas of any restaurants and/or canteens etc. must pass through a fat and grease trap of adequate design before any discharge to the public sewer network.

The developer's attention is drawn to Requirement H3 of the Building Regulations 2000. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SUDS), for example the use of soakaways and/or permeable hardstanding etc., may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SUDS in this instance from the appropriate authorities.

Where appropriate, soakaways, swales and infiltration trenches (SUDS) may be adopted as part of the public sewer network. For general conditions for the adoption of SUDS please see the attached sheet. Further information may be seen in the DEFRA publication 'Interim Code of Practice for Sustainable

Drainage Systems' (ISBN 0-86017-904-4). If the developer is considering adoption of SUDS they should contact our Developer Services Team on 0845 120 84 82.

The local public sewer network does not have capacity to accept any additional discharge of surface water from the proposal site. The developer is advised to contact the Environment Agency/local Land Drainage Authority with a view to establishing a suitable watercourse for discharge.

It is understood that watercourses are located to the east/north-east of the site. These appear to be the obvious place for surface water disposal.

Failing the above, curtilage surface water discharges to the public sewer will be restricted to the level of run-off - i.e. same rate of discharge - to that from the existing use of the site. To maintain the "status quo" in the public sewer network, any discharge of surface water from the site should take place with similar rates of flow and/or measured areas discharging to similar points of connection to that of the existing use of the site. You will need to demonstrate positive drainage to the public sewer to Yorkshire Water by means of investigation and calculation carried out at your expense. Discharges to the public sewer must take into account a 30% reduction in existing discharge and climate change.

To do this, Yorkshire Water requires to see existing and proposed drainage layouts with pipe sizes, gradients and connection points, measured impermeable areas of the present and proposed use of the site, along with the calculations that show the existing and proposed discharge rate from the site to the public sewer.

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Land Drainage Authority/Internal Drainage Board, with regard to surface water disposal from the site.

Surface water run-off from communal parking (greater than 800 sq metres or more than 50 car parking spaces) and hardstanding must pass through an oil, petrol and grit interceptor/separator of adequate design before any discharge to the public sewer network. Roof water should not pass through the traditional 'stage' or full retention type of interceptor/separator. It is good drainage practice for any interceptor/separator to be located upstream of any on-site balancing, storage or other means of flow attenuation that may be required.

Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the WRc publication "Sewers for Adoption - a design and construction guide for developers" 6th Edition as supplemented by Yorkshire Water's requirements, pursuant to an agreement under Section 104 of the Water Industry Act 1991. An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Developer Services Team (telephone 0845 120 84 82) for further information.

The public sewer network is for domestic sewage purposes. This generally means foul water for domestic purposes and, where a suitable surface water or combined sewer is available, surface water from the roofs of buildings together with surface water from paved areas of land appurtenant to those buildings. Land and highway drainage have no right of connection to the public sewer network. Highway drainage, however, may be accepted under certain circumstances; for instance, if SUDS are not a viable option and there is no highway drain available and if capacity is available within the public sewer network. In this event, the developer will be required to enter into a formal agreement with Yorkshire Water Services under Section 115 Water Industry Act 1991 to discharge non-domestic flows into the public sewer network.

No land drainage to be connected/discharged to public sewer.

The site is within an area that may be affected by river flooding. We would advise you to contact the Environment Agency for details.

Any new connection to an existing public sewer will require the approval of Yorkshire Water. You may obtain an application form from our website (www.yorkshirewater.com) or by telephoning 0845 120 84 82.

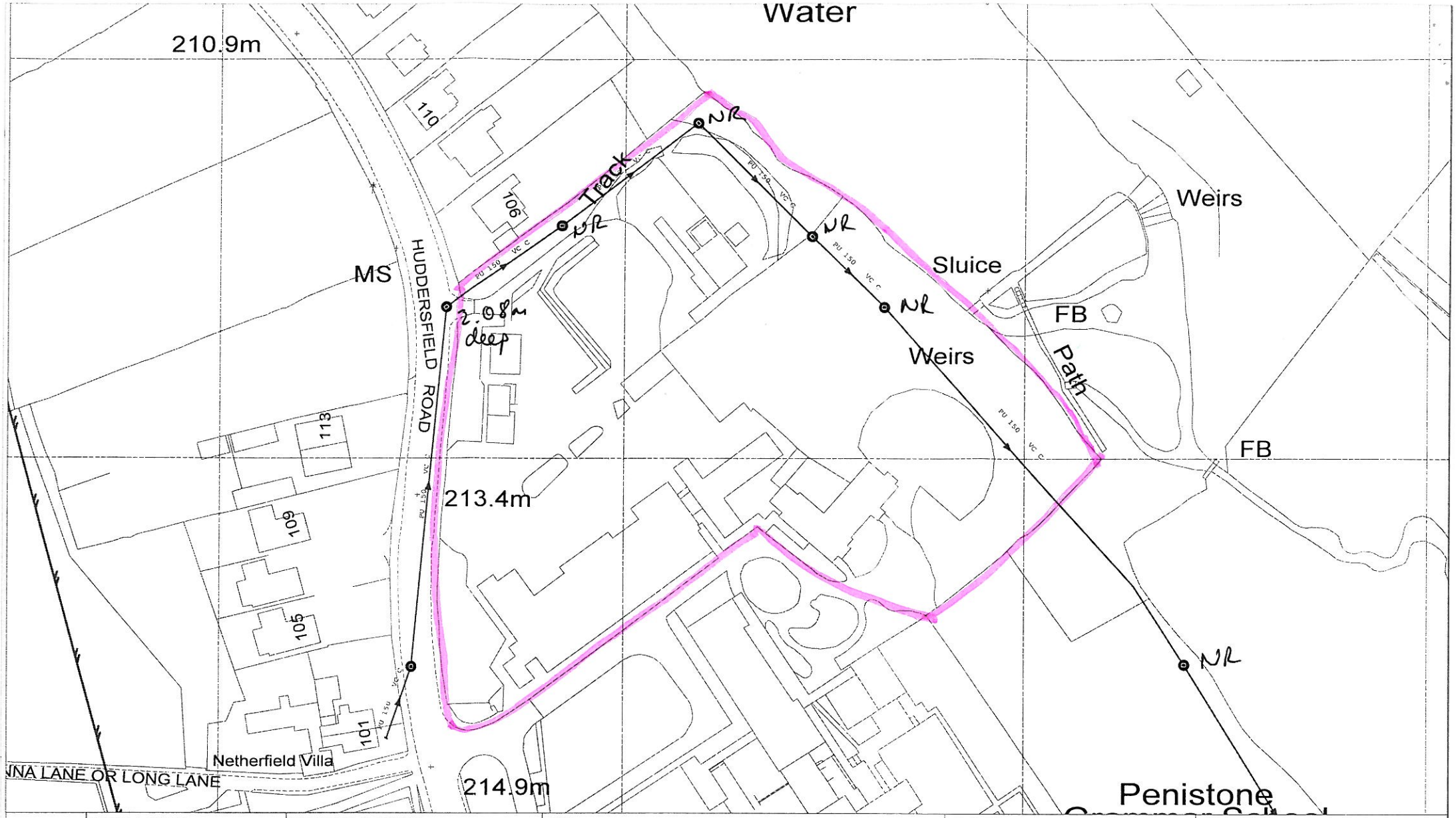
All the above comments are based upon the information and records available at the present time.

The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours faithfully



Developer Services Team



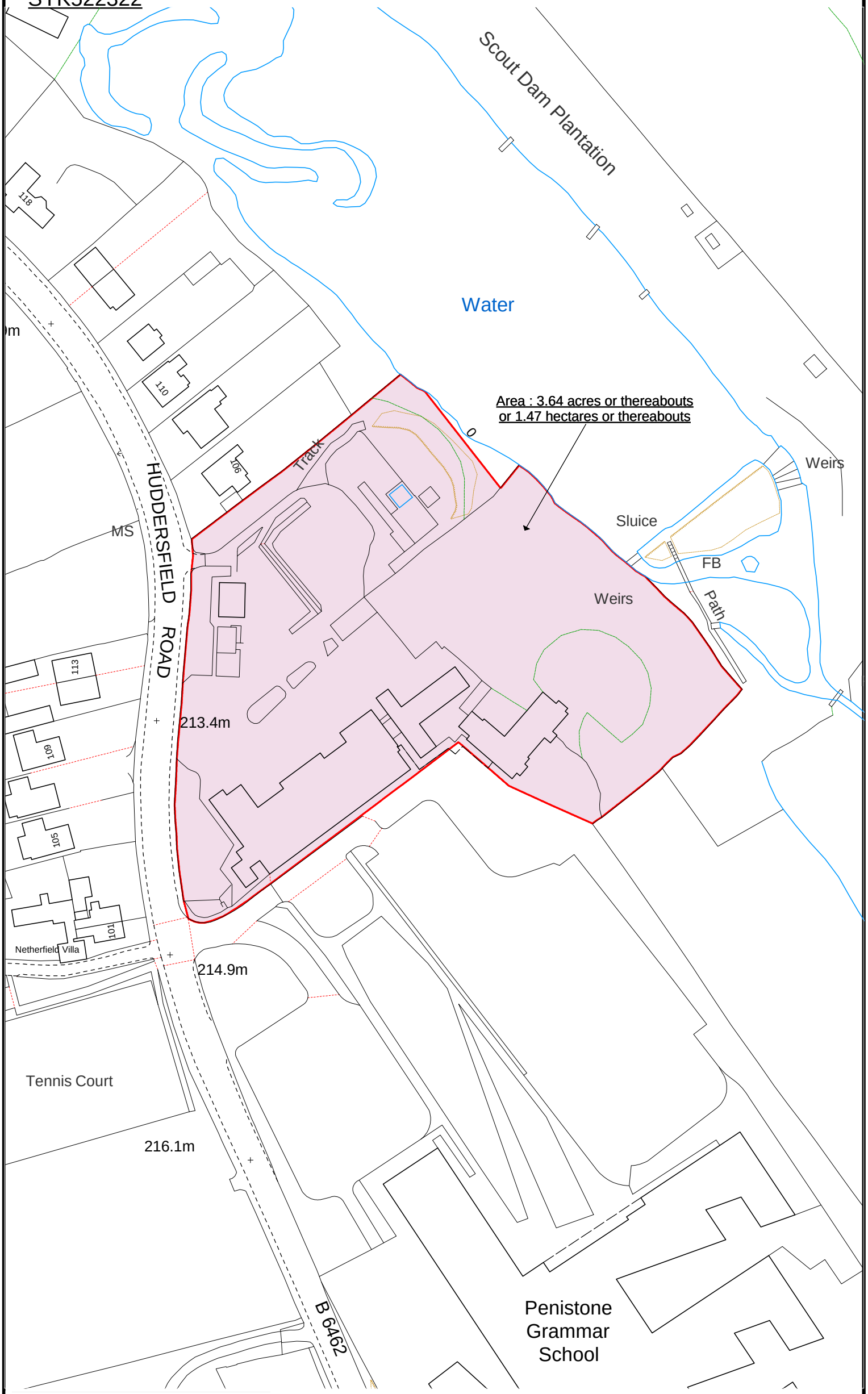
424040 : 404106	Map Name : SE2404SW	Title	Partial Key Foul Sewer = F Combined Sewer = C Surface Water Sewer = SW Trade Sewer = TD Partially Separate = PS
YorkshireWater	Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : K KHAN Contact Tel .	Notes NR = No Recorded depth.	This plan is furnished as a general guide only and no warranty as to its correctness is given or implied. This plan must not be relied upon in the event of excavations or other works made in the vicinity of public sewers. No house or property connection
		(Ody) COPYRIGHT STATEMENTS. Reproduced by permission of Ordnance Survey on behalf of HMSO © Crown copyright and database 2004. All rights reserved Ordnance Survey Licence number 100019559	Date Req : 26/10/2010, 14:20:42 Date Gen : 26/10/2010, 14:20:44 Source : Sewer Network Enquiry

UPN: Undefined Originator: K KHAN, New Development - Waste Water,

PLAN REFERRED TO:

PENISTONE

SYK522322



nps group

NPS Barnsley Ltd
PO Box 634
Barnsley
S70 9GG

Tel: 01226 774605
Fax: 01226 774399
Email: enquiries@nps.co.uk
www.nps.co.uk

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Scale 1: 1

Plan No: SH4949A Date: 19/11/2012

APPENDIX D

EXPLORATORY HOLE RECORDS

WINDOW SAMPLING RECORD

BH No. **WS1**
Sheet 1 of 1

Site: Former Penistone Grammar School

Contract No: C5362

Client: Bellway Homes Ltd

Dates: 23/04/2013

Method: Tracked Window Sample Rig

Scale 1:25

Logged By: JW | Checked By: RIH

Driller: RP

SAMPLE DETAILS Type	Depth From - To(m)	(N) Shear vane	Groundwater	STRATA RECORD Description	Depth (m)	Level (mAOD)	Legend	Well
				MADE GROUND: Concrete.	0.12			
J	0.20m			MADE GROUND: Dark grey angular fine to coarse GRAVEL of clinker.	0.30			
D	0.75m			Very stiff orange brown slightly sandy slightly gravelly CLAY. Low plasticity (field description). Gravel is subangular fine to coarse of mudstone and siltstone lithorelicts.				
		N=10 (2,1,1,2,2,5)		At 1.00m: Medium strength.				
				Light grey angular tabular fine to coarse GRAVEL of sandstone.	1.60			
D	1.80m			Orange brown silty sandy subangular fine to coarse GRAVEL of siltstone.	1.70			
		N=32 (5,5,6,7,8,11)		Dense orange brown very silty fine SAND.	2.00			
D	2.50m							
D	2.90m	50/50mm (25/60,50/50)		Very weak very thinly bedded orange brown SILTSTONE. Recovered as subangular tabular fine to coarse gravel of siltstone.	2.80			
				End of Window Sample at 3.00 m	3.00			

Remarks and Water Observations

1.No groundwater encountered. 2.Borehole backfilled with arisings on completion.

GL (mAOD) -
Easting: -
Northing: -

Fig. No. WS1

WINDOW SAMPLING RECORD

BH No. **WS2**
Sheet 1 of 1

Site: Former Penistone Grammar School

Contract No: C5362

Client: Bellway Homes Ltd

Dates: 23/04/2013

Method: Tracked Window Sample Rig

Scale 1:25

Logged By: JW | Checked By: RIH

Driller: RP

SAMPLE DETAILS			Groundwater	STRATA RECORD				
Type	Depth From - To(m)	(N) Shear vane		Description	Depth (m)	Level (mAOD)	Legend	Well
				MADE GROUND: Tarmacadam.	0.05			
				MADE GROUND: Brown grey angular medium and coarse GRAVEL of sandstone.	0.20			
J	0.30m			MADE GROUND: Stiff grey brown slightly sandy slightly gravelly CLAY. High plasticity (field description). Gravel is angular and subangular fine to coarse of sandstone, siltstone, coal and brick. [Relic Topsoil]	0.50			
D	0.90m	N=33 (4,5,7,8,8,10)		Firm orange brown slightly sandy slightly gravelly CLAY. Low plasticity (field description). Gravel is subangular fine to coarse of mudstone and siltstone lithorelicts. Below 0.70m: Stiff. Below 1.00m: Very Stiff. Very high strength.				
D	1.50m							
D	1.70m - 1.80	50/40mm (25/70,50/40)		Extremely weak very thinly bedded orange brown MUDSTONE. Recovered as subangular tabular fine to coarse gravel of mudstone.	1.70 1.80			
				Very weak very thinly bedded orange brown SILTSTONE. Recovered as subangular tabular medium and coarse gravel of siltstone.	2.00			
				End of Window Sample at 2.00 m				

Remarks and Water Observations

1.No groundwater encountered. 2.Borehole backfilled with arisings on completion.

GL (mAOD)
-
Easting:
-
Northing:
-

Fig. No.
WS2

WINDOW SAMPLING RECORD

BH No. **WS3**
Sheet 1 of 1

Site: Former Penistone Grammar School

Contract No: C5362

Client: Bellway Homes Ltd

Dates: 23/04/2013

Method: Tracked Window Sample Rig

Scale 1:25

Logged By: JW | Checked By: RIH

Driller: RP

SAMPLE DETAILS Type	Depth From - To(m)	(N) Shear vane	Groundwater	STRATA RECORD Description	Depth (m)	Level (mAOD)	Legend	Well
J	0.20m			REWORKED TOPSOIL: Firm brown sandy CLAY with rootlets. High plasticity (field description). Rare angular fine to coarse gravel of brick.				
				Stiff orange brown sandy slightly gravelly CLAY. High plasticity (field description). Gravel is subangular fine to coarse of sandstone lithorelicts.	0.30			
D	0.70m			Orange brown and light brown silty subangular and angular tabular fine to coarse GRAVEL of siltstone. At 0.80m: 60mm thick interbed of of light grey angular fine to coarse gravel of sandstone.	0.60			
		N=21 (3,4,5,5,5,6)		Very stiff high strength orange brown mottled grey sandy slightly gravelly CLAY. Low plasticity (field description). Gravel is subangular fine to coarse of mudstone and siltstone lithorelicts.	1.00			
D	1.20m							
D	1.50m			Extremely weak very thinly bedded orange brown MUDSTONE. Recovered as subangular tabular fine to coarse gravel of mudstone.	1.30			
		50/160mm (20,5/10,20,22 ,8/10)		Very weak very thinly bedded orange brown SILTSTONE. Recovered as subangular tabular fine to coarse gravel of siltstone.	1.70			
				End of Window Sample at 1.95 m	1.95			

Remarks and Water Observations

1.No groundwater encountered. 2.Borehole backfilled with arisings on completion.

GL (mAOD)
-
Easting:
-
Northing:
-

Fig. No.
WS3

WINDOW SAMPLING RECORD

BH No. **WS4**
Sheet 1 of 1

Site: Former Penistone Grammar School

Contract No: C5362

Client: Bellway Homes Ltd

Dates: 23/04/2013

Method: Tracked Window Sample Rig

Scale 1:25

Logged By: JW | Checked By: RIH

Driller: RP

SAMPLE DETAILS Type	Depth From - To(m)	(N) Shear vane	Groundwater	STRATA RECORD Description	Depth (m)	Level (mAOD)	Legend	Well
				MADE GROUND: Tarmacadam.	0.10			
J	0.20m			MADE GROUND: Dark grey ashy angular fine to coarse GRAVEL of clinker, brick, limestone and coal.	0.30			
D	0.60m			Very stiff orange brown slightly sandy slightly gravelly very silty CLAY. Intermediate plasticity. Gravel is subangular fine to coarse of siltstone and sandstone lithorelicts.	0.90			
		N=26 (4,5,5,5,7,9)		Light grey angular tabular fine to coarse GRAVEL of sandstone.	1.10			
D	1.20m			Very stiff high strength orange brown slightly sandy gravelly CLAY. Low plasticity (field description). Gravel is subangular fine to coarse of mudstone and siltstone lithorelicts.	1.50			
D	1.60m - 1.70	50/180mm (19,6/20,21,20 ,9/30)		Extremely weak very thinly bedded light brown SILTSTONE. Recovered as subangular tabular medium and coarse gravel of siltstone.	1.60			
				Very weak very thinly bedded light grey SANDSTONE. Recovered as angular tabular medium and coarse gravel of sandstone.	1.98			
				End of Window Sample at 1.98 m				

Remarks and Water Observations

1.No groundwater encountered.
2.Borehole backfilled with arisings on completion.

GL (mAOD)
-
Easting:
-
Northing:
-

Fig. No.
WS4

WINDOW SAMPLING RECORD

BH No. **WS5**
Sheet 1 of 1

Site: Former Penistone Grammar School

Contract No: C5362

Client: Bellway Homes Ltd

Dates: 23/04/2013

Method: Tracked Window Sample Rig

Scale 1:25

Logged By: JW | Checked By: RIH

Driller: RP

SAMPLE DETAILS			Groundwater	STRATA RECORD				
Type	Depth From - To(m)	(N) Shear vane		Description	Depth (m)	Level (mAOD)	Legend	Well
J	0.10m - 0.20			REWORKED TOPSOIL: Brown gravelly fine to coarse SAND with rootlets. Gravel is subangular and subrounded fine and medium of quartzite, limestone and sandstone.	0.20			
J D	0.50m 0.50m - 0.60			Orange brown and light brown slightly clayey slightly sandy angular tabular fine to coarse GRAVEL of sandstone.				
		50/160mm (16,9/40,15,23 ,12/10)		Very weak very thinly bedded light grey SANDSTONE. Recovered as angular tabular medium and coarse gravel of sandstone.	1.00			
				End of Window Sample at 1.30 m	1.30			

Remarks and Water Observations

1.No groundwater encountered.
2.Borehole backfilled with arisings on completion.

GL (mAOD)
-
Easting:
-
Northing:
-

Fig. No.
WS5

WINDOW SAMPLING RECORD

BH No. **WS6**
Sheet 1 of 1

Site: Former Penistone Grammar School

Contract No: C5362

Client: Bellway Homes Ltd

Dates: 23/04/2013

Method: Tracked Window Sample Rig

Scale 1:25

Logged By: JW | Checked By: RIH

Driller: RP

SAMPLE DETAILS Type	Depth From - To(m)	(N) Shear vane	Groundwater	STRATA RECORD Description	Depth (m)	Level (mAOD)	Legend	Well
				MADE GROUND: Concrete.	0.10			
J	0.30m - 0.50			MADE GROUND: Light grey sandy subangular fine to coarse GRAVEL of concrete.				
J	0.80m - 1.00				0.80			
		N=11 (2,3,2,3,3,3)		MADE GROUND: Medium dense grey brown sandy clayey angular and subangular fine to coarse GRAVEL of brick, concrete, ash and clinker.				
D	1.50m			Orange brown silty sandy subangular and angular fine to coarse GRAVEL of siltstone and sandstone.	1.40			
				At 1.75m: 50mm bed of light grey angular tabular medium and coarse gravel of sandstone.	1.80			
		N=17 (7,4,4,3,4,6)		Very stiff high strength orange brown mottled grey sandy slightly gravelly CLAY. Low plasticity (field description). Gravel is subangular fine to coarse of sandstone and siltstone lithorelicts.				
D	2.20m							
		N=20 (3,4,4,4,5,7)		Medium dense orange brown sandy angular tabular fine to coarse GRAVEL of sandstone.	3.00			
D	3.20m							
D	3.70m - 3.90			Extremely weak very thinly bedded grey orange brown MUDSTONE with very thin interbeds of light grey sandstone. Recovered as subangular and angular tabular fine to coarse gravel of mudstone and sandstone.	3.50			
		50/40mm (25,50/40)		At 4.00m: Very weak.				
				End of Window Sample at 4.10 m	4.10			

Remarks and Water Observations

1.No groundwater encountered.
2.Borehole backfilled with arisings on completion.

GL (mAOD) -
Easting: -
Northing: -

Fig. No. WS6

WINDOW SAMPLING RECORD

BH No. **WS7**
Sheet 1 of 1

Site: Former Penistone Grammar School

Contract No: C5362

Client: Bellway Homes Ltd

Dates: 23/04/2013

Method: Tracked Window Sample Rig

Scale 1:25

Logged By: JW | Checked By: RIH

Driller: RP

SAMPLE DETAILS Type	Depth From - To(m)	(N) Shear vane	Groundwater	STRATA RECORD Description	Depth (m)	Level (mAOD)	Legend	Well
J	0.20m - 0.30			MADE GROUND: Dark grey ashy angular fine to coarse GRAVEL of clinker and coal with rootlets.	0.30			
D	0.50m			Stiff orange brown mottled light grey slightly sandy slightly gravelly SILT. Low plasticity (field description). Gravel is subangular fine to coarse of siltstone and sandstone lithorelicts.				
		N=16 (3,3,5,4,3,4)		Below 1.00m: Very stiff. High strength.	1.40			
D	1.50m			Orange brown silty sandy subangular and angular fine to coarse GRAVEL of siltstone and sandstone. Locally very stiff sandy gravelly silt.				
		N=20 (4,4,5,5,5,5)		At 2.00m: Medium dense.				
		N=16 (4,4,4,4,4,4)						
D	3.50m			Grey orange brown gravelly fine to coarse SAND. Gravel is subangular and angular fine to coarse of sandstone.	3.40			
				Between 3.70 and 3.80m: Clayey.	3.80			
D	3.90m			Extremely weak very thinly bedded orange brown SANDSTONE with very thin interbeds of siltstone. Recovered as subangular and angular tabular fine to coarse gravel of sandstone and siltstone.				
		50/275mm (25/60,22,10,10,8/50)			4.34			
				End of Window Sample at 4.34 m				

Remarks and Water Observations

1.No groundwater encountered.
2.Borehole backfilled with arisings on completion.

GL (mAOD)
-
Easting:
-
Northing:
-

Fig. No.
WS7

WINDOW SAMPLING RECORD

BH No. **WS8**
Sheet 1 of 1

Site: Former Penistone Grammar School

Contract No: C5362

Client: Bellway Homes Ltd

Dates: 23/04/2013

Method: Tracked Window Sample Rig

Scale 1:25

Logged By: JW | Checked By: RIH

Driller: RP

SAMPLE DETAILS Type	Depth From - To(m)	(N) Shear vane	Groundwater	STRATA RECORD Description	Depth (m)	Level (mAOD)	Legend	Well
J	0.10m - 0.20			MADE GROUND: Firm brown slightly sandy CLAY with rootlets. High plasticity (field description). Rare angular fine to coarse of gravel of coal, clinker and brick. [Reworked Topsoil]	0.30			
D	0.50m			Stiff orange brown sandy slightly gravelly SILT. Low plasticity (field description). Gravel is subangular fine to coarse of siltstone and sandstone lithorelicts.				
		N=10 (2,2,1,2,2,5)		At 1.00m: Medium strength.				
D	1.70m			Orange brown sandy angular tabular coarse GRAVEL of sandstone.	1.60			
		N=32 (8,7,7,8,8,9)		Dense orange brown silty sandy subangular and angular fine to coarse GRAVEL of siltstone, mudstone and sandstone. Locally very stiff sandy gravelly silt.	2.00			
D	2.50m							
		N=18 (4,3,5,4,4,5)		At 3.00m: Medium dense.				
D	3.90m							
		50/295mm (5,3,4,6,10,30 /70)		At 4.30m: Possible bedrock (based on SPT; no recovery).				
				End of Window Sample at 4.45 m	4.45			

Remarks and Water Observations

1.No groundwater encountered.
2.Borehole backfilled with arisings on completion.

GL (mAOD)
-
Easting:
-
Northing:
-

Fig. No.
WS8

WINDOW SAMPLING RECORD

BH No. **WS9**
Sheet 1 of 1

Site: Former Penistone Grammar School

Contract No: C5362

Client: Bellway Homes Ltd

Dates: 23/04/2013

Method: Tracked Window Sample Rig

Scale 1:25

Logged By: JW | Checked By: RIH

Driller: RP

SAMPLE DETAILS			Groundwater	STRATA RECORD				
Type	Depth From - To(m)	(N) Shear vane		Description	Depth (m)	Level (mAOD)	Legend	Well
				MADE GROUND: Dark grey and white bitumen bound subangular fine to coarse GRAVEL of limestone. [Tarmacadam]	0.20			
J	0.30m			MADE GROUND: Cream angular and subangular fine to coarse GRAVEL of limestone. [Sub-base]	0.50			
				Orange brown sandy subangular tabular fine to coarse GRAVEL of sandstone.				
D	0.90m	50/230mm (5,8,10,15,22, 3/5mm)		Extremely weak very thinly bedded light brown SANDSTONE. Recovered as subangular and angular tabular fine to coarse gravel of sandstone.	0.90			
				End of Window Sample at 1.38 m	1.38			

Remarks and Water Observations

1.No groundwater encountered.
2.Borehole backfilled with arisings on completion.

GL (mAOD)
-
Easting:
-
Northing:
-

Fig. No.
WS9

TRIAL PIT RECORD

TP No. **HDTP1**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 23/04/2013

Method : Hand excavated trial pit

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD				
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend	
J	0.20m			MADE GROUND: Dark brown sandy slightly gravelly CLAY with rootlets. High plasticity (field description). Gravel is angular to subrounded fine to coarse of sandstone, brick and coal. [Reworked Topsoil]	0.25			
				Orange brown clayey sandy subangular and subrounded fine to coarse GRAVEL of sandstone and siltstone.				
				End of Trial Pit at 0.90 m	0.90			

Remarks and Water Observations

1.No groundwater encountered.
2.Trial pit backfilled with arisings on completion.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
HDTP1

TRIAL PIT RECORD

TP No. **HDTP2**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 23/04/2013

Method : Hand excavated trial pit

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD				
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend	
J	0.20m			MADE GROUND: Dark brown sandy slightly gravelly CLAY with rootlets. High plasticity (field description). Gravel is angular and subangular fine to coarse of sandstone, clinker and coal. [Reworked Topsoil]	0.30			
				Stiff red brown sandy slightly gravelly SILT. Low plasticity (field description). Gravel is subangular fine to coarse of sandstone and siltstone.				
				End of Trial Pit at 0.80 m	0.80			

Remarks and Water Observations

1.No groundwater encountered.
2.Trial pit backfilled with arisings on completion.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
HDTP2

TRIAL PIT RECORD

TP No. **TP1**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 24/04/2013

Method : JCB 3CX equipped with 0.60m wide toothed bucket.

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS Type	Depth From - To(m)	Vane Results kN/m²	Groundwater	STRATA RECORD Description	Depth (m)	Level (mAOD) PID (ppm)	Legend
				MADE GROUND: Tarmacadam.	0.08		
J	0.30m			MADE GROUND: Grey brown sandy angular and subangular fine to coarse GRAVEL of sandstone, siltstone and rare brick. At 0.20m: Wall steps out 100mm. At 0.35m: Wall steps out a further 50mm. At 0.50m: Base of sandstone wall.	0.50		
D	0.60m			Orange brown silty sandy fine to coarse GRAVEL of siltstone and sandstone.	0.60		
D	0.90m			Light brown angular tabular fine to coarse GRAVEL and COBBLES of sandstone.	0.80		
				Very stiff orange brown slightly sandy gravelly CLAY. Low plasticity (field description). Gravel is subangular and angular fine to coarse of mudstone and siltstone lithorelicts.	2.00		
D	2.10m			Very weak very thinly bedded light grey SANDSTONE. Recovered as angular tabular medium and coarse gravel of sandstone.	2.10		
				End of Trial Pit at 2.10 m			

Remarks and Water Observations

1.Excavation stable.
2.No groundwater encountered.
3.Very slow excavation within sandstone bedrock.
4.Trial pit backfilled with arisings on completion.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
TP1

TRIAL PIT RECORD

TP No. **TP2**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 24/04/2013

Method : JCB 3CX equipped with 0.60m wide toothed bucket.

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD				
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend	
				MADE GROUND: Tarmacadam.	0.10			
J	0.20m			MADE GROUND: Red brown and grey sandy gravelly angular COBBLES of brick and concrete. Gravel is angular fine to coarse of brick and concrete.	0.30			
D	0.50m	58.0		Firm medium strength orange brown slightly gravelly silty CLAY. Low plasticity (field description). Gravel is subangular fine to coarse of siltstone and mudstone lithorelicts.	0.60			
D	0.90m			Orange brown silty slightly sandy subangular fine to coarse GRAVEL of siltstone and sandstone. Below 1.00m: Slow excavation.				
D	1.40m			Very weak very thinly bedded light grey SANDSTONE. Recovered as angular tabular medium and coarse gravel and cobbles of sandstone.	1.30 1.50			
				End of Trial Pit at 1.50 m				

Remarks and Water Observations

1.Excavation stable.
2.No groundwater encountered.
3.Very slow excavation within sandstone bedrock.
4.Trial pit backfilled with arisings on completion.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
TP2

TRIAL PIT RECORD

TP No. **TP3**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 24/04/2013

Method : JCB 3CX equipped with 0.60m wide toothed bucket.

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD			
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend
				MADE GROUND: Tarmacadam.	0.10		
				MADE GROUND: Light brown gravelly angular COBBLES of sandstone. Gravel is angular fine to coarse of sandstone.	0.40		
J	0.50m			MADE GROUND: Stiff grey brown sandy slightly gravelly CLAY. Low plasticity (field description). Gravel is angular and subangular fine to coarse of sandstone, siltstone, coal, brick and clinker. [Relic Topsoil]	0.60		
D	0.70m	64.0		Firm medium strength orange brown silty CLAY. Low plasticity (field description).			
D	1.50m	22.0		Firm low strength orange brown mottled light grey sandy CLAY. Intermediate plasticity.	1.40		
D	1.80m			Orange brown mottled grey silty sandy subangular fine to coarse GRAVEL of siltstone.	1.70		
D	1.90m		▽	Extremely weak very thinly bedded light brown SILTSTONE. Recovered as subangular tabular fine to coarse gravel and cobbles of siltstone.	1.90		
				Very weak very thinly bedded light grey SANDSTONE. Recovered as angular tabular medium and coarse gravel of sandstone.	2.00		
				End of Trial Pit at 2.05 m	2.05		

Remarks and Water Observations

1.Excavation stable.
2.Groundwater seepage encountered at 1.90m bgl.
3.Very slow excavation within sandstone bedrock.
4.Trial pit backfilled with arisings on completion.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
TP3

TRIAL PIT RECORD

TP No. **TP4**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 24/04/2013

Method : JCB 3CX equipped with 0.60m wide toothed bucket.

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD			
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend
				MADE GROUND: Tarmacadam.	0.10		
				MADE GROUND: Light brown gravelly angular COBBLES of sandstone. Gravel is angular fine to coarse of sandstone.	0.25		
				MADE GROUND: Dark grey and red brown slightly clayey sandy angular and subangular fine to coarse GRAVEL of sandstone, brick, coal, clinker and red shale.	0.35		
				Firm orange brown mottled light grey sandy silty CLAY with roots and rootlets. High plasticity (field description).	0.70		
D	0.90m	60.0		Stiff medium strength red brown slightly gravelly slightly sandy CLAY. High plasticity. Gravel is subangular and angular fine to coarse of mudstone and siltstone lithorelicts.			
D	1.60m			Stiff orange brown mottled grey silty CLAY. High plasticity (field description).	1.50		
				Orange brown silty sandy angular and subangular fine to coarse GRAVEL of siltstone and mudstone.	1.80		
				Extremely weak very thinly bedded light brown SILTSTONE. Recovered as subangular tabular fine to coarse gravel and cobbles of siltstone.	2.20		
				Very weak very thinly bedded light grey SANDSTONE. Recovered as angular tabular medium and coarse gravel of sandstone.	2.40		
				End of Trial Pit at 2.50 m	2.50		

Remarks and Water Observations

1.Excavation stable.
2.No groundwater encountered.
3.Very slow excavation within sandstone bedrock.
4.Trial pit backfilled with arisings on completion.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
TP4

TRIAL PIT RECORD

TP No. **TP5NE**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 24/04/2013

Method : JCB 3CX equipped with 0.60m wide toothed bucket.

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD			
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend
				MADE GROUND: Turf over dark grey ashy angular fine to coarse GRAVEL of clinker with rootlets.	0.05		
J	0.20m			MADE GROUND: Light red brown sandy angular fine to coarse GRAVEL of limestone.	0.30		
				MADE GROUND: Concrete.	0.50		
				MADE GROUND: Grey brown silty slightly sandy subangular and angular fine to coarse GRAVEL of siltstone and sandstone.			
J	0.90m - 1.00m			At 0.80m: Concrete haunch in north eastern part of trial pit with soil vent pipe over. Trial pit continued to south west.	0.90		
				MADE GROUND: Stiff grey brown slightly sandy slightly gravelly CLAY. Low plasticity (field description). Gravel is angular and subangular fine to coarse of sandstone, siltstone, clinker, coal and brick. [Relic Topsoil]	1.00		
				End of Trial Pit at 1.00 m			

Remarks and Water Observations

1.Trial pit terminanted due to concrete haunch over drain.
2.Excavation stable.
3.No groundwater encountered.
4.Trial pit backfilled with arisings on completion.
5. Trial pit continued to south west (c.f. TP5SW).

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
TP5NE

TRIAL PIT RECORD

TP No. **TP5SW**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 24/04/2013

Method : JCB 3CX equipped with 0.60m wide toothed bucket.

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD				
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend	
				MADE GROUND: Turf over dark grey ashy angular fine to coarse GRAVEL of clinker with rootlets.	0.05			
				MADE GROUND: Light red brown sandy angular fine to coarse GRAVEL of limestone.	0.25			
D	0.50m			Orange brown clayey subangular fine to coarse GRAVEL of mudstone and siltstone. Locally very clayey. Brick wall in north western face. At 0.50m: Bottom of wall on concrete strip footing (200mm thick).				
				Very weak very thinly bedded light grey SANDSTONE. Recovered as angular tabular medium and coarse gravel and cobbles of sandstone.	1.70			
				End of Trial Pit at 2.00 m	2.00			

Remarks and Water Observations

1.Excavation stable.
2.No groundwater encountered.
3.Very slow excavation within sandstone bedrock.
4.Trial pit backfilled with arisings on completion.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
TP5SW

TRIAL PIT RECORD

TP No. **TP6**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 24/04/2013

Method : JCB 3CX equipped with 0.60m wide toothed bucket.

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD				
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend	
				MADE GROUND: Dark grey sandy angular fine to coarse GRAVEL of sandstone, clinker, coal and glass, with rootlets.				
				Orange brown sandy clayey angular tabular fine to coarse GRAVEL of sandstone and siltstone. Locally very clayey. At 0.40m in north eastern part of trial pit: Well backfilled with red brown sandy clayey angular tabular flags of sandstone. Depth of well not proven.	0.30			
				Extremely weak very thinly bedded light brown SILTSTONE. Recovered as subangular tabular fine to coarse gravel and cobbles of siltstone.	1.40			
				End of Trial Pit at 1.60 m	1.60			

Remarks and Water Observations

1.Excavation unstable within backfill to well.
2.No groundwater encountered.
3.Very slow excavation within siltstone bedrock.
4.Trial pit backfilled with arisings on completion.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
TP6

TRIAL PIT RECORD

TP No. **TP7**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 24/04/2013

Method : JCB 3CX equipped with 0.60m wide toothed bucket.

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD			
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend
				MADE GROUND: Grey sandy angular fine to coarse GRAVEL of dolomite.	0.05		
J	0.30m - 0.40m			MADE GROUND: Light red brown sandy angular fine to coarse GRAVEL of limestone.	0.30		
D	0.50m			MADE GROUND: Black angular medium and coarse GRAVEL of clinker. Hydrocarbon odour.	0.40		
				MADE GROUND: Grey brown sandy angular and subangular fine to coarse GRAVEL of sandstone, siltstone, ash and clinker. Localised pockets of ash and clinker.			
				Firm red brown silty CLAY. High plasticity (field description). At 0.90m: Top of concrete haunch in south eastern part of trial pit. Presumed to be over culvert.	0.90		
				End of Trial Pit at 1.30 m	1.30		

Remarks and Water Observations

1.Trial pit excavated in order to locate culvert at request of Bellway.
2.Excavation stable.
3.No groundwater encountered.
4.Trial pit backfilled with arisings on completion. 5.Unable to remove concrete haunch due to live electric cable to west.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
TP7

TRIAL PIT RECORD

TP No. **TP8**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 24/04/2013

Method : JCB 3CX equipped with 0.60m wide toothed bucket.

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD			
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend
				MADE GROUND: Red brown fine to coarse SAND.			
				MADE GROUND: Light brown grey sandy subangular and subrounded fine to coarse GRAVEL of limestone and sandstone.	0.20		
J	0.60m			MADE GROUND: Stiff dark grey brown sandy slightly gravelly CLAY. Low plasticity (field description). Gravel is angular and subangular fine to coarse of sandstone, siltstone and coal. [Relic Topsoil]	0.50 0.70		
D	0.90m	66.0 68.0		Stiff medium strength red brown slightly gravelly silty CLAY. Low plasticity (field description). Gravel is subangular fine to coarse of siltstone and mudstone lithorelicts. Below 1.00m: Very stiff.			
				At 1.50m: Angular sandstone cobble in south eastern face.			
				Very weak very thinly bedded light grey SANDSTONE. Recovered as angular tabular medium and coarse gravel of sandstone.	1.90 2.00		
				End of Trial Pit at 2.00 m			

Remarks and Water Observations

1.Excavation stable.
2.No groundwater encountered.
3.Very slow excavation within sandstone bedrock.
4.Trial pit backfilled with arisings on completion.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
TP8

TRIAL PIT RECORD

TP No. **TP9**
Sheet 1 of 1

Site : Former Penistone Grammar School

Contract No: C5362

Client : Bellway Homes Ltd

Dates: 24/04/2013

Method : JCB 3CX equipped with 0.60m wide toothed bucket.

Scale 1:25

Logged By: JW

Checked By: RH

SAMPLE DETAILS			Groundwater	STRATA RECORD				
Type	Depth From - To(m)	Vane Results kN/m²		Description	Depth (m)	Level (mAOD) PID (ppm)	Legend	
				MADE GROUND: Firm dark brown sandy slightly gravelly CLAY with rootlets. High plasticity (field description). Gravel is angular and subangular fine to coarse of sandstone , siltstone and coal. [Reworked Topsoil]	0.30			
D	0.60m	60.0		Stiff medium strength orange brown mottled grey slightly gravelly silty CLAY. Low plasticity (field description). Gravel is subangular and angular fine to coarse of mudstone and siltstone lithorelicts. At 0.60m: Bottom of sandstone wall.				
		74.0		End of Trial Pit at 0.90 m	0.90			

Remarks and Water Observations

1.Excavation stable.
2.No groundwater encountered.
3.Trial pit terminated at shallow depth due to proximity to drain.
4.Trial pit backfilled with arisings on completion.

GL (m AOD)
-
Easting:
-
Northing:
-

Fig. No.
TP9

APPENDIX E

LABORATORY TEST RESULTS

Certificate of Analysis

2139

Certificate Number: 13-80222

Date: 09/05/2013

Client:	Sirius Geotechnical & Environmental 4245 Park Approach Thorpe Park Leeds LS15 8GB
Our Reference:	13-80222
Client Reference:	C5362/01
Contract Title:	Penistone Grammar School
Description:	10 soil samples, 5 leachate samples
Date Received:	30 April 2013
Date Started:	30 April 2013
Date Completed:	09 May 2013
Test Procedures:	Identified by prefix DETSn (details on request), Asbestos Analysis (DETS 082).
Notes:	Observations and interpretations are outside the scope of UKAS accreditation
Approved By:	Rob Brown, Business Manager

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Information in Support of the Analytical Results

Analysis

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425um sieve, in accordance with BS1377.
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28oC +/-2oC.

Key

*	Denotes test not included in laboratory scope of accreditation
#	Denotes test that holds MCERTS accreditation, however, MCERTS accreditation is only implied if the report carries the MCERTS logo
$	Denotes tests completed by an approved subcontractor
I/S	Denotes insufficient sample to carry out test
U/S	Denotes that the sample is not suitable for testing

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month
Liquids - 2 weeks
Asbestos (test portion) - 6 months

Summary of Chemical Analysis
Matrix Descriptions

Our Ref: 13-80222
Client Ref: C5362/01
Contract Title: Penistone Grammar School

Sample ID	Depth	Sample No	Completed	Matrix Description
HDTP2	0.20	507664	09/05/2013	Dark brown gravelly very clayey SAND with odd rootlets
TP2	0.20	507665	09/05/2013	Dark brown gravelly sandy CLAY (made ground includes brick)
TP3	0.50	507666	09/05/2013	Dark brown gravelly sandy CLAY
TP7	0.30-0.40	507667	09/05/2013	Dark brown grey very gravelly SAND
TP8	0.60	507668	09/05/2013	Dark brown gravelly sandy CLAY
WS2	0.30	507669	09/05/2013	Brown gravelly sandy CLAY
WS3	0.20	507670	09/05/2013	Dark brown gravelly sandy CLAY with numerous rootlets
WS4	0.20	507671	09/05/2013	Dark brown brown gravelly clayey SAND (made ground includes brick)
WS6	0.80-1.00	507672	09/05/2013	Brown gravelly clayey SAND (made ground includes brick)
WS7	0.20-0.30	507673	09/05/2013	Dark brown gravelly clayey SAND with odd rootlets (made ground includes possible brick)

Summary of Chemical Analysis
Soil Samples

Our Ref: 13-80222
Client Ref: C5362/01
Contract Title: Penistone Grammar School

			Lab No.	507664	507665	507666	507667	507668
			Sample ID	HDTP2	TP2	TP3	TP7	TP8
			Depth	0.20	0.20	0.50	0.30-0.40	0.60
			Sample Ref					
			Sample Type	J	J	J	J	J
			Sampling Date	23/04/2013	23/04/2013	23/04/2013	23/04/2013	23/04/2013
			Sampling Time					
Test	**Units**	**DETSxx**	**LOD**					
Mercury	mg/kg	DETSC 2325#	0.05	0.19	0.12	1.3	< 0.05	
Arsenic	mg/kg	DETS 042#	0.2	15	13	18	3.6	
Cadmium	mg/kg	DETS 042#	0.1	0.7	0.7	0.8	< 0.1	
Chromium	mg/kg	DETS 042#	0.15	30	27	51	53	
Copper	mg/kg	DETS 042#	0.2	25	34	48	6.5	
Nickel	mg/kg	DETS 042#	1	20	18	25	1.2	
Lead	mg/kg	DETS 042#	0.3	54	35	69	2.3	
Selenium	mg/kg	DETS 042#	0.5	< 0.5	< 0.5	< 0.5	2.6	
Zinc	mg/kg	DETS 042#	1	80	57	100	7.2	
Calorific Value	MJ/kg	DETSC 5008	1			1.3		
Total Sulphate as SO4	%	DETSC 2321#	0.01	0.07	0.09	0.10	0.82	
Sulphate Aqueous Extract as SO4	mg/l	DETSC 2076#	10	21	44	120	1500	
Total Organic Carbon	%	DETSC 2084#	0.5	1.7	1.2	1.7	< 0.5	
pH		DETSC 2008#		5.7	7.7	8.2	12.1	
Aliphatic C5-C6	mg/kg	DETSC 3321*	0.01				< 0.01	< 0.01
Aliphatic C6-C8	mg/kg	DETSC 3321*	0.01				< 0.01	< 0.01
Aliphatic C8-C10	mg/kg	DETSC 3321*	0.01				< 0.01	< 0.01
Aliphatic C10-C12	mg/kg	DETSC 3072#	1.5				< 1.5	< 1.5
Aliphatic C12-C16	mg/kg	DETSC 3072#	1.2				9.2	< 1.2
Aliphatic C16-C21	mg/kg	DETSC 3072#	1.5				21	< 1.5
Aliphatic C21-C35	mg/kg	DETSC 3072#	3.4				48	< 3.4
Aromatic C5-C7	mg/kg	DETSC 3321*	0.01				< 0.01	< 0.01
Aromatic C7-C8	mg/kg	DETSC 3321*	0.01				< 0.01	< 0.01
Aromatic C8-C10	mg/kg	DETSC 3321*	0.01				< 0.01	< 0.01
Aromatic C10-C12	mg/kg	DETSC 3072#	0.9				3.8	< 0.9
Aromatic C12-C16	mg/kg	DETSC 3072#	0.5				140	< 0.5
Aromatic C16-C21	mg/kg	DETSC 3072#	0.6				1100	3.5
Aromatic C21-C35	mg/kg	DETSC 3072#	1.4				1100	5.6
Aliphatic C5-C35	mg/kg	DETSC 3072*	10				79	< 10
Aromatic C5-C35	mg/kg	DETSC 3072*	10				2300	< 10
TPH Ali/Aro	mg/kg	DETSC 3072*	10				2400	< 10

Summary of Chemical Analysis
Soil Samples

Our Ref: 13-80222
Client Ref: C5362/01
Contract Title: Penistone Grammar School

			Lab No.	507664	507665	507666	507667	507668
			Sample ID	HDTP2	TP2	TP3	TP7	TP8
			Depth	0.20	0.20	0.50	0.30-0.40	0.60
			Sample Ref					
			Sample Type	J	J	J	J	J
			Sampling Date	23/04/2013	23/04/2013	23/04/2013	23/04/2013	23/04/2013
			Sampling Time					
Test	**Units**	**DETSxx**	**LOD**					
Acenaphthene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	0.2	16	
Acenaphthylene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	< 0.1	1.3	
Anthracene	mg/kg	DETSC 3301	0.1	< 0.1	0.8	1.1	63	
Benzo(a)anthracene	mg/kg	DETSC 3301	0.1	< 0.1	1.7	4.2	53	
Benzo(a)pyrene	mg/kg	DETSC 3301	0.1	< 0.1	1.1	3.5	37	
Benzo(b)fluoranthene	mg/kg	DETSC 3301	0.1	< 0.1	1.0	2.7	28	
Benzo(k)fluoranthene	mg/kg	DETSC 3301	0.1	< 0.1	0.5	1.5	17	
Benzo(g,h,i)perylene	mg/kg	DETSC 3301	0.1	< 0.1	1.1	1.9	22	
Chrysene	mg/kg	DETSC 3301	0.1	< 0.1	1.6	4.4	50	
Dibenzo(a,h)anthracene	mg/kg	DESTC 3301	0.1	< 0.1	0.1	0.3	2.6	
Fluoranthene	mg/kg	DETSC 3301	0.1	< 0.1	4.4	9.0	170	
Fluorene	mg/kg	DETSC 3301	0.1	< 0.1	0.1	0.2	25	
Indeno(1,2,3-c,d)pyrene	mg/kg	DETSC 3301	0.1	< 0.1	1.1	2.1	23	
Naphthalene	mg/kg	DETSC 3301	0.1	< 0.1	< 0.1	< 0.1	0.1	
Phenanthrene	mg/kg	DETSC 3301	0.1	< 0.1	1.5	2.8	260	
Pyrene	mg/kg	DETSC 3301	0.1	< 0.1	3.8	6.8	130	
PAH	mg/kg	DETSC 3301	1.6	< 1.6	19	41	890	
Phenol - Monohydric	mg/kg	DETSC 2130#	0.3	< 0.3	< 0.3	< 0.3	< 0.3	
PCB 77	mg/kg	DETSC 3401*	0.01					
PCB 81	mg/kg	DETSC 3401*	0.01					
PCB 105	mg/kg	DETSC 3401*	0.01					
PCB 114	mg/kg	DETSC 3401*	0.01					
PCB 118	mg/kg	DETSC 3401*	0.01					
PCB 123	mg/kg	DETSC 3401*	0.01					
PCB 126	mg/kg	DETSC 3401*	0.01					
PCB 156	mg/kg	DETSC 3401*	0.01					
PCB 157	mg/kg	DETSC 3401*	0.01					
PCB 167	mg/kg	DETSC 3401*	0.01					
PCB 169	mg/kg	DETSC 3401*	0.01					
PCB 189	mg/kg	DETSC 3401*	0.01					

Summary of Chemical Analysis
Soil Samples

Our Ref: 13-80222
Client Ref: C5362/01
Contract Title: Penistone Grammar School

			Lab No.	507669	507670	507671	507672	507673
			Sample ID	WS2	WS3	WS4	WS6	WS7
			Depth	0.30	0.20	0.20	0.80-1.00	0.20-0.30
			Sample Ref					
			Sample Type	J	J	J	J	J
			Sampling Date	23/04/2013	23/04/2013	23/04/2013	23/04/2013	23/04/2013
			Sampling Time					
Test	**Units**	**DETSxx**	**LOD**					
Mercury	mg/kg	DETSC 2325#	0.05		0.16	< 0.05	0.12	0.59
Arsenic	mg/kg	DETS 042#	0.2		13	7.0	13	57
Cadmium	mg/kg	DETS 042#	0.1		0.6	0.4	1.0	1.8
Chromium	mg/kg	DETS 042#	0.15		20	32	66	21
Copper	mg/kg	DETS 042#	0.2		24	20	27	220
Nickel	mg/kg	DETS 042#	1		13	12	24	34
Lead	mg/kg	DETS 042#	0.3		42	14	34	620
Selenium	mg/kg	DETS 042#	0.5		< 0.5	0.7	0.6	< 0.5
Zinc	mg/kg	DETS 042#	1		64	28	69	100
Calorific Value	MJ/kg	DETSC 5008	1			< 1.0	< 1.0	10.0
Total Sulphate as SO4	%	DETSC 2321#	0.01		0.07	0.20	0.20	0.13
Sulphate Aqueous Extract as SO4	mg/l	DETSC 2076#	10		85	450	270	59
Total Organic Carbon	%	DETSC 2084#	0.5		< 0.5	1.8	< 0.5	4.4
pH		DETSC 2008#			8.2	10.9	11.2	7.9
Aliphatic C5-C6	mg/kg	DETSC 3321*	0.01	< 0.01				
Aliphatic C6-C8	mg/kg	DETSC 3321*	0.01	< 0.01				
Aliphatic C8-C10	mg/kg	DETSC 3321*	0.01	< 0.01				
Aliphatic C10-C12	mg/kg	DETSC 3072#	1.5	< 1.5				
Aliphatic C12-C16	mg/kg	DETSC 3072#	1.2	< 1.2				
Aliphatic C16-C21	mg/kg	DETSC 3072#	1.5	< 1.5				
Aliphatic C21-C35	mg/kg	DETSC 3072#	3.4	< 3.4				
Aromatic C5-C7	mg/kg	DETSC 3321*	0.01	< 0.01				
Aromatic C7-C8	mg/kg	DETSC 3321*	0.01	< 0.01				
Aromatic C8-C10	mg/kg	DETSC 3321*	0.01	< 0.01				
Aromatic C10-C12	mg/kg	DETSC 3072#	0.9	< 0.9				
Aromatic C12-C16	mg/kg	DETSC 3072#	0.5	< 0.5				
Aromatic C16-C21	mg/kg	DETSC 3072#	0.6	< 0.6				
Aromatic C21-C35	mg/kg	DETSC 3072#	1.4	< 1.4				
Aliphatic C5-C35	mg/kg	DETSC 3072*	10	< 10				
Aromatic C5-C35	mg/kg	DETSC 3072*	10	< 10				
TPH Ali/Aro	mg/kg	DETSC 3072*	10	< 10				

Summary of Chemical Analysis
Soil Samples

Our Ref: 13-80222
Client Ref: C5362/01
Contract Title: Penistone Grammar School

			Lab No.	507669	507670	507671	507672	507673
			Sample ID	WS2	WS3	WS4	WS6	WS7
			Depth	0.30	0.20	0.20	0.80-1.00	0.20-0.30
			Sample Ref					
			Sample Type	J	J	J	J	J
			Sampling Date	23/04/2013	23/04/2013	23/04/2013	23/04/2013	23/04/2013
			Sampling Time					
Test	**Units**	**DETSxx**	**LOD**					
Acenaphthene	mg/kg	DETSC 3301	0.1		< 0.1	31	< 0.1	< 0.1
Acenaphthylene	mg/kg	DETSC 3301	0.1		< 0.1	1.4	< 0.1	< 0.1
Anthracene	mg/kg	DETSC 3301	0.1		0.1	65	0.7	< 0.1
Benzo(a)anthracene	mg/kg	DETSC 3301	0.1		0.8	130	1.3	< 0.1
Benzo(a)pyrene	mg/kg	DETSC 3301	0.1		0.5	120	1.3	< 0.1
Benzo(b)fluoranthene	mg/kg	DETSC 3301	0.1		0.4	83	0.6	< 0.1
Benzo(k)fluoranthene	mg/kg	DETSC 3301	0.1		0.1	49	0.3	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETSC 3301	0.1		0.2	60	0.4	< 0.1
Chrysene	mg/kg	DETSC 3301	0.1		0.4	140	1.0	< 0.1
Dibenzo(a,h)anthracene	mg/kg	DESTC 3301	0.1		0.2	9.4	0.6	< 0.1
Fluoranthene	mg/kg	DETSC 3301	0.1		0.7	280	2.6	0.2
Fluorene	mg/kg	DETSC 3301	0.1		< 0.1	44	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETSC 3301	0.1		0.4	64	1.2	< 0.1
Naphthalene	mg/kg	DETSC 3301	0.1		< 0.1	1.9	< 0.1	< 0.1
Phenanthrene	mg/kg	DETSC 3301	0.1		< 0.1	200	0.7	< 0.1
Pyrene	mg/kg	DETSC 3301	0.1		0.8	230	2.2	0.2
PAH	mg/kg	DETSC 3301	1.6		4.7	1500	13	< 1.6
Phenol - Monohydric	mg/kg	DETSC 2130#	0.3		< 0.3	< 0.3	< 0.3	< 0.3
PCB 77	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 81	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 105	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 114	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 118	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 123	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 126	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 156	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 157	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 167	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 169	mg/kg	DETSC 3401*	0.01		< 0.01			
PCB 189	mg/kg	DETSC 3401*	0.01		< 0.01			

Summary of Asbestos Analysis
Soil Samples

Our Ref: 13-80222
Client Ref: C5362/01
Contract Title: Penistone Grammar School

Lab No	Sample Ref	Material Type*	Result	Comment	Analyst
507665	TP2 0.20	Soil	NAD	na	Jeff Cruddas
507666	TP3 0.50	Soil	Chrysotile	Loose bundles	Jeff Cruddas
507671	WS4 0.20	Soil	NAD	na	Jeff Cruddas
507672	WS6 0.80-1.00	Soil	NAD	na	Jeff Cruddas

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. NAD = No Asbestos Detected. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETS 082 using polarised light microscopy in accordance with HSG248 and documented in-house methods. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'.

Summary of Chemical Analysis
Leachate Samples

Our Ref: 13-80222
Client Ref: C5362/01
Contract Title: Penistone Grammar School

			Lab No.	507674	507675	507676	507677	507678
			Sample ID	TP2	TP7	TP8	WS2	WS6
			Depth	0.20	0.30-0.40	0.60	0.30	0.80-1.00
			Sample Ref					
			Sample Type	J	J	J	J	J
			Sampling Date	23/04/2013	23/04/2013	23/04/2013	23/04/2013	23/04/2013
			Sampling Time					
Test	**Units**	**DETSxx**	**LOD**					
NRA Leachate Preparation		DETS 036*		Y	Y	Y	Y	Y
Arsenic, Dissolved	ug/l	DETSC 2306	0.16	1.5	< 0.16			< 0.16
Cadmium, Dissolved	ug/l	DETSC 2306	0.03	< 0.030	< 0.030			< 0.030
Chromium, Dissolved	ug/l	DETSC 2306	0.25	< 0.25	61			< 0.25
Copper, Dissolved	ug/l	DETSC 2306	0.4	< 0.40	< 0.40			< 0.40
Lead, Dissolved	ug/l	DETSC 2306	0.09	0.096	< 0.090			< 0.090
Mercury, Dissolved	ug/l	DETSC 2306	0.01	< 0.010	0.017			< 0.010
Nickel, Dissolved	ug/l	DETSC 2306	0.5	< 0.50	< 0.50			< 0.50
Selenium, Dissolved	ug/l	DETSC 2306	0.25	< 0.25	0.83			< 0.25
Zinc, Dissolved	ug/l	DETSC 2306	1.25	< 1.3	1.9			1.4
pH		DETSC 2008		7.9	7.5			7.7
Aliphatic C5-C6	ug/l	DETSC 3322	0.1			< 0.1	< 0.1	
Aliphatic C6-C8	ug/l	DETSC 3322	0.1			< 0.1	< 0.1	
Aliphatic C8-C10	ug/l	DETSC 3322	0.1			< 0.1	< 0.1	
Aliphatic C10-C12	ug/l	DETSC 3072*	1			< 1.0	< 1.0	
Aliphatic C12-C16	ug/l	DETSC 3072*	1			< 1.0	< 1.0	
Aliphatic C16-C21	ug/l	DETSC 3072*	1			< 1.0	< 1.0	
Aliphatic C21-C35	ug/l	DETSC 3072*	1			< 1.0	< 1.0	
Aromatic C5-C7	ug/l	DETSC 3322	0.1			< 0.1	< 0.1	
Aromatic C7-C8	ug/l	DETSC 3322	0.1			< 0.1	< 0.1	
Aromatic C8-C10	ug/l	DETSC 3322	0.1			< 0.1	< 0.1	
Aromatic C10-C12	ug/l	DETSC 3072*	1			< 1.0	< 1.0	
Aromatic C12-C16	ug/l	DETSC 3072*	1			< 1.0	< 1.0	
Aromatic C16-C21	ug/l	DETSC 3072*	1			< 1.0	< 1.0	
Aromatic C21-C35	ug/l	DETSC 3072*	1			< 1.0	< 1.0	
Aliphatic C5-C35	ug/l	DETSC 3072*	10			< 10	< 10	
Aromatic C5-C35	ug/l	DETSC 3072*	10			< 10	< 10	
TPH Ali/Aro	ug/l	DETSC 3072*	10			< 10	< 10	
Acenaphthene	ug/l	DETS 074*	0.01	0.03	0.14			< 0.01
Acenaphthylene	ug/l	DETS 074*	0.01	< 0.01	< 0.01			< 0.01
Anthracene	ug/l	DETS 074*	0.01	0.16	1.4			0.10
Benzo(a)anthracene	ug/l	DETS 074*	0.01	0.25	0.24			0.13
Benzo(a)pyrene	ug/l	DETS 074*	0.01	0.21	0.17			0.09
Benzo(b)fluoranthene	ug/l	DETS 074*	0.01	0.27	0.21			0.13
Benzo(k)fluoranthene	ug/l	DETS 074*	0.01	0.14	0.11			0.06
Benzo(g,h,i)perylene	ug/l	DETS 074*	0.01	0.15	0.10			0.04
Chrysene	ug/l	DETS 074*	0.01	0.22	0.29			0.11
Dibenzo(a,h)anthracene	ug/l	DETS 074*	0.01	< 0.01	0.04			0.04
Fluoranthene	ug/l	DETS 074*	0.01	0.72	1.8			0.44
Fluorene	ug/l	DETS 074*	0.01	0.07	0.70			0.02
Indeno(1,2,3-c,d)pyrene	ug/l	DETS 074*	0.01	0.23	0.06			0.10
Naphthalene	ug/l	DETS 074*	0.01	0.08	0.79			0.05
Phenanthrene	ug/l	DETS 074*	0.01	0.24	5.4			0.28
Pyrene	ug/l	DETS 074*	0.01	0.73	1.7			0.44
PAH	ug/l	DETS 074*	0.2	3.5	13			2.1
Phenol	ug/l	DETS 079*	0.5	< 0.50	< 0.50			< 0.50

Sample Comments

DETS cannot be held responsible for the integrity of sample(s) received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating.

Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note "Guidance on Deviating Samples".

All samples received are listed below. However, those samples that have additional comments in relation to hold time and/or inappropriate containers are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations.

If no sampled date (soils) or date/time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters), this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Lab No.	Sample ID	Date Sampled	Containers Received	Deviating due to holding time being exceeded for test(s)	Deviating due to inappropriate container for test(s)	Deviating due to headspace presence in container for test(s)
507664	HDTP2 0.20 SOIL	23/04/2013	Glass Jar 1 litre (1 litre)			
507665	TP2 0.20 SOIL	23/04/2013	Glass Jar 1 litre (1 litre)			
507666	TP3 0.50 SOIL	23/04/2013	Glass Jar 1 litre (1 litre)			
507667	TP7 0.30-0.40 SOIL	23/04/2013	Glass Jar 1 litre (1 litre)			
507668	TP8 0.60 SOIL	23/04/2013	Glass Jar 1 litre (1 litre)			
507669	WS2 0.30 SOIL	23/04/2013	Glass Jar 1 litre (1 litre)			
507670	WS3 0.20 SOIL	23/04/2013	Glass Jar 1 litre (1 litre)			
507671	WS4 0.20 SOIL	23/04/2013	Glass Jar 1 litre (1 litre)			
507672	WS6 0.80-1.00 SOIL	23/04/2013	Glass Jar 1 litre (1 litre)			
507673	WS7 0.20-0.30 SOIL	23/04/2013	Glass Jar 1 litre (1 litre)			
507674	TP2 0.20 LEACHATE	23/04/2013	Glass Jar 1 litre (1 litre)			
507675	TP7 0.30-0.40 LEACHATE	23/04/2013	Glass Jar 1 litre (1 litre)			
507676	TP8 0.60 LEACHATE	23/04/2013	Glass Jar 1 litre (1 litre)			
507677	WS2 0.30 LEACHATE	23/04/2013	Glass Jar 1 litre (1 litre)			
507678	WS6 0.80-1.00 LEACHATE	23/04/2013	Glass Jar 1 litre (1 litre)			

Appendix A - Details of Analysis

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS.
No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Method	Name of Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic Matter	%	0.01	Air Dried	No	Yes	Yes
DETSC 2003	Loss on Ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2004	Total Sulphate	%	0.01	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate	%	0.01	Air Dried	No	Yes	Yes
DETSC 2004	Water Soluble Sulphate	mg/l	10.00	Air Dried	No	Yes	Yes
DETSC 2076	Water Soluble Sulphate	mg/l	10.00	Air Dried	No	Yes	Yes
DETSC 2006	Chloride	mg/kg	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	0.10	Air Dried	No	Yes	Yes
DETS 042	Selenium	mg/kg	0.50	Air Dried	No	Yes	Yes
DETSC 2119	Ammonia	mg/kg	0.02	Air Dried	No	Yes	Yes
DETS 020	Boron (Water Soluble)	mg/kg	0.20	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10.00	Air Dried	No	Yes	Yes
DETS 042	Antimony	mg/kg	1.00	Air Dried	No	No	No
DETS 042	Arsenic	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Barium	mg/kg	1.50	Air Dried	No	Yes	Yes
DETS 042	Beryllium	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Cadmium	mg/kg	0.10	Air Dried	No	Yes	Yes
DETS 042	Cobalt	mg/kg	0.70	Air Dried	No	Yes	Yes
DETS 042	Copper	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETS 042	Iron	mg/kg	1.00	Air Dried	No	Yes	No

Appendix A - Details of Analysis

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS.
No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Method	Name of Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 042	Lead	mg/kg	0.30	Air Dried	No	Yes	Yes
DETS 042	Manganese	mg/kg	20.00	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETS 042	Molybdenum	mg/kg	0.40	Air Dried	No	Yes	Yes
DETS 042	Nickel	mg/kg	0.20	Air Dried	No	Yes	Yes
DETS 042	Thallium	mg/kg	1.00	Air Dried	No	No	No
DETS 042	Vanadium	mg/kg	0.80	Air Dried	No	Yes	Yes
DETS 042	Zinc	mg/kg	1.00	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (Free)	mg/kg	0.50	As Received	No	Yes	Yes
DETSC 3301	PAH by GC-FID	mg/kg	0.10	As Received	No	Yes	No
DETSC 3311	TPH (C10 - C40)	mg/kg	20.00	As Received	No	Yes	Yes
DETSC 3401	PCB	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzne	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Easily Liberatable Cyanide	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Complex Cyanide	mg/kg	0.30	Air Dried	No	Yes	No
DETSC 2130	Total Cyanide	mg/kg	0.40	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes

Appendix A - Details of Analysis

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS.
No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Method	Name of Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3431	VOC	mg/kg	0.01	As Received	No	No	No
DETSC 3303	PAH by GCMS (see list below)						
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Anthracene	mg/kg	0.03	As Received	No	Yes	No
DETSC 3303	Chrysene	mg/kg	0.03	As Received	No	Yes	No
DETSC 3303	Fluorene	mg/kg	0.03	As Received	No	Yes	No

PSL
Professional Soils Laboratory

LABORATORY REPORT

UKAS TESTING
4043

Contract Number: PSL13/1524

Client's Reference: Report Date: 28 May 2013

Client Name: Sirius Leeds
4245 Park Approach
Century Way
Thorpe Park
Leeds
LS15 8GB

For the attention of: Jim Wilson

Contract Title: Former Penistone Grammar School

Date Received: 2/5/2013
Date Commenced: 2/5/2013
Date Completed: 16/5/2013

Notes: Observations and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

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awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Depth m	Description of Sample
TP3		D	1.50	Brown sandy CLAY.
TP4		D	0.90	Brown slightly gravelly slightly sandy CLAY.
WS4		D	0.60	Brown slightly gravelly sandy very silty CLAY.

PSL
Professional Soils Laboratory

Compiled by	Date	Checked by	Date	Approved by	Date
	07/05/13		07/05/13		07/05/13

FORMER PENISTONE GRAMMAR SCHOOL.

Contract No: PSL13/1524

Client Ref: C5362

SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Depth m	Moisture Content % Clause 3.2	Bulk Density Mg/m^3 Clause 7.2	Dry Density Mg/m^3 Clause 7.2	Particle Density Mg/m^3 Clause 8.	Liquid Limit % Clause 4.3/4.4	Plastic Limit % Clause 5.	Plasticity Index % Clause 6.	% Passing .425mm	Remarks
TP3		D	1.50	26				43	20	23	100	Intermediate plasticity CI.
TP4		D	0.90	30				57	24	33	96	High plasticity CH.
WS4		D	0.60	20				35	21	14	96	Intermediate plasticity CI.

SYMBOLS : NP : Non Plastic *** : Liquid Limit and Plastic Limit Wet Sieved.**

PSL
Professional Soils Laboratory

Compiled by	Date	Checked by	Date	Approved by	Date
	07/05/13		07/05/13		07/05/13

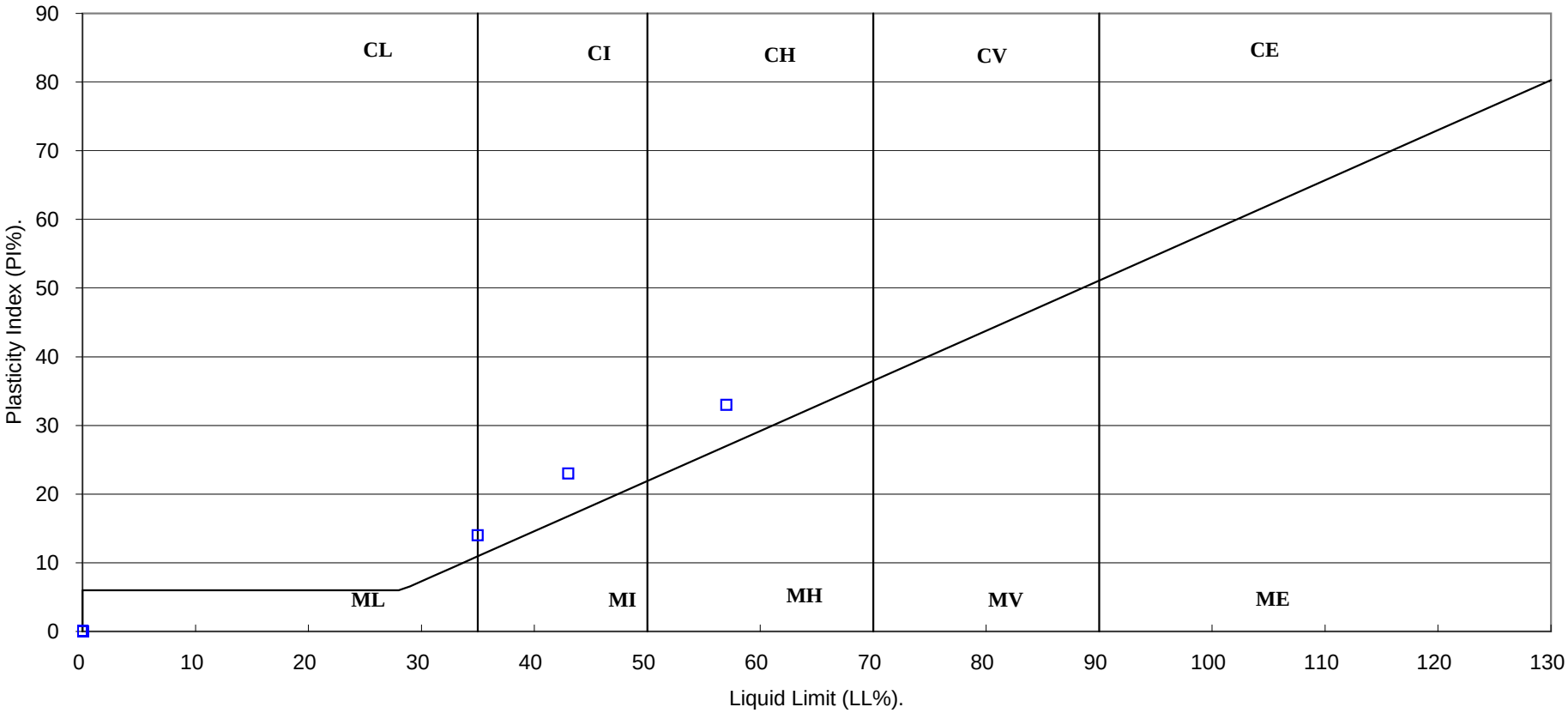
FORMER PENISTONE GRAMMAR SCHOOL.

Contract No: **PSL13/1524**

Client Ref: **C5362**

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930 : 1999)



PSL Professional Soils Laboratory	**Compiled by**	**Date**	**Checked by**	**Date**	**Approved by**	**Date**
		07/05/13		07/05/13		07/05/13
	FORMER PENISTONE GRAMMAR SCHOOL.				**Contract No:**	**PSL13/1524**
					Client Ref:	**C5362**

Certificate of Analysis

2139

Date: 13/05/2013

Certificate Number: 13-80580

Client:	Professional Soils Laboratory Ltd 5/7 Hexthorpe Road Hexthorpe DN4 0AR
Our Reference:	13-80580
Client Reference:	PSL13/1524
Contract Title:	Former Penistone Grammar School
Description:	6 soil samples
Date Received:	07 May 2013
Date Started:	08 May 2013
Date Completed:	13 May 2013
Test Procedures:	Identified by prefix DETSn, details available upon request.
Notes:	Observations and interpretations are outside the scope of UKAS accreditation

Approved By:



Rob Brown, Business Manager

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Information in Support of the Analytical Results

Analysis

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425um sieve, in accordance with BS1377.
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28oC +/-2oC.

Key

*	Denotes test not included in laboratory scope of accreditation
#	Denotes test that holds MCERTS accreditation, however, MCERTS accreditation is only implied if the report carries the MCERTS logo
$	Denotes tests completed by an approved subcontractor
I/S	Denotes insufficient sample to carry out test
U/S	Denotes that the sample is not suitable for testing

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month
Liquids - 2 weeks
Asbestos (test portion) - 6 months

Summary of Chemical Analysis
Soil Samples

Our Ref: 13-80580
Client Ref: PSL13/1524
Contract Title: Former Penistone Grammar School

			Lab No.	509734	509735	509736	509737	509738
			Sample ID	TP1	TP1	TP2	TP3	WS3
			Depth	0.90	2.10	0.90	1.90	1.50
			Sample Ref					
			Sample Type	D	D	D	D	D
			Sampling Date	/ /	/ /	/ /	/ /	/ /
			Sampling Time					
Test	**Units**	**DETSxx**	**LOD**					
Sulphate Aqueous Extract as SO4	mg/l	DETSC 2076#	10	16	15	< 10	20	70
pH		DETSC 2008#		7.8	7.7	7.9	8.0	6.7

Summary of Chemical Analysis
Soil Samples

Our Ref: 13-80580
Client Ref: PSL13/1524
Contract Title: Former Penistone Grammar School

			Lab No.	509739
			Sample ID	WS7
			Depth	0.50
			Sample Ref	
			Sample Type	D
			Sampling Date	/ /
			Sampling Time	
Test	**Units**	**DETSxx**	**LOD**	
Sulphate Aqueous Extract as SO4	mg/l	DETSC 2076#	10	11
pH		DETSC 2008#		7.2

Sample Comments

DETS cannot be held responsible for the integrity of sample(s) received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating.

Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note "Guidance on Deviating Samples".

All samples received are listed below. However, those samples that have additional comments in relation to hold time and/or inappropriate containers are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations.

If no sampled date (soils) or date/time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters), this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Lab No.	Sample ID	Date Sampled	Containers Received	Deviating due to holding time being exceeded for test(s)	Deviating due to inappropriate container for test(s)	Deviating due to headspace presence in container for test(s)
509734	TP1 0.90 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		
509735	TP1 2.10 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		
509736	TP2 0.90 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		
509737	TP3 1.90 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		
509738	WS3 1.50 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		
509739	WS7 0.50 SOIL		Plastic Tub 1 litre (1kg)	Sample is deviating (no sampled date supplied)		

APPENDIX F

SIRIUS GENERIC ASSESSMENT CRITERIA

SIRIUS GENERIC ASSESSMENT CRITERIA

LEGISLATIVE AND RISK ASSESSMENT FRAMEWORK

Under the Town and Country Planning Legislation, in order that a site may be redeveloped, the site needs to be suitable for its intended use. Part IIA of the Environmental Protection Act 1990 (EPA) provides a legal framework for identifying and dealing with contaminated land.

The Contaminated Land (England) Regulations 2000 were issued in accordance with the provision with the EPA. The regulations define Contaminated Land as land "in such condition, by reason of substances in, on, or under the land, that: significant harm is being caused, or pollution of controlled waters is being or is likely to be caused".

In the UK the determination of whether land can be classified as contaminated land and whether land is suitable for its intended use are both based upon risk assessment. The methodology for undertaking such risk assessments has been published by DEFRA and the Environment Agency. This is based upon the concept of potential source-pathway-receptor relationships to determine whether there are pollutant linkages operating in a particular end use.

The framework for conducting site investigations, risk assessments and undertaking any necessary remedial works is presented in the Environment Agency report CLR11 "Model Procedures for the Management of Contaminated Land". This presents a tiered approach to risk assessment: analysis of potential pollutant linkages via a Conceptual Site Model; comparison of contaminant concentrations with Soil Guideline Values or other Generic Assessment Criteria (Generic Quantitative Risk Assessment; GQRA); and, if required, a Detailed Quantitative Risk Assessment (DQRA) based on site-specific conditions.

Human Health

Where Soil Guideline Values (SGV) have been published by the Environment Agency, these have been used by Sirius as the basis for human health Generic Assessment Criteria (GAC).

For metals and metalloids, SGVs have been applied directly for the "Residential With Plant Uptake" and "Commercial" land uses as the SGVs are not sensitive to soil type nor soil organic matter content. For the "Residential Without Plant Uptake" land use, GAC values have been derived by Sirius using CLEA versions 1.04 and 1.06, the contaminant parameter values presented in the SGV reports and the relevant guidance presented in the Environment Agency Science Report SC050021 series. For organics, GAC values have been derived using the same approach for a sandy soil type at a range of SOM contents. The sandy soil type is conservative for the majority of soils (including made ground) encountered on historically contaminated sites.

In the absence of published SGVs, Sirius has normally derived GAC values using CLEA versions 1.04 and 1.06 and the authoritative parameter data presented in Nathanail *et al*. (2009) "The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment", 2nd edition, Land Quality Press, Nottingham.

Where neither SGVs nor authoritative third party reports were available, GAC values were derived by Sirius using the CLEA version 1.04 and 1.06 models in accordance with the guidance published by the Environment Agency in the SC050021 report series. Full details of the derivation of these GAC values can be provided upon request.

Controlled Waters

The Environment Agency's "Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources", R&D Publication 20, provides a framework for assessing the potential for pollution of controlled waters and for deriving remedial target concentrations in soil and groundwater. In relation to the standards for controlled waters, there are currently no generic groundwater nor surface water standards that are applicable to all sites. However, the UK Drinking Water Standards and the Environment Agency's national Environmental Quality Standards (EQS) are considered appropriate assessment criteria for many cases.

Soil Leachability

A screening assessment has been carried out using leachability data obtained from tests performed on soils at the site, to assess the potential risks to local controlled waters, including groundwater. The Environment Agency's Remedial Targets

Methodology recommends the use of the BS EN 12475 leachate methods and this is adopted by Sirius.

The results of the leachate analysis have been compared to relevant criteria derived from Environment Agency (2002) “Technical Advice to Third Parties on Pollution of Controlled Waters for Part IIA, EPA1990” and The Water Supply (Water Quality) Regulations 1989, as amended (2001 and 2007).

Buried Concrete

A generic assessment is made in relation to the potential impact on buried concrete by reference to BRE Special Digest No. 1; 3rd Edition (2005) “Concrete in Aggressive Ground”.

SIRIUS HUMAN HEALTH GENERIC ASSESSMENT CRITERIA – SOILS

Parameter	Residential (mg/kg, unless otherwise stated)						Commercial / Industrial (mg/kg, unless otherwise stated)			Source
	With Plant Uptake			Without Plant Uptake						
	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	
Metals/Metalloids										
Arsenic (inorganic)	32			35			640			Arsenic SGV [a]
Boron	290			10300			190000			Sirius/LQM/CIEH [b]
Cadmium [c]	10			18			230			Cadmium SGV
Chromium (III) [d]	3000			3000			30000			Sirius/LQM/CIEH
Copper	200 [e]			6200			72000			See note [e]
Lead	450			450			750			SGV10 [f]
Mercury (inorganic) [g]	170			240			3600			Mercury SGV
Nickel	130			130			1800			Nickel SGV
Selenium	350			600			13000			Selenium SGV
Vanadium	74			190			3200			Sirius/LQM/CIEH
Zinc	450 [e]			40000			600000			See note [e]
Other Inorganics										
pH	<5			<5			<5			
Total Sulphate	2400			2400			2400			BRE (2005) [h]
Water-Soluble Sulphate	0.5 g/l			0.5 g/l			0.5 g/l			BRE (2005)
Free Cyanide	34			34			1400			Acute risk calc. [i]
Organics										
PAHs										
Acenaphthene	200	460	840	1400	2400	3200	77000	93000	100000	Sirius/LQM/CIEH
Acenaphthylene	160	380	710	1400	2400	3200	77000	93000	100000	Sirius/LQM/CIEH
Anthracene	2200	4900	8200	19000	22000	23000	520000	540000	540000	Sirius/LQM/CIEH
Benzo(a)anthracene	3.3	4.9	5.8	4.1	5.5	6.2	91	96	98	Sirius/LQM/CIEH
Benzo(a)pyrene	0.83	0.94	1.0	1.0	1.0	1.0	14	14	15	Sirius/LQM/CIEH
Benzo(b)fluoranthene	5.6	6.5	7.0	7.0	7.3	7.4	100	100	100	Sirius/LQM/CIEH
Benzo(g,h,i)perylene	44	46	47	47	47	48	660	660	660	Sirius/LQM/CIEH
Benzo(k)fluoranthene	8.5	9.6	10	10	10	10	140	140	140	Sirius/LQM/CIEH

Parameter	Residential (mg/kg, unless otherwise stated)						Commercial / Industrial (mg/kg, unless otherwise stated)			Source
	With Plant Uptake			Without Plant Uptake						
	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	
Chrysene	6.1	8.1	9.1	9.0	9.8	10	140	140	140	Sirius/LQM/CIEH
Dibenz(a,h)anthracene	0.77	0.86	0.90	0.87	0.91	0.93	13	13	13	Sirius/LQM/CIEH
Fluoranthene	260	460	630	980	1000	1000	23000	23000	23000	Sirius/LQM/CIEH
Fluorene	160	370	660	1500	2200	2600	61000	67000	70000	Sirius/LQM/CIEH
Indeno(1,2,3-cd)pyrene	3.2	3.9	4.1	4.2	4.4	4.4	61	62	62	Sirius/LQM/CIEH
Naphthalene	0.68	1.6	3.2	0.7	1.7	3.3	110	270	540	Sirius/LQM/CIEH
Phenanthrene	92	200	330	820	920	960	22000	22000	23000	Sirius/LQM/CIEH
Pyrene	560	1000	1500	2300	2400	2400	54000	54000	55000	Sirius/LQM/CIEH
BTEX and related										
Benzene	0.054	0.11	0.20	0.11	0.21	0.38	16	30	52	Sirius/CLEA [j]
Toluene	92	210	410	260	570	1070	840	1900	3600	Sirius/CLEA
Ethylbenzene	42	100	200	70	160	320	510	1200	2400	Sirius/CLEA
Xylenes (total) [k]	20	47	92	22	52	100	470	1100	2200	Sirius/CLEA
1,2,4-trimethylbenzene	0.16	0.39	0.76	0.17	0.41	0.81	23	55	110	Sirius/CLEA/EIC [l]
Iso-propylbenzene	4.7	11	23	4.8	12	23	750	1800	3600	Sirius/CLEA/EIC
Propylbenzene	15	37	54	16	40	79	2200	5400	10400	Sirius/CLEA/EIC
Styrene	6.1	14	28	15	34	65	2000	4100	6900	Sirius/CLEA/EIC
TPH										
Aliphatic EC 5-6	17	28	47	29	53	93	2500	4300	7200	Sirius/LQM/CIEH
Aliphatic EC >6-8	36	77	150	70	160	300	5500	12000	22000	Sirius/LQM/CIEH
Aliphatic EC >8-10	8.8	22	42	18	44	88	1300	3200	6300	Sirius/LQM/CIEH
Aliphatic EC >10-12	43	110	210	90	220	440	6400	15000	29000	Sirius/LQM/CIEH
Aliphatic EC >12-16	350	850	1600	720	1600	2700	44000	73000	85000	Sirius/LQM/CIEH
Aliphatic EC >16-35	29000	48000	62000	44000	64000	74000	No GAC [m]	No GAC	No GAC	Sirius/LQM/CIEH
Aliphatic EC >35-44	29000	48000	62000	44000	64000	74000	No GAC	No GAC	No GAC	Sirius/LQM/CIEH
Aromatic EC >5-7	0.054	0.11	0.20	0.11	0.21	0.38	16	30	52	Set as benzene
Aromatic EC >7-8	92	210	410	610	1290	2300	35000	71000	120000	Sirius/LQM/CIEH

Parameter	Residential (mg/kg, unless otherwise stated)						Commercial / Industrial (mg/kg, unless otherwise stated)			Source
	With Plant Uptake			Without Plant Uptake						
	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	
Aromatic EC >8-10	14	34	68	32	78	150	2300	5400	10000	Sirius/LQM/CIEH
Aromatic EC >10-12	54	130	250	170	400	730	11000	23000	30000	Sirius/LQM/CIEH
Aromatic EC >12-16	140	300	520	1200	1600	1700	35000	37000	38000	Sirius/LQM/CIEH
Aromatic EC >16-21	250	480	710	1300	1300	1300	28000	28000	28000	Sirius/LQM/CIEH
Aromatic EC >21-35	890	1100	1200	1300	1300	1300	28000	28000	28000	Sirius/LQM/CIEH
Aromatic EC >35-44	890	1100	1200	1300	1300	1300	28000	28000	28000	Sirius/LQM/CIEH
Chlorinated Organics										
Chlorobenzene	0.14	0.31	0.61	0.14	0.31	0.61	33	75	150	Sirius/LQM/CIEH
Dichloromethane (DCM)	0.41	0.7	1.0	0.83	1.2	1.7	140	200	290	Sirius/CLEA/EIC
1,1-dichloroethane (DCA)	1.0	1.7	2.8	1.0	1.7	2.9	150	250	420	Sirius/CLEA/EIC
1,2-dichloroethane (DCA)	0.0022	0.0035	0.0055	0.0024	0.0037	0.0059	0.36	0.55	0.86	Sirius/LQM/CIEH
1,1-dichloroethene (DCE)	0.10	0.18	0.32	0.10	0.18	0.32	15	28	48	Sirius/CLEA/EIC
cis-1,2-dichloroethene (DCE)	0.05	0.08	0.14	0.05	0.09	0.19	7.7	14	24	Sirius/CLEA/EIC
trans-1,2-dichloroethene (DCE)	0.08	0.15	0.27	0.08	0.15	0.27	12	23	41	Sirius/CLEA/EIC
Pentachlorophenol	0.54	1.3	2.5	23	31	35	1200	1300	1400	Sirius/LQM/CIEH
1,1,1,2-tetrachloroethane	0.41	0.96	1.9	0.44	1.0	2	63	150	280	Sirius/LQM/CIEH
1,1,2,2-tetrachloroethane	0.78	1.7	3.2	1.1	2.4	4.4	160	330	600	Sirius/LQM/CIEH
Tetrachloroethene (PCE)	0.41	0.94	1.8	0.43	0.96	1.9	72	163	310	Sirius/LQM/CIEH
Tetrachloromethane	0.0078	0.017	0.033	0.0078	0.017	0.033	1.7	3.8	7.3	Sirius/LQM/CIEH
1,1,1-trichloroethane (TCA)	2.6	5.5	10	2.7	5.5	10	390	820	1500	Sirius/LQM/CIEH
1,1,2-trichloroethane (TCA)	0.30	0.64	1.2	0.36	0.76	1.4	51	110	200	Sirius/CLEA/EIC
Trichloroethene (TCE)	0.045	0.1	0.18	0.046	0.098	0.19	6.6	14	27	Sirius/LQM/CIEH
Trichloromethane	0.34	0.63	1.1	0.37	0.68	1.2	57	110	190	Sirius/LQM/CIEH
Vinyl Chloride	0.00024	0.00032	0.00045	0.00026	0.00034	0.00047	0.04	0.052	0.072	Sirius/LQM/CIEH
Miscellaneous Organics										
Carbon disulphide	0.047	0.094	0.17	0.047	0.094	0.17	7.1	14	27	Sirius/LQM/CIEH
Di-(2-ethylhexyl)-phthalate	280	610	1000	2700	2800	2800	85000	86000	86000	Sirius/CLEA/EIC

Parameter	Residential (mg/kg, unless otherwise stated)						Commercial / Industrial (mg/kg, unless otherwise stated)			Source
	With Plant Uptake			Without Plant Uptake						
	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	
MTBE	23	40	70	28	48	81	4000	6900	12000	Sirius/CLEA/EIC
Phenol	180	290	392	310	420	510	3200 [n]			Phenol SGV
Methylphenols (cresols), total [o]	77	170	330	3900	5600	6800	160000	160000	160000	Sirius/CLEA/EIC
2,4-dimethylphenol (m-xylenol)	18	41	78	140	300	500	14000	22000	27000	Sirius/CLEA/EIC

All values are rounded to 1 or 2 significant figures.

Notes:

[a] SGV reports comprise the SGV, TOX and supporting contaminant-specific reports published by the Environment Agency as part of the Science Report SC050021 series. SGV values are applied directly as the criteria are not sensitive to soil type nor SOM content. For the “Residential Without Plant Uptake” land use, GAC values have been derived by Sirius using CLEA version 1.06 and the published model parameter and chemical property data.

[b] Calculated by Sirius for sandy soil in CLEA version 1.06 using the toxicological, model parameter and chemical property data presented in Nathanail et al. (2009) “The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment”, 2nd edition, Land Quality Press, Nottingham.

[c] The SGV and GAC values for cadmium are based on data for soils having a pH value in the range 6-8. Caution should be applied in applying them at pH values outside this range, especially at pH values <5.

[d] GAC for Cr (III) also applied for total chromium, as hexavalent chromium does not persist to a significant extent in soils under normal conditions (further information can be provided upon request). A SSAC will be required for sites where historical information indicate that Cr (VI) was handled or generated on site, when analytical data demonstrate Cr (VI) is present or when soil conditions indicate that Cr (VI) will persist in situ.

[e] For the 'Residential with Plant Uptake' end-use, the GAC values for Cu and Zn are based on potential phytotoxic effects and have been set at the maximum allowable concentrations for sewage sludge-amended soils presented in the "Sludge (Use in Agriculture) Regulations" (SI 1263/1989). The equivalent GAC values for human health protection in this land-use are: Cu, 2300 mg/kg; Zn, 3700 mg/kg (LQM/CIEH values - Nathanail et al., 2009). The GAC values for the other land uses presented are human health-based criteria presented in Nathanail et al. (2009). In cases where soils in those land uses may be used for vegetation purposes, then the 'Residential with Plant Uptake' GAC values may be applied. However, for all cases where the GAC is set on the basis of potential phytotoxicity, alternative criteria will be derived where elevated natural background soil concentrations of these metals have been demonstrated.

[f] SGV10 has been retained as the most appropriate source of a GAC for lead, given the specific blood lead calculation methods and input data applied.

[g] The SGV for mercury is based on inorganic mercury which represents the most common form encountered within the environment. This is considered appropriate for most sites as: “…the SGV for inorganic mercury can normally be compared with chemical analysis for total mercury content because the equilibrium concentrations of elemental and methylmercury compounds are likely to be very low” (SC050021/Mercury SGV). Analysis and specific assessment for elemental or methylated forms of mercury will need to be considered if historical land use or site-specific factors indicate that these forms of mercury are likely to be present.

[h] BRE (2005) Special Digest 1, 3rd Edition “Concrete in aggressive ground”. Sulphate is not considered to pose a potential risk to human health under normal circumstances – this GAC applies to construction cases only and is set at the upper limit for DS-1 Design Sulphate Class concrete.

[i] GAC calculated for acute risk. Further information can be provided upon request.

[j] Calculated by Sirius for all land uses using CLEA version 1.06 and the toxicological, model parameter and chemical property data published by the Environment Agency (Science Report SC050021 Series).

[k] For screening purposes, a single GAC has been set for total xylene. This is the lowest of the values calculated for the three individual xylene isomers.

[l] Calculated by Sirius for all land uses using CLEA version 1.06 and the toxicological, model parameter and chemical property data published by CL:AIRE in association with the AGS and EIC (December 2009).

[m] “No GAC” indicates that no value has been specified for this land use as the HCV cannot be exceeded at achievable soil concentrations.

[n] The GAC for Commercial/Industrial land use is based on the threshold protective of direct skin contact with phenol (See SR050021/Phenol SGV).

[o] For screening purposes, a single GAC has been set for total methylphenol. This is the lowest of the values calculated for the three individual methylphenol isomers.

[p] The Hazardous Waste (England and Wales) Regulations 2005. TOC content in itself does not represent a potential risk to human health. This GAC is provided for indicative assessment of disposal options, in the case that off-site landfill of soil is is undertaken. This GAC is specified at the ‘Inert’ waste threshold and should be considered as for information purposes only.

[q] ICRCL (1986) Guidance Note 61/84, 2nd Edition, Notes on the Fire Hazards of Contaminated Land. Calorific value is not an indication of chronic human health risk but may be useful in assessment of the potential fire risk posed by made ground or natural soils containing elevated concentrations of potentially combustible organic matter.

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Revision no.: 7
Last edited by: PM
Last revision date: 23-Jun-12

GAC VALUES FOR CONTROLLED WATERS IN ENGLAND AND WALES

Parameter	GAC (µg/l, unless stated)			Notes
	Inland waters		Coastal and transition waters	
	EQS	DWS	EQS	
Metals and metalloids				
Arsenic	50	10	25	1
Cadmium	See separate table	5	0.2	1, 2
Chromium (total)	4.7	50	4.7	1, 3
Copper	See separate table	2000	5	1, 2
Lead	7.2	25	7.2	1
Mercury	0.05	1	0.05	1
Nickel	20	20	20	1
Zinc	See separate table	5000	40	1, 2
Misc. inorganics				
Ammonia (total, as N)	See separate table	N.A.	N.A.	2, 4
Ammonia (total, as $NH4^+$)	N.A.	500	N.A.	
Ammonia (un-ionised (NH3), as N)	N.A.	N.A.	21	
Sulphate	400 mg/l	250 mg/l	N.A.	5
Petroleum hydrocarbons and related				
TPH	See notes	See notes	See notes	6, 7
Benzene	10	1	8	
Toluene	50	700	40	8
Xylenes (sum)	30	500	30	8
MTBE	2600	200	2600	9, 10
PAHs				
Anthracene	0.1	N.A.	0.1	
Benzo(b)fluoranthene + Benzo(k)fluoranthene (sum)	0.03	Sum of 4 = 0.1	0.03	
Benzo(g,h,i)perylene + indeno(1,2,3-c,d)pyrene (sum)	0.002		0.002	
Benzo(a)pyrene	0.05	0.01	0.05	
Fluoranthene	0.1	N.A.	0.1	
Naphthalene	2.4	N.A.	1.2	
Phenol				
Phenol	7.7	0.5	7.7	

Cadmium - inland waters EQS	
Hardness (as mg/l CaCO3)	EQS (µg/l)
<40	0.08
40-50	0.08
50-100	0.09
100-200	0.15
>=200	0.25

Copper & zinc - inland waters EQS		
Hardness (as mg/l CaCO3)	EQS (µg/l)	
	Cu	Zn
0-50	1	8
50-100	6	50
100-250	10	75
>250	28	125

Ammonia - inland waters EQS		
Alkalinity (as mg/l CaCO3)	Altitude	EQS (µg/l)
<10	Any	300
10-50	Any	300
50-100	<80m	600
50-100	>80m	300
100-200	<80m	600
100-200	>80m	300
>200	Any	600

Parameter	GAC (µg/l, unless stated)			Notes
	Inland waters		Coastal and transition waters	
	EQS	DWS	EQS	
Chlorinated organics				
Dichloromethane	20	N.A.	20	
Trichloromethane (chloroform)	2.5	100	2.5	11
Tetrachloromethane (carbon tetrachloride)	12	3	12	
1,2-dichloroethane (1,2-DCA)	10	N.A.	10	
1,1,1-trichloroethane (1,1,1-TCA)	100	N.A.	100	
1,1,2-trichloroethane (1,1,2-TCA)	400	N.A.	300	
Trichloroethene (TCE)	10	Sum of 2 = 10	10	
Tetrachloroethene (PCE)	10		10	
Vinyl chloride	N.A.	0.5	N.A.	

Notes referenced in table:

1. Metals and metalloid EQS relate to dissolved contamination only (i.e. analysis of filtered samples).
2. Inland waters EQS for these parameters is dependent upon hardness or alkalinity of the *receiving water* . See separate tables.
3. Separate EQS standards exist for Cr III and CrVI in fresh water. Cr III value adopted as screening purposes for total Cr analysis as it is normally the predominant form in solution. Specific EQS for Cr VI (3.4µg/l in freshwater; 0.6µg/l in transition and coastal waters) must be applied where relevant.
4. EQS for ammonia in inland waters also depends on altitude of receptor water body. See separate table.
5. Inland waters EQS for sulphate is non-statutory.
6. No concentration based EQS exists for TPH. Hydrocarbons must not: form a visible film on the surface of the water; form coatings on the beds of water bodies: impart a detectable 'hydrocarbon' taste to fish; or, produce harmful effects in fish.
7. No concentration based DWS exists for TPH. Subject to justification on a case-specific basis, it may be appropriate to apply 200µg/l TPH as a GAC on the basis that this is the DW2 Class threshold limit specified in the Surface Water (Abstraction for Drinking Water) (Classification) Regulations 1996. DW2 waters are generally suitable for abstraction as drinking water supplies, subject to standard filtration and chemical treatment.
8. World Health Organisation (WHO) Guidelines for Drinking Water Quality, 1984 - health value.
9. EQS for MTBE is the PNEC value for fresh and sea water life given in: EU Risk Assessment Report (2002) MTBE, 3rd Priority List, volume 19.
10. DWS for MTBE is a 5-fold dilution of the USEPA (1997) Drinking Water Advisory value for taint, EPA-822-F-97-009. Toxicological thresholds are significantly higher.
11. Sum trihalomethanes limit is 100µg/l but chloroform is only compound of this class normally encountered at contaminated sites.

Sources and general comments

Unless otherwise stated, EQS-based GACs relate to "Good Standard" annual average surface water quality criteria as given in: The River Basin Districts Typology, Standards and Groundwater threshold values (Water Framework Directive) (England and Wales) Directions 2010.

Unless otherwise stated, drinking water standard-based GACs are taken from the Water Supply (Water Quality) (Amendment) Regulations 2000, 2001 and 2007 and relate to concentration at the supply point and/or consumers' taps.

This list presents recommended GAC values for commonly monitored analytes but is not exhaustive. A comprehensive database of criteria is available at: http://evidence.environment-agency.gov.uk/ChemicalStandards/home.aspx.

Other EQS-based criteria may apply in specific cases and regulatory guidance should be sought in case of doubt.