A6 to Manchester Airport Relief Road

B001 - A6 Bus Bridge
Preliminary Design Report
Report No. 1007/704/081

September 2013

STOCKPORT METROPOLITAN BOROUGH COUNCIL

MANCHESTER CITY COUNCIL

Cheshire East Council

Structure Name: A6 Bus Bridge

Structure Number: B001

Report No. 1007/704/081

Report Control Sheet

Version	Date	Status	Prepared By	Checked By	Approved By
P1	17/01/2012	Draft	T Kshirsagar	N Sheena	N Sheena
2	16/05/2012	Draft (Final)	N Afshar	T Kshirsagar	N Sheena
3	24/01/2013	Draft (Final)	M Mfandarahwa	N Sheena	N Sheena
4	03/09/2013	Draft	L Fields	M Mfandarahwa	N Sheena
5	13/09/2013	Final	L Fields	N Sheena	N Sheena

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1. Description of Site

As part of the South East Manchester Multi Modal Strategy (SEMMMS), the existing A6 is to be realigned to accommodate an interchange with the proposed A6 to Manchester Airport Relief Road (A6MARR). The A6 Bus Bridge (B001) is to cross the A6MARR with access restricted to buses, cyclists and pedestrians. The bridge is located approximately 250m south of the at-grade interchange and 50m north of the Hazel Grove to Buxton Line Railway Bridge (B002).

There are a number of residential and commercial properties in the vicinity of the site including the former Simpson Sausage Factory to the South West. Generally the surrounding area is open farm land to the north and to the south. An aerial location plan at 1:1250 scale with the bridge extents delineated in red is included in Appendix A.

At highway Design Freeze 7 constraints on the scheme land boundary at this bridge site have been relaxed allowing the removal of the requirement for a retaining wall structure between structures B001 and B002.

2. Highway Details

Over Structure – A6 Single Bus lane and Cycle track (3.0m F/W+ 3.65m C/W+ 1.0m Verge)

Under Structure – A6MARR with a width of 23.9m.

3. Proposed structure

The proposed structure will be a single span fully integral bridge. The superstructure will be in the form of pre-cast pre-stressed concrete Y beams and reinforced concrete slab deck. The square deck width including parapet up stands will be 7.8m.

The bridge superstructure will be supported on contiguous bored pile abutments. Wing walls will with a return of 45 degrees to the carriageway will also be of contiguous bored pile construction. A General Arrangement drawing of the proposal is included in Appendix B.

4. Span arrangements

Single clear span of 26.1m measured between abutment faces. The skew angle is approximately 8 degrees.

5. Headroom and Clearances

The provided Headroom is greater that 5.3m. In accordance with TD27 the superstructure will be designed for impact. The lane width and cycle way width are in accordance with TD 27. The overall width of the bridge consists of 3.65m single lane, 3 m cycleway at north, 1m verge at south, 0.5m parapet string courses at north and south.

6. Road Restraint system (Bridge Parapets)

Type N2 steel parapet with mesh infill in accordance with Road Restraints Risk Assessment Process (RRRAP) and with TD 19/06. Working width class to be not greater than W4 and will be decided in the final stage of design. Parapet height is to be 1.4m at the north verge, which contains a cycle route and pedestrians.

7. Bridge articulation

The deck will be fully integral with the contiguous bored pile wall abutments.

8. Preferred Structural Options

8.1. Superstructure Option

(Fully integral pre-cast pre-stressed Y beam and slab deck) refer to Drawing number 1007/3D/DF7/A6-MA/B001/701 and the 3D Model in Appendix B:

Fully integral construction is a feasible and considered a cost effective solution for this span. Elimination of movement joints removes a major cause of maintenance problems from penetration of dirt, water and de-icing salts, which corrode substructures.

For a span range of 15m to 35m, pre-cast pre-stressed beam construction is normally considered a cost effective solution.

Advantages:

- Low capital & whole-life cost
- Good aesthetics due to symmetrical structure
- Fast and efficient build
- Factory quality with engineered tolerances
- Low maintenance
- Environmentally friendly
- The beams could be lifted individually
- Permanent formwork provides self supporting system during construction and eliminates false-work
- The beams are spaced apart, facilitating easy access to the underside of the structure
- Reduces site works which is weather dependent

Disadvantages:

- Precast concrete beams are usually heavier than comparable steel beams. As a result bigger cranes might be required to lift the precast concrete beams.
- Heavier superstructure mentioned above might lead to bigger foundation sizes

- Delivery times are dependent on specialist supplier

8.2. Substructure Option

Contiguous Bored pile wall abutment

Advantages:

- Easy and relatively fast construction
- Less cutting especially in rocky area
- Similar visual impacts on either side
- Most suited to single span construction
- Suited when there are no overhead cables

Disadvantages:

- Uneven finish which will require spray concrete and might also require cladding
- Additional cost associated with pile testing
- Noise is usually associated with piling

9. Geotechnical Information

The ground and groundwater conditions for the A6 Bus Bridge have been assessed using relevant geological maps (Stockport Sheet 98, Solid and Drift Scale 1:50,000) and 10 No. exploratory bore holes logs are provided by a number of phases of GI for the area (refer to Appendix C for further information).

9.1 Groundwater

Groundwater was encountered in five exploratory bore holes with overall depths ranging from 5.5mbgl (108.65mAOD) and 24.30mbgl (86.6mAOD), groundwater was encountered within the Sandstone and Mudstone.

There is no known groundwater monitoring information for the site.

9.2 Preliminary Geotechnical Assessment

It is anticipated that piled foundations through the glacial till and into the underlying coal measures is the most appropriate foundation method. The length of piles will need to be confirmed by the pile designer.

It should be noted that due to the presence of Coal Measures strata and the possibility of encountering Coal seams during construction a Coal Authority licence will be required for any excavation/drilling in the seams. It may also be required that a topsoil strip is undertaken along the scheme in advance of construction to reduce the risk of encountering un-recorded shafts/ shallow workings. Additional investigation may also be required at structural locations prior to the final stage of design.

However, the presence of coal seams underlying the site does not pose a significant geotechnical risk if confirmed to be a competent ground bearing

material i.e. unweathered and historically unworked. In order to confirm this (prior to a mining desk study), planning conditions will request deep rotary core/open hole ground investigation works to be undertaken. Evidence of cavity/voids as a result of mine workings are normally identified by poor rock core recovery, disturbed/'broken ground', loss of drilling flush, drop of drill rods and discontinuation/absence of coal seams across the site.
The potential for chemical attack on buried concrete within the ground has not been assessed. This will be the responsibility of the foundation designer.

Given that groundwater has been identified in a number of exploratory bore holes, drainage methods will need to be considered in the design. Further investigation into the groundwater levels and changes with seasons, along with flow rates is recommended for the design and drainages methods, along with temporary mitigation measures during construction.

Geotechnical information relevant to the site is included in Appendix C.

10. Environmental Impact Considerations

Refer to Volume 1 (Main Text) of the Environmental Statement.

11. Appearance

On elevation B001 comprises of 1.2m deep concrete flush faced YE Edge beams and a string course of 0.6m. In addition N2 steel parapets (post with 2 and 4 rails- open structure) will be mounted on the string courses either sides of the bridge.

The bridge approaches will be carried on approximately 0.8m high embankments and these are not anticipated to have adverse visual impacts.

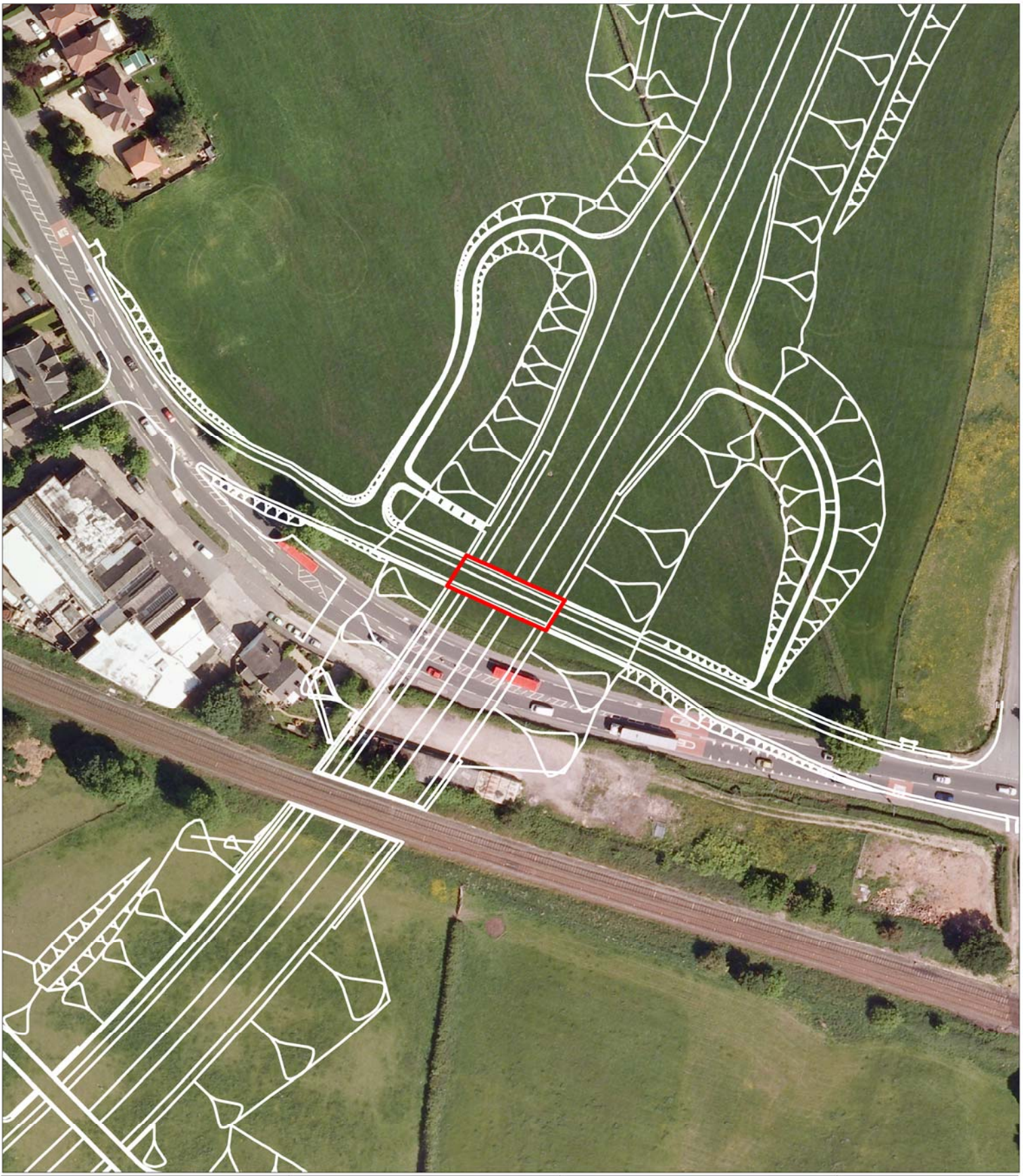
The abutments of the bridge are close to the carriageway edge. The wing walls are proposed at a return angle of 45 degrees to minimise tunnelling effects and reduce the area of exposed faces. The contiguous piles will require cladding with a concrete finish.

Appendix A: Location plans

www.semmms.info

STOCKPORT METROPOLITAN BOROUGH COUNCIL · MANCHESTER CITY COUNCIL · Cheshire East Council

bluesky



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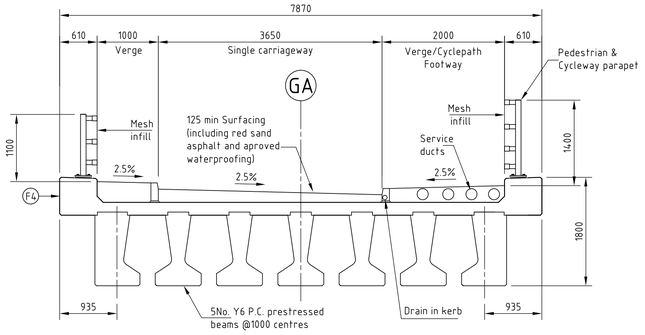
Date	12/08/2013	Date	12/08/2013	Date	12/08/2013
Size	A4	Scale	1 : 1,250		
GIS Task	4268_1	Filename			
Drawing No.	1007-3D-DF7-A6-MA-B001-ALP			Revision	

Appendix B: Proposed General Arrangement drawing and 3D Model



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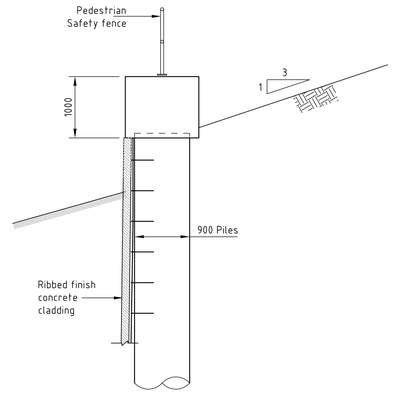

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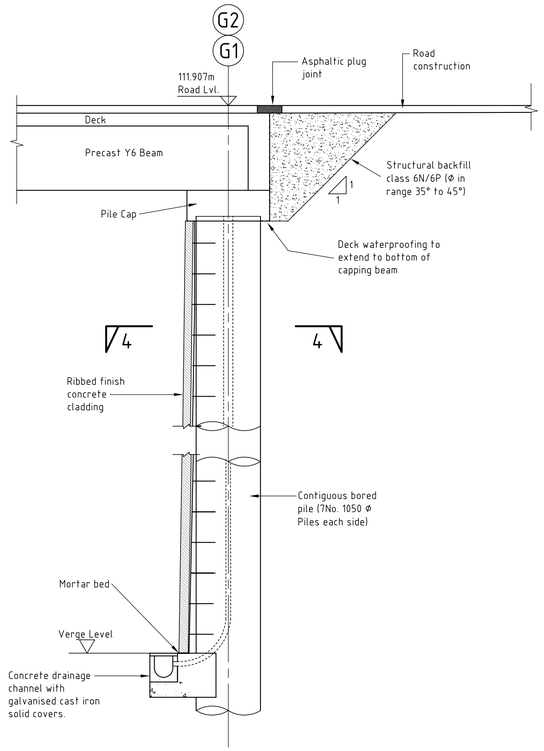

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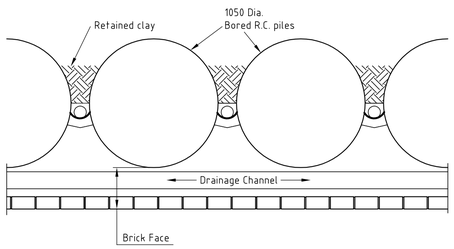
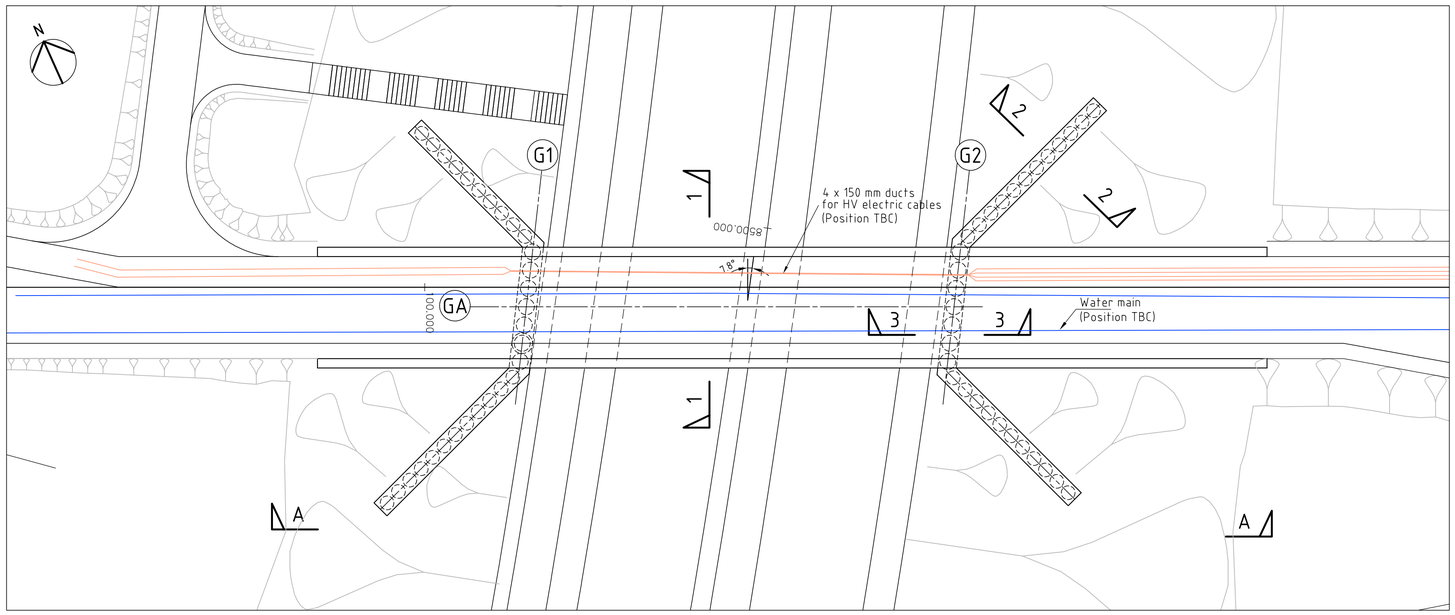
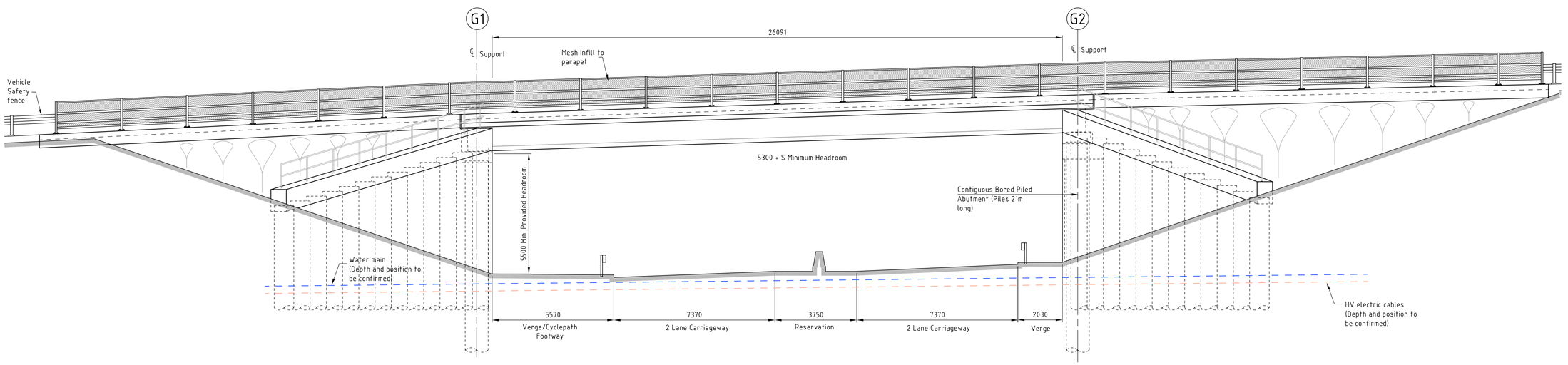


SECTION 4-4
(NTS)



PLAN
(1:200)



ELEVATION A-A
(1:100)

NOTES

1. This drawing has been produced based on the latest MX highway model - Draft Design Freeze DF7, as provided by the client (July 2013).
2. This drawing has been produced mainly for the purpose of preliminary design and planning.
3. Levels are in metres and above Ordnance Datum.
4. All dimensions are in millimetres.
5. The option shown in this drawing is not for construction
6. The foundation type shown on the drawing is based on the latest available geotechnical information.
7. Basic preliminary design has been undertaken to determine the geometry of the section sizes as per client's instruction.
8. Concrete strengths:-

Precast panel	C32/ 40
Contiguous bored piles	C32/ 40
Abutment diaphragm/ Capping beam	C40/ 50
Deck slab	C40/ 50
Parapet edge beams	C40/ 50
Precast beams	C50/ 60

9. Permanent formwork is required. to underside of deck.
10. Concrete finishes to be as per MCHW specification series 1700 U.N.O. :-

Burried foundations :	F1, U1.
Abutment columns :	F1.
Buried face of abutment :	F1.
Waterproofing :	F4.
Precast beams :	F5.
Precast concrete panel	F4.
Parapet edge beam :	F3, U3.
Deck slab top surface :	U4.

Rev.	Drawn	Checked	Date	Revision Details
C	SPH	M.M.	12.09.13	ISSUED FOR PLANNING
B	SPH	M.M.	02/09/13	ALIGNMENT & PILE LAYOUT REVISED.
A	SPH	N.A.	18/03/13	REVISED INCORPORATING CLIENTS COMMENTS
-	L.F	T.K.	08/11/11	ARTICULATION CHANGED TO INTEGRAL

south east manchester multi modal strategy
HIGHWAYS AND STRUCTURES
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Job Title

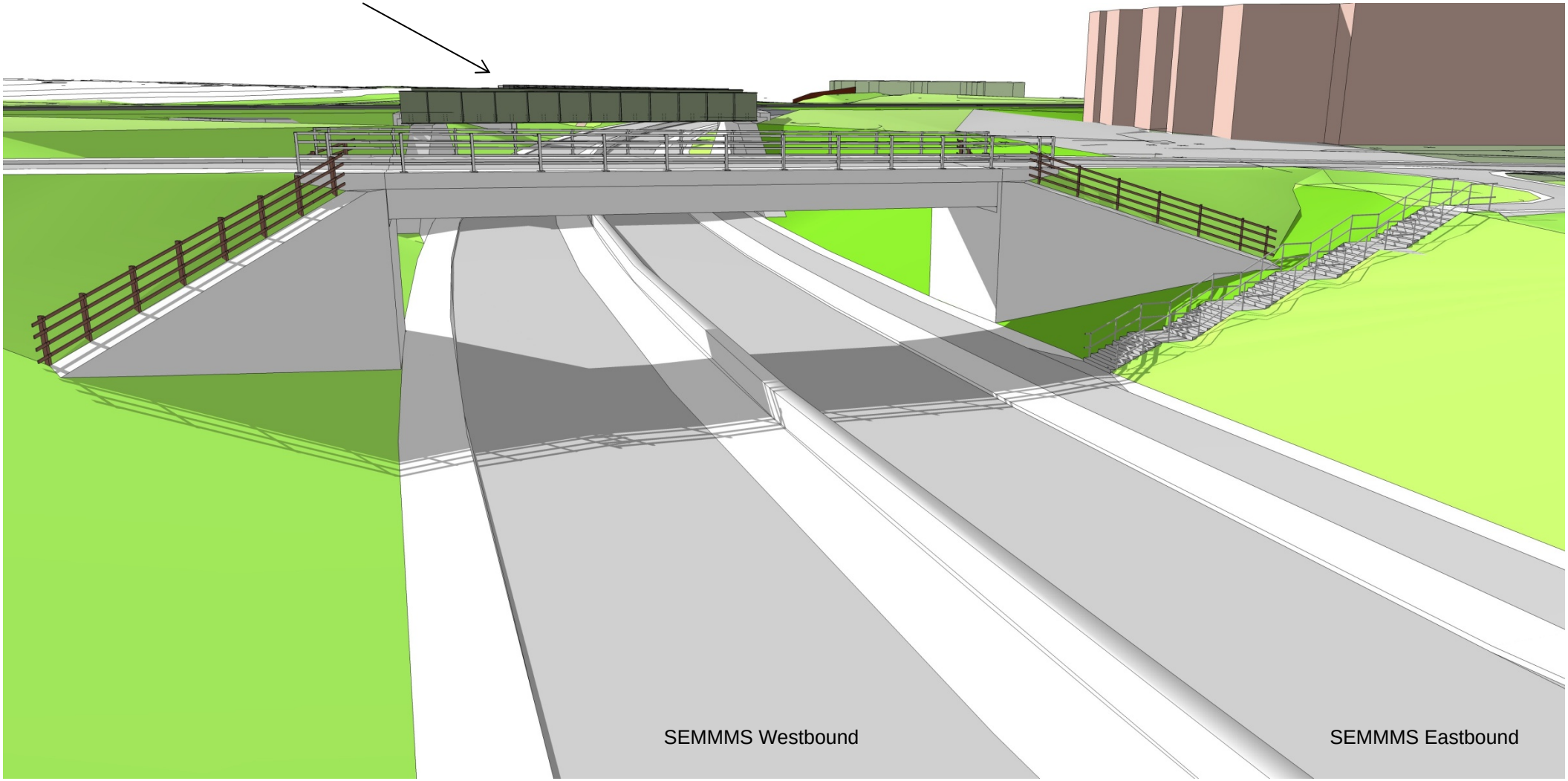
A6 TO MANCHESTER AIRPORT RELIEF ROAD

Drawing Title

B001
A6 BUS BRIDGE
GENERAL ARRANGEMENT

Drawn	Engineer	Checked	Approved
JM / LF	TK	NS	NS
Date	Date	Date	Date
25/10/11	25/10/11	25/10/11	
Size	Scale		
A1	AS SHOWN		
SCG No.	Filename		
Drawing No.			Revision
1007/3D/DF7/A6-MA/B001/701			C

B002 Hazel Grove to Buxton Railway Bridge



B001 – A6 Bus Bridge

Elevation Looking West

Appendix C: Reviewed Ground Investigation Information

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No. **NWH MAIN GI 224**
Date: 12-05-1984/14-05-1984	**Co-ordinates:** E 393320.0 N 385710.0	**Ground Level:** 109.00 (m)	Sheet: 1 of 2
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						108.90	0.10	MADE GROUND: Tarmac		
						108.75	0.25	MADE GROUND: concrete		
							(1.25)	MADE GROUND: black ash and hardcore.		
1.50	D U 600					107.50	1.50	Soft mid-brown, silty, sandy CLAY with some fine, subrounded gravel.		
2.20	C	N = 86(450mm) 18 19/20 20 22 24				106.80	(0.70) 2.20	Very dense, dark red-brown, silty, slightly clayey fine SAND (completely weathered sandstone).		
2.65-4.00			70.00 10.00			106.35	(0.45) 2.65	Purple-grey, silty, fine grained, slightly weathered SANDSTONE. Weak.		
4.00-4.80			100.00 0.00			104.70	(1.65) 4.30	Purple-brown, micaceous, muddy, moderately weathered SILTSTONE. Very weak and highly fractured. Highly weathered band from 4.80m to 4.90m.		
4.80-6.50			100.00 0.00			102.40	(2.30) 6.60	Purple-grey, silty, fine, occasionally medium grained, slightly weathered SANDSTONE. Weak. Moderately weathered band from 10.30m to 10.50m. Moderately open, silt dusted, vertical joints from 8.10m to 8.30m and 8.50m to 9.10m.		
6.50-9.50			100.00 28.00				(3.90)			

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks
3.00	3.00	20	3.00	Slight water inflow

Method, Equipment and Remarks

Method: CP

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No. **NWH MAIN GI 224**
Date: 12-05-1984/14-05-1984	**Co-ordinates:** E 393320.0 N 385710.0	**Ground Level:** 109.00 (m)	
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 2 of 2

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
9.50-10.50			75.00 0.00			98.50	10.50			
10.50-11.50			45.00 0.00			97.30	(1.20) 11.70	Black and red-brown mottled, silty, completely weathered MUDSTONE. Very weak.		
11.50-13.50			80.00 0.00			95.50	(1.80) 13.50	Mid-grey, silty, moderately to highly weathered MUDSTONE. Very weak. Becomes carbonaceous below 12.60m.		
								End of Borehole		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: CP

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 13-03-1984/06-04-1984	**Co-ordinates:** E 393352.0 N 385718.0	**Ground Level:** 110.39 (m)	**NWH MAIN GI 220**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 1 of 2

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						109.99	(0.40) 0.40	TOPSOIL		
0.50	D U 600							Firm light grey, brown mottled, fine and medium sandy CLAY with occasional fine subrounded gravel.		
1.50	D D 600 U 601					108.69	(1.30) 1.70			
2.20	D D 601					107.69	(1.00) 2.70	Firm to stiff, red brown, very sandy (fine, medium and coarse) CLAY with occasional fine subrounded gravel.		
3.50	D D 601 U 602 U 6706							Puprle brown completely weathered clayey SILTSTONE - very weak becoming weak at 3.95m. Poorly thinly laminated, highly weathered from 4.20m to 4.40m and contaiing fine grained sandstone fragments from 5.60m to 5.85m.		
4.20-5.60			47.00 0.00			104.54	(3.15) 5.85			
5.60-7.10			50.00 0.00			102.29	(2.25) 8.10	Light brown, occasionally reddish brown, silty, fine and medium grained moderately to highly weathered SANDSTONE, weak. Silty moderately open vertical joints 6.90m-7.10m, 7.85m-8.00m. Highly fractured from 7.65m-7.85m. 8.00m-8.10m.		
7.10-8.30			80.00 0.00							
8.30-9.80			90.00 0.00				(3.60)	Black and reddish grey silty, completely weathered MUDSTONE, very weak and very highly fractured. Contains fragments of fine graiend sandstone and siltstone with much clay from 8.30m to 11.00m.		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: CP

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

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BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 13-03-1984/06-04-1984	**Co-ordinates:** E 393352.0 N 385718.0	**Ground Level:** 110.39 (m)	**NWH MAIN GI 220**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 2 of 2

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
9.80-10.80			0.00					Black and reddish grey silty, completely weathered MUDSTONE, very weak and very highly fractured. Contains fragments of fine graiend sandstone and siltstone with much clay from 8.30m to 11.00m. *(continued)*		
10.80-11.80			90.00 0.00			98.69	11.70			
						98.59	11.80	Light grey slightly weathered MUDSTONE, moderately weak.		
							(1.00)	Dark grey and reddish brown silty completely to highly weathered MUDSTONE, very weak and highly fractured.		
11.80-13.10			92.00 0.00			97.59	12.80			
								Dark grey to black silty, moderately to highly weathered MUDSTONE, weak to very weak. Highly fractured from 13.10m to 15.10m.		
13.10-15.10			75.00 0.00				(3.20)			
15.10-16.40			38.00 0.00			94.39	16.00			
								Light grey, silty, slightly weathered MUDSTONE, very weak, fractured and occasionally highly weathered.		
16.40-16.60			100.00 0.00				(2.00)			
16.60-18.00			75.00 0.00			92.39	18.00			
								End of Borehole		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: CP

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No. **NWH MAIN GI 219**
Date: 14-03-1984/06-04-1984	**Co-ordinates:** E 393412.0 N 385713.0	**Ground Level:** 111.85 (m)	
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 1 of 4

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						111.40	(0.45) 0.45	TOPSOIL		
1.00	D					110.75	(0.65) 1.10	Soft, brown and grey mottled, silty very sandy CLAY with occasional fine, subrounded gravel.		
1.50	D U 600					109.85	(0.90) 2.00	Firm, dark brown and dark grey mottled, silty, sandy CLAY with occasional fine, subrounded gravel.		
2.65	D D 600 U 601					108.85	(1.00) 3.00	Stiff brown, silty, very sandy CLAY with occasional fine, medium, subrounded gravel.		
3.50	D U 500 D 601 U 602					106.65	(2.20) 5.20	firm to stiff, dark brown, silty, slightly sandy CLAY with occasional fine, medium, subrounded siltstone gravel.		1
4.40-5.20			29.00 0.00			106.55	5.30	Red-brown, muddy, completely weathered SILTSTONE. Very weak and very thinly bedded.		
5.20-6.60			71.00 9.00			103.75	(2.80) 8.10	Grey and purple-brown, silty, fine grained, moderately to highly weathered SANDSTONE. Moderately weak and highly to very highly fractured. Occasionally thinly laminated and cross-bedded.		
6.60-7.80			100.00 0.00			103.15	(0.60) 8.70	Red-brown, slightly muddy, completely weathered SILTSTONE. Very weak and very highly fractured. Occasionally slightly micaceous.		
7.80-9.45			100.00 0.00			103.05	8.80	Light grey, calcitic, highly weathered SILTSTONE, weak and highly fractured.		
						102.15	(0.90) 9.70	Purple-brown, slighlty muddy, highly to completely weathered SILTSTONE. Weak to very weak and highly to very highly fractured. Completely weathered from 9.45m to 9.70m.		
						102.05	9.80	Brown, silty, completley weathered MUDSTONE. Very weak.		
								See next page.		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks
5.20	4.40	20	5.20	Moderate water inflow

Method, Equipment and Remarks

Method: CP

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No. **NWH MAIN GI 219**
Date: 14-03-1984/06-04-1984	**Co-ordinates:** E 393412.0 N 385713.0	**Ground Level:** 111.85 (m)	
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 2 of 4

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
9.45-10.55			100.00 0.00				(1.30)	Purple-brown, muddy, highly weathered SILTSTONE. Weak to very weak and highly to very highly fractured. Completely weathered from 10.10m to 10.30m and 10.70m to 11.10m. *(continued)*		
						100.75	11.10			
10.55-12.15			100.00 15.00				(1.85)	Light grey, slightly silty, fine grained moderately weathered SANDSTONE. Moderately weak and highly fractured. Moderately tight, rough vertical joint with occasional calcitic infill from 11.45m to 11.85m, 12.20m to 2.40m, cross-bedded, 11.85m to 12.00m purple brown, completely weathered siltstone.		
12.15-12.95			100.00 0.00			98.90	12.95			
12.95-13.65			100.00 0.00				(0.95)	Black carboanceous, silty, completely weathered MUDSTONE. Very weak.		
13.65-14.10			100.00 0.00			97.95	13.90			
14.10-15.40			100.00 0.00				(1.50)	Grey-brown, silty, completely weathered MUDSTONE. Very weak with much clay.		
						96.45	15.40			
							(2.60)	Grey MUDSTONE with traces of coal.		
						93.85	18.00			
								Grey MUDSTONE		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: CP

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No. **NWH MAIN GI 219**
Date: 14-03-1984/06-04-1984	**Co-ordinates:** E 393412.0 N 385713.0	**Ground Level:** 111.85 (m)	Sheet: 3 of 4
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
							(4.50)	Grey MUDSTONE *(continued)*		
						89.35	22.50			
							(0.50)	Hard red and grey SANDSTONE		
						88.85	23.00			
							(1.10)	Grey SANDSTONE		
						87.75	24.10			
15.40-35.00							(2.80)	Grey MUDSTONE		
						84.95	26.90			
							(3.10)	Hard red and grey SANDSTONE		
						81.85	30.00			

Water Strikes				
Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: CP

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 14-03-1984/06-04-1984	**Co-ordinates:** E 393412.0 N 385713.0	**Ground Level:** 111.85 (m)	**NWH MAIN GI 219**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 4 of 4

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						79.85	(2.00) 32.00	Grey SANDSTONE		
						78.65	(1.20) 33.20	Hard grey SANDSTONE		
						77.75	(0.90) 34.10	Dark grey MUDSTONE with traces of coal		
						76.85	(0.90) 35.00	Light grey MUDSTONE		
								End of Borehole		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: CP

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 30-05-1984/30-05-1984	**Co-ordinates:** E 393452.0 N 385677.0	**Ground Level:** 114.03 (m)	**NWH MAIN GI 218B**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 1 of 3

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						113.88	0.15	TOPSOIL		
							(3.35)	Orange-grey brown mottled, slightly sandy CLAY.		
						110.53	3.50			
							(1.75)	Red, medium and coarse SANDSTONE, with thin band of yellow-grey sandstone. Moderately weak.		
						108.78	5.25			
							(0.75)	Light grey MUDSTONE.		
						108.03	6.00			
						107.78	6.25	Black COAL		
							(2.75)	Light grey MUDSTONE.		
						105.03	9.00			
								Light brown-grey MUDSTONE		

Water Strikes				
Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RO

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 30-05-1984/30-05-1984	**Co-ordinates:** E 393452.0 N 385677.0	**Ground Level:** 114.03 (m)	**NWH MAIN GI 218B**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 2 of 3

Samples & Tests					Water/ (Flush Return)	Strata				
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	Backfill/ Instrument
							(3.00)	Light brown-grey MUDSTONE *(continued)*		1
0.00-24.00						102.03	12.00			
							(4.00)	Dark grey-purple slightly silty MUDSTONE with red grey silty mudstone bands		
						98.03	16.00			
							(7.00)	Light grey, muddy SILTSTONE and dark grey-purple MUDSTONE becoming more dominant with depth.		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks
11.50	6.00	20	11.50	Slight water inflow

Method, Equipment and Remarks

Method: RO

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 30-05-1984/30-05-1984	**Co-ordinates:** E 393452.0 N 385677.0	**Ground Level:** 114.03 (m)	**NWH MAIN GI 218B**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 3 of 3

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						91.03	23.00	Light grey, muddy SILTSTONE and dark grey-purple MUDSTONE becoming more dominant with depth. *(continued)*		
						90.53	(0.50) 23.50	Red-grey slightly silty MUDSTONE.		
						90.03	(0.50) 24.00	Dark grey-purple, silty MUDSTONE		
								End of Borehole		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RO

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 25-05-1984/25-05-1984	**Co-ordinates:** E 393460.0 N 385686.0	**Ground Level:** 114.15 (m)	**NWH MAIN GI 218A**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 1 of 4

Samples & Tests					Water/ (Flush Return)	Strata				
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	Backfill/ Instrument
						114.05	0.10	TOPSOIL		
							(1.40)	Light brown-yellow, medium, coarse silty sandy CLAY with occasional cobbles and boulders.		
						112.65	1.50			
							(1.75)	Orange-brown, moderately silty, sandy CLAY.		
						110.90	3.25			
							(0.75)	Red-purple, highly weathered MUDSTONE. Weak.		
						110.15	4.00			
						109.90	4.25	Dark grey, shaly MUDSTONE.		
						109.65	4.50	Red-grey MUDSTONE		
							(0.75)	Black, thinly laminated COAL		
						108.90	5.25			
							(3.25)	Dark grey MUDSTONE		
						105.65	8.50			
							(0.45)	COAL		
						105.20	8.95			
							(1.55)	Light grey MUDSTONE		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks
5.50	3.00	20	5.50	Slight water inflow

Method, Equipment and Remarks

Method: RO

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 25-05-1984/25-05-1984	**Co-ordinates:** E 393460.0 N 385686.0	**Ground Level:** 114.15 (m)	**NWH MAIN GI 218A**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 2 of 4

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						103.65	10.50	Light grey MUDSTONE *(continued)*		
						103.15	(0.50) 11.00	Dark grey MUDSTONE		
						102.85	11.30	Dark grey-black carbonaceous MUDSTONE		
0.00-35.00						96.15	(6.70) 18.00	Light grey MUDSTONE. Weak.		
							(3.00)	Dark grey-purple, moderately silty MUDSTONE. Moderately weak. Becoming dark grey-red with depth.		

Water Strikes				
Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RO

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 25-05-1984/25-05-1984	**Co-ordinates:** E 393460.0 N 385686.0	**Ground Level:** 114.15 (m)	**NWH MAIN GI 218A**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 3 of 4

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
								Dark grey-purple, moderately silty MUDSTONE. Moderately weak. Becoming dark grey-red with depth. *(continued)*		
						93.15	21.00			
								Dark grey-purple, slightly silty, possibly calcareous MUDSTONE. Weak and moderately weak bands. Becoming dark grey MUDSTONE with depth.		
							(14.00)			

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RO

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 25-05-1984/25-05-1984	**Co-ordinates:** E 393460.0 N 385686.0	**Ground Level:** 114.15 (m)	**NWH MAIN GI 218A**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 4 of 4

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
								Dark grey-purple, slightly silty, possibly calcareous MUDSTONE. Weak and moderately weak bands. Becoming dark grey MUDSTONE with depth. *(continued)*		
						79.15	35.00			
								End of Borehole		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RO

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BORELOG LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 14-03-1984/04-04-1984	**Co-ordinates:** E 393445.0 N 385694.0	**Ground Level:** 112.93 (m)	**NWH MAIN GI 218**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 1 of 2

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						112.53	(0.40) 0.40	TOPSOIL		
0.50	D					111.53	(1.00) 1.40	Soft to firm, light grey and brown mottled, very clayey, very sandy SILT, with occasional fine, subrounded gravel.		
1.50	D U 500 U 600					110.73	(0.80) 2.20	Soft to firm, mid-brown with occasional dark grey mottling silty, sandy CLAY with occasional fine, subrounded gravel.		
2.50	D D 600 U 601					109.33	(1.40) 3.60	Soft to firm, mid-brown, silty, very sandy CLAY with occasional fine sandy pockets, and fine, subrounded gravel.		
4.60	D D 200 D 601 U 602					107.73	(1.60) 5.20	Red-brown, silty, highly weathered MUDSTONE. Stiff becoming very weak and highly fractured.		
5.10-6.50			57.00 0.00			107.68 106.63	5.25 (1.05) 6.30	Light grey, silty fine grained highly weathered SANDSTONE. Weak and very highly fractured. Red brown, friable, silty, completely weathered MUDSTONE. Very weak with much clay.		
6.50-7.50			70.00 0.00			106.43 106.13 105.93	6.50 6.80 7.00	Light grey, silty, fine grained, highly to completely weathered SANDSTONE. Weak with much iron staining. Red-brown with occasional grey mottling, muddy completely weathered SILTSTONE. Very weak. Light grey, silty, fine grained, highly weathered SANDSTONE. Weak with occasional iron staining.		
7.50-8.20			100.00 0.00			104.13	(1.80) 8.80	Dark grey, slightly carbonaceous, silty, completely weathered MUDSTONE. Very weak with much clay and highly weathered fragments.		
8.20-9.10			81.00 0.00			103.68 103.53	(0.45) 9.25 9.40	Light grey, slightly muddy, highly to moderately weathered SILTSTONE. Weak to very weak and highly fractured, becomes completely weathered below 9.10m. Black, very muddy, poor COAL.		
							(1.00)	Red brown and grey, friable, muddy, completely weathered SILTSTONE. Very weak with occasional highly weathered fragments.		

Water Strikes				
Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: CP

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

AGS3_NEW.GLB | SW BH LOG (CP/RC) | K:\4.7060785 - SEMMS\05.0 PROJECT INFORMATION\GINT\4.7060785-SEMMS.GPJ | AGS3_NEW.GDT | 23/11/2011 | 09:09:52

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 14-03-1984/04-04-1984	**Co-ordinates:** E 393445.0 N 385694.0	**Ground Level:** 112.93 (m)	**NWH MAIN GI 218**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 2 of 2

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
9.10-11.40			80.00 0.00			102.53	10.40			
						101.93	(0.60) 11.00	Dark grey, slightly carbonaceous, silty, highly weathered MUDSTONE. Very weak to weak and highly fractured.		
						101.43	(0.50) 11.50	Light grey, muddy, highly to completely weathered SILTSTONE. Very weak and very highly fractured.		
11.40-12.20			77.00 0.00			100.93	(0.50) 12.00	Dark grey, friable, slightly silty, completely weathered MUDSTONE. Very weak.		
12.20-14.85			35.00 0.00			98.08	(2.85) 14.85	Light grey, slightly silty,completely weathered MUDSTONE. Very weak with plant traces.		
14.85-15.15			14.00 0.00			95.83	(2.25) 17.10	Grey, muddy, fine sandy SILTSTONE fragments, grey silty MUDSTONE, grey fine grained SANDSTONE fragments, with much clay (possible old workings).		
15.15-17.15			11.00 0.00			95.53	17.40	Light grey, slightly silty, fine grained, moderately weathered SANDSTONE. Weak to moderately weak. Moderately tight, rough, clean vertical joint from 17.20m to 17.35m.		
17.15-18.15			66.00 0.00			94.78	(0.75) 18.15	Grey-brown, silty, completely weathered MUDSTONE. Very weak with occasional highly weathered fragments. Becomes light grey below 18.00m.		
18.15-19.15			76.00 0.00			93.78	(1.00) 19.15	Light grey, poorly laminated, muddy, moderately to highly weathered SILTSTONE. Weak occasionally very weak.		
								End of Borehole		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: CP

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

AGS3_NEW.GLB | SW BH LOG (CP/RC) | K:\4.7060785 - SEMMS\05.0 PROJECT INFORMATION\GINT\4.7060785-SEMMS.GPJ | AGS3_NEW.GDT | 23/11/2011 | 09:09:52

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 17-07-1992/22-07-1992	**Co-ordinates:** E 393343.0 N 385733.5	**Ground Level:** 109.90 (m)	**EA 3RD SUPP 742**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 1 of 3

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						107.30	(2.60) 2.60	TOPSOIL onto CLAY		
2.60-3.60			100.00 34.00 21.00			106.65	(0.65) 3.25	Yellow-brown and red-brown thinly to medium bedded medium grained moderately weathered SANDSTONE, moderately strong. Apparent dip of bedding 5 deg. Closely spaced discontinuities, subhorizontal and subvertical planar rough open ironstained.		
						106.00	(0.65) 3.90	Red-brown thickly laminated highly weathered clayey SILTSTONE, very weak. Some laminae of completely weathered silty mudstone.		
3.60-5.10			74.00 19.00 19.00			104.80	(1.20) 5.10	Red-brown onto off white yellow-brown and light red-brown medium bedded medium grained moderately weathered SANDSTONE, moderately strong. 3.90m to 4.30m: non-intact, angular gravel sized fragments. 4.30m to 5.10m: 90 deg irregular rough open partially ironstained discontinuity with associated randomly orientated discontinuities.		
5.10-5.98			80.00 56.00 44.00			102.31	(2.49) 7.59	Black dark red-brown and dark grey thinly laminated irregularly banded completely to highly weathered silty MUDSTONE, very weak. Bedding variable and disturbed. Occasional yellow-brown sandstone layers and fragments.		
5.95-6.52			17.00 0.00 0.00							
6.52-7.59			49.00 31.00 14.00							
7.59-8.40			44.00 22.00 14.00			100.95	(1.36) 8.95	Dark grey and dark red-brown thinly and thickly laminated highly and moderately weathered silty MUDSTONE, weak. Apparent dip of bedding 5 deg. 7.59m to 8.65m: non-intact. Below 8.65m: closely spaced discontinuities, subhorizontal (parallel to bedding) planar closed clayey.		
8.40-9.58			100.00 50.00 0.00			100.50	(0.45) 9.40	Black thinly and thickly laminated slightly weathered carbonaceous MUDSTONE, weak. Apparent dip of bedding 5 deg. Grading in places and laminae of black cleated dull or vitreous coal. Very closely spaced discontinuities, subhorizontal (parallel to bedding) planar closed clayey.		
9.58-9.76			100.00 44.00 0.00				(0.70)	*See next page.*		

Water Strikes				
Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RC

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 17-07-1992/22-07-1992	**Co-ordinates:** E 393343.0 N 385733.5	**Ground Level:** 109.90 (m)	**EA 3RD SUPP 742**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 2 of 3

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
9.76-11.32			96.00 45.00 7.00			99.80	10.10	Dark grey thinly and thickly laminated slightly weathered carbonaceous clayey SILTSTONE, weak. Apparent dip of bedding 5 deg. Occasional grey and red-brown highly weathered silty mudstone layers. Very closely spaced discontinuities, subhorizontal (parallel to bedding) planar closed. 9.90m to 10.05m: laminae of carbonaceous mudstone and cleated dull or vitreous. *(continued)*		
						99.14	(0.66) 10.76			
						98.25	(0.89) 11.65	Dark grey and grey occasionally light grey thickly laminated fine grained slightly weathered SANDSTONE, moderately strong with many siltstone laminae. Apparent dip of bedding 5 deg. Very closely and closely spaced discontinuities subhorizontal (parallel to bedding) planar open occasionally clayey or non-intact. 10.35m to 10.76m: 90 deg discontinuity, irregular rough open.		
11.32-12.90			85.00 32.00 15.00			97.90	12.00	Dark grey thickly laminated to very thinly bedded slightly weathered SILTSTONE, moderately weak. Apparent dip of bedding 5 deg. Closely and very closely spaced discontinuities, subhorizontal (parallel to bedding) planar smooth tight occasionally clayey.		
						96.75	(1.15) 13.15	Black cleated dull and vitreous slightly weathered COAL, weak. Occasional disseminated pyrite and pyrite veins.		
12.90-15.51			97.00 71.00 34.00			94.10	(2.65) 15.80	Dark grey thickly laminated moderately weathered silty MUDSTONE, weak. Bands (<60mm thick) of grey fine graiend slightly weathered sandstone, moderately strong. At 12.40m: ironstone nodules (<30mm). 12.50m to 12.90m: non-intact. Below 12.90m: many laminae of carbonaceous mudstone and occasional vitreous coal Grey and dark grey discoloured red-brown thickly laminated to very thinly bedded slightly weathered SILTSTONE, moderately weak. Many ironstone bands (<50mm thick) and occasional ironstone nodules (<40mm). Apparent dip of bedding 5 deg. Closley and medium spaced discontinuities, subhorizontal (parallel to bedding) planar open or tight occasionally clayey or non-intact. 14.25m to 14.40m: subvertical irregular discontinuities (possibly drilling induced).		
15.51-16.95			117.00 96.00 70.00			91.30	(2.80) 18.60	Red-brown and light grey thickly laminated occasionally thinly laminated and very thinly bedded fine and medium grained slightly weathered SANDSTONE, moderately strong. Many dark red-brown siltstone layers and laminae. Apparent dip of bedding 5 deg. medium occasionally closely and very closely spaced discontinuities, subhorizontal (parallel to bedding) planar rough open occasionally oxidized. 16.30m to 16.95m: 80 deg stepped closed annealed calcite vein (3mm wide) with occasional vugs (<5mm wide). 16.95m to 17.50m: 80 deg curved rough partially ironstained discontinuity. 17.55m to 17.70m: 80 deg irregular rough discontinuity.		
16.95-17.50			80.00 0.00 0.00							
17.50-20.10			100.00 80.00 65.00			90.80	(0.50) 19.10	Dark red-brown thinly laminated slightly weathered fine sandy SILTSTONE, moderately weak. Apparent dip of bedding 5 deg. Occasional dark grey fine sandstone laminae, closely oc asionally very closely and medium spaced discontinuities, subhorizontal (parallel to bedding) planar open or tight occasionally clayey. *See next page.*		

Water Strikes				
Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RC

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 17-07-1992/22-07-1992	**Co-ordinates:** E 393343.0 N 385733.5	**Ground Level:** 109.90 (m)	**EA 3RD SUPP 742**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 3 of 3

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
20.10-20.54			82.00 41.00 27.00			88.85	(1.95) 21.05	Red-brown and light grey thickly laminated occasionally thinly laminated and very thinly bedded fine and medium grained slightly weathered SANDSTONE, moderately strong. Many dark red-brown siltstone layers and laminae. Apparent dip of bedding 5 deg. Medium occasionally closely and very closely spaced discontinuities, subhorizontal (parallel to bedding) planar rough open occasionally oxidized. occasional very thin vertical (<1mm thick) calcite and red ironstained veins. 20.40m to 20.97m: 80 deg rough irregular partially ironstained discontinuity. *(continued)*		
20.54-20.97			67.00 0.00 0.00							
20.97-23.14			105.00 88.00 76.00			87.55	(1.30) 22.35	Dark red-brown occasionally dark grey thickly laminated to very thinly bedded silty fine grained slightly weathered SANDSTONE, moderately weak to moderately strong. Apparent dip of bedding 5 deg. Medium to widely spaced discontinuities, subhorizontal (parallel to bedding) planar tight. 22.20m to 22.35m: grading to moderately weathered siltstone with ironstone nodules (<30mm).		
23.14-23.64			72.00 50.00 50.00			86.20	(1.35) 23.70	Dark red-brown, red-brown and light grey thickly laminated fine and medium grained slightly weathered SANDSTONE, moderately strong. Apparent dip of bedding 5 deg. Medium spaced discontinuities, subhorizontal (parallel to bedded) planar tight. 23.00m to 23.10m: dark red-brown thinly laminated slightly weathered siltstone, moderately weak.		
23.64-25.58			100.00 74.00 58.00			85.30	(0.90) 24.60	Dark red-brown occasionally dark grey thickly laminated to very thinly bedded silty fine grained slightly weathered SANDSTONE, moderately weak to moderately strong. Apparent dip of bedding 5 deg. Medium to widely spaced discontinuities, subhorizontal (parallel to bedding) planar tight.		
25.58-27.32			77.00 11.00 0.00			83.45	(1.85) 26.45	Dark red-brown and dark grey thickly laminated slightly weathered silty MUDSTONE, weak with many ironstone bands (<40 mm thick). Apparent dip of bedding 5 deg. Closely to medium spaced discontinuities sub-horizontal (parallel to bedding) planar open. Grading in places to clayey siltstone. 25.20m to 25.27m: highly weathered and very weak. 25.27m to 26.45m: non-intact slightly to moderately weathered. below 26.30m: dark grey and carbonaceous.		
27.32-30.00			90.00 70.00 50.00			82.58	(0.87) 27.32	Dark grey thickly laminated silty fine graiend slightly weathered SANDSTONE, moderately weak. Grading in places to fine sandy siltstone. Non-intact.		
						81.80	(0.78) 28.10	Grey and dark grey thickly laminated moderately weathered silty MUDSTONE, weak. Occasional light grey and grey fine sandstone, moderately strong layers (<100mm thick). Occasional dark grey carbonaceous layers.		
						81.35	(0.45) 28.55	Black cleated dull and vitreous slightly weathered COAL, weak. Some non intact layers. Occasional ironstone bands (<20mm thick) or pyrite veins.		
						81.05	28.85	dark grey and grey thinly and thickly laminated highly to completely weathered silty MUDSTONE, very weak. Apparent dip of bedding 5 deg. Occasional carbonaceous or vitreous coal laminae (<5mm thick).		
								End of Borehole		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RC

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

AGS3_NEW.GLB | SW BH LOG (CP/RC) | K:\4.7060785 - SEMMS\05.0 PROJECT INFORMATION\GINT\4.7060785-SEMMS.GPJ | AGS3_NEW.GDT | 23/11/2011 | 09:09:49

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 23-07-1992/28-07-1992	**Co-ordinates:** E 393383.5 N 385717.5	**Ground Level:** 110.90 (m)	**EA 3RD SUPP 741**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 1 of 4

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						108.85	(2.05) 2.05	Stiff yellow CLAY with sand band		
						108.40	(0.45) 2.50	Red MUDSTONE and fractured SANDSTONE		
2.50-3.42			22.00 0.00 0.00			106.80	(1.60) 4.10	Light brown fine and medium grained thinly bedded moderately weathered SANDSTONE, moderately strong. Apparent dip of bedding 5 deg. Closely and very closely spaced discontinuities, subhorizontal (parallel to bedding) planar, rough, tight and open, sandy. Below 3.80m: 80 deg to 90 deg curviplanar, rough, tight, non intact adjacent. Below 3.95m: yellow-brown.		
3.42-3.65			0.00 0.00 0.00							
3.65-5.09			111.00 77.00 67.00			106.00	(0.80) 4.90	Dark red-brown thickly laminated moderately weathered silty MUDSTONE, weak. Apparent dip of bedding <5 deg. Occasional light grey siltstone laminae.		
5.09-6.50			97.00 77.00 55.00			103.05	(2.95) 7.85	Red-brown and dark red-brown thickly laminated slightly to moderately weathered clayey SILTSTONE, weak and moderately weak. Grading in places to silty fine graiend slightly weathered sandstone, moderately strong and highly weathered silty mudstone, weak and very weak. Apparent dip of bedding 5 deg to <5 deg. Very closely and closely spaced discontinuities, subhorizontal (parallel to bedding) planar, tight, rough, and smooth with occasional non itnact zones adjacent. Below 6.85m: medium to widely spaced discontinuities.		
6.50-7.97			84.00 63.00 59.00							
7.97-8.34			100.00 38.00 38.00			102.60	(0.45) 8.30	Light grey fine and medium grained thinly bedded slightly weathered SANDSTONE, moderately strong, apparent dip of bedding 5 deg. Very closely to medium spaced discontinuities, subhorizontal (parallel to bedding) planar, rough, open and tight.		
8.34-10.09			109.00 46.00 13.00			100.90	(1.70) 10.00	Grey onto red-brown and dark red-brown thickly laminated moderately and highly weathered clayey SILTSTONE, weak. Apparent dip of bedding 5 deg. Grading in places to highly weathered silty mudstone, very weak and silty fine sandstone, moderately weak. Corestones between non intact and clay bound zones.		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RC

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 23-07-1992/28-07-1992	**Co-ordinates:** E 393383.5 N 385717.5	**Ground Level:** 110.90 (m)	**EA 3RD SUPP 741**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 2 of 4

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
10.09-11.77			113.00 15.00 11.00				(3.40)	Red-brown occasionally yellow-brown and dark red-brown fine and medium grained thinly to medium bedded slightly weathered SANDSTONE, moderately strong. Apparent dip of bedding 5 deg. 10.00m to 11.10m: 80 deg to 90 deg planar and curviplanar, rough tight and open partially ironstained discontinuity with associated widely spaced subhorizontal (parallel to bedding) planar, rough, tight discontinuitites. 1.40m to 11.70m: 80 deg planar, rough, tight ironstained discontinuity with subhorizontal medium spaced planar rough, tight discontinuities. 11.70m to 12.70m: 4 no. 70 deg planar and irregular rough, tight, discontinuities, non intact adjacent. 12.87m to 13.25m: 85 deg planar, rough, tight, ironstained discontinuity with widely spaced subhorizontal (parallel to bedding) planar, rough, tight discontinuities.		
11.77-13.71			91.00 25.00 18.00			97.50	13.40			
						97.26	13.65	Black and dark grey thickly laminated hihgly weathered carbonaceous silty MUDSTONE, very weak. Apparent dip of bedding 5 deg.		
13.71-14.67			100.00 74.00 47.00				(1.56)	Dark grey and grey thickly laminated slightly weathered carbonaceous SILTSTONE, weak. Many laminae and thin beds (<80mm thick) of light grey fine and medium grained slightly weathered sandstone, moderately weak. Apparent dip of bedding 5 deg. Closely to medium spaced discontinuities, subhorizontal (parallel to bedding) planar, rough, tight, occasionally non intact adjacent. Sandstone layers fragmented with vertical planar, rough , open, discontinuities.		
14.67-15.16			16.00 0.00 0.00			95.70	15.20			
15.16-16.99			74.00 4.00 0.00				(1.60)	Dark grey and grey thinly and thickly laminated highly weathered silty MUDSTONE, very weak. Occasional ironstone nodules (<20mm) and bands (<10mm thick).		
						94.10	16.80			
16.99-17.96			100.00 0.00 0.00				(1.85)	Dark grey and dark red-brown thinly and thickly laminated highly occasionally moderately weathered clayey SILTSTONE, weak. Grading in places to silty mudstone, very weak. Occasional ironstone bands (<10mm thick) and nodules (<20mm). Below 18.00m: dark grey occasionally grey non intact or claybound with occasional claybound corestones.		
17.96-19.30			108.00 10.00 0.00			92.25	18.65			
								See next page.		
19.30-19.74			77.00 0.00 0.00							
19.74-19.94			100.00 30.00							

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RC

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

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BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 23-07-1992/28-07-1992	**Co-ordinates:** E 393383.5 N 385717.5	**Ground Level:** 110.90 (m)	**EA 3RD SUPP 741**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 3 of 4

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
19.94-20.03			0.00				(2.75)	Light grey fine and medium grained thickly laminated to thinly and medium bedded slightly and moderately weathered SANDSTONE, moderately strong. Apparent dip of bedding, horizontal. Occasional laminae and beds (up to 40mm thick) and red-brown siltstone. Closely to medium spaced horizontal, planar, rough, tight, occaisonally clayey or ironstinaed discontinuities. 18.65m to 18.95m: 70 deg irregular, rough, tight, discontinuity, non intact adjacent. 19.15m to 19.74m: corestones or non intact. 19.74m to 19.94m: very closely spaced discontinuities. Below 19.94m: medium occasionally closely spaced. 20.40m to 20.60m: 80 deg planar and irregular rough tight discontinuity. *(continued)*		
20.03-20.21			122.00							
			122.00							
			122.00							
			94.00							
			94.00							
			94.00							
			96.00							
20.21-22.45			65.00			89.50	21.40			
			51.00							
							(1.20)	Dark red-brown occasionally grey thinly laminated slightly weathered SILTSTONE, moderately weak. Apparent dip of bedd <5 deg to horizontal. Light grey fine sandstone laminae and beds (up to 80mm thick). Medium occasionally closely spaced discontinuities horizontal, planar, tight, rough occasionaly clayey or sandy. Grading in places to silty mudstone, weak.		
						88.30	22.60			
							(1.10)	Red-brown occasionally grey silty fine grained very thinly to medium bedded slightly weathered SANDSTONE, moderately strong. Apparent dip of bedding 5 deg. Medium spaced discontinuities, subhorizontal (parallel to bedding) planar, rough, open, occasionally ironstained. Below 23.50m: red-brown and grading to fine sandy siltstone, moderately weak with 60 deg planar, irregular, rough tight, discontinuities.		
						87.20	23.70			
			90.00							
22.45-25.25			33.00							
			30.00				(0.60)	Dark red-brown thickly laminated slightly weathered SILTSTONE, moderately weak. Apparent dip of bedding <5 deg. Occasional light grey silty fien sandstone laminae. Medium to widely spaced discontinuities, subhorizontal (parallel to bedding) planar, rough, tight, occasionally non intact adjacent. 23.70m to 23.90m: 70 deg planar, rough, tight, discontinuity. 23.90m to 24.05m: clayey discontinuity with irregular subvertical discontinuities (possibly drilling induced).		
						86.60	24.30			
							(0.95)	Light grey fine and medium grained thinly to medium bedded slightly weathered SANDSTONE, moderately strong to strong. Apparent dip of bedding 5 deg. Medium to spaced discontinuities, subhorizontal (parallel to bedding) planar, rough, open ironstained. 24.40m to 25.25m: 80 to 90 deg irregular and curviplanar rough partially ironstained discontinuity.		
						85.65	25.25			
			61.00							
25.25-27.38			0.00				(1.00)	Dark red-brown occasionally grey silty fine grained thickly laminated to very thinly bedded slightly weathered SANDSTONE, moderately strong. Apparent dip of bedding <5 deg. Closely to medium, occasionally very closely spaced discontinuities, subhorizontal (parallel to bedding) planar, rough tight and open.		
			0.00			84.65	26.25			
							(2.00)	Dark red-brown thinly and thickly laminated slightly weathered silty MUDSTONE, weak. Grading in places to clayey siltstone. Apparent dip of bedding <5 deg. Closely to medium spaced discontinuities, subhorizontal (parallel to bedding) planar tight clayey smooth. Occasional 45 deg to 60 deg planar tight clayey discontinuities.		
			61.00							
27.38-27.79			0.00							
			0.00							
						82.65	28.25			
						82.30	28.60	Black fine grained carbonaceous thinly and thickly laminated slightly weathered SANDSTONE, moderately strong. Many light grey fine sandstone laminae. Apparent dip of bedding <5 deg to 0 deg. Closely spaced discontinuities, horizontal, planar, rough, tight with 90 deg irregular rough tight discontinuity.		
						81.92	(0.38) 28.98			
			101.00					Black vitreous cleated thickly laminated slightly weathered COAL, moderately weak. Apparent dip of bedding 0 deg. Very closely and closely spaced discontinuities, horizontal, planar, tight, smooth, dusty.		
27.79-30.78			59.00							
			21.00				(1.27)	*See next page.*		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks
24.30	15.16	20	24.30	Ingress

Method, Equipment and Remarks

Method: RC

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 23-07-1992/28-07-1992	**Co-ordinates:** E 393383.5 N 385717.5	**Ground Level:** 110.90 (m)	**EA 3RD SUPP 741**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 4 of 4

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						80.65	30.25	Dark grey carbonaceous thinly and thickly laminated slightly weathered silty MUDSTONE, weak. Apparent dip of bedding 0 deg. Closely to medium spaced discontinuities, horizontal, planar, rough and smooth, tight, with occasional 45 deg planar tight clayey discontinuities. occasional ironstone nodules (<30mm). Below 29.15m: grey. At base: dark grey and carbonaceous. *(continued)*		
							(0.53)			
						80.12	30.78	Black vitreous cleated thickly laminated slightly weathered COAL, moderately weak. Apparent dip of bedding 0 deg. Very closely and closely spaced discontinuities, horizontal, planar, rough, tight. Occasional pyrite.		
30.78-32.78			83.00 56.00 52.00				(2.00)	Black carbonaceous thickly laminated highly weathered MUDSTONE, very weak. Apparent dip of bedding <5 deg. Below 31.00m: dark grey with occasional black carbonaceous layers, claybound or non intact zones. Below 31.80m: grey. Below 32.10m: moderately weathered corestones between non intact stones.		
						78.12	32.78	End of Borehole		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RC

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 15-07-1992/23-07-1992	**Co-ordinates:** E 393434.0 N 385695.5	**Ground Level:** 112.70 (m)	**EA 3RD SUPP 740**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 1 of 3

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
						112.40	0.30	TOPSOIL		
							(3.10)	Brown sandy boulder CLAY		
						109.30	3.40			
						109.10	3.60	Red weathered MUDSTONE		
3.60-4.60			79.00 0.00 0.00				(2.20)	Red-brown and dark red-brown thickly laminated highly weathered clayey SILTSTONE, weak and very weak. Apparent dip of bedding 5 deg. Corestones between clay bound non-intact zones.		
4.60-5.10			100.00 32.00 0.00							
5.10-5.70			100.00 0.00 0.00			106.90	5.80			
5.70-7.70			100.00 63.00 51.00			106.00	(0.90) 6.70	Red-brown and dark red-brown thickly laminated slightly to moderately weathered SILTSTONE, weak. Apparent dip of bedding 5 deg. Occasional yellow-brown fine sandstone layers. Medium spaced discontinuities, subhorizontal (parallel to bedding) planar tight clayey. 6.55m to 6.70m: grading to highly weathered silty mudstone, very weak.		
						104.95	(1.05) 7.75	Red-brown and dark red-brown thickly laminated silty fine grained slightly to moderately weathered SANDSTONE, moderately weak. Apparent dip of bedding 5 deg. Medium spaced discontinuities, subhorizontal and subvertical planar tight clayey or non-intact. Several subvertical irregular rough discontinuities (possibly drilling induced).		
7.70-9.70			97.00 24.00 19.00			103.00	(1.95) 9.70	Light grey and red-brown very thinly and thinly bedded fine and medium grained slightly weathered SANDSTONE, moderately strong. Apparent dip of bedding 5 deg. Medium occasionally closely and widely spaced discontinuities sub-horizontal (parallel to bedding) planar open rough. 7.85m to 8.20m: 90 deg irregular rough partially ironstained discontinuity, non intact below 8.10m. 8.50m to 9.00m: 70 to 80 deg irregular rough partially ironstained discontinuity with associated randomly orietnated discontinuities. 9.25m to 9.70m: 90 deg planar rough partially ironstained discontinuity.		
								See next page.		

Water Strikes

Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RC

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 15-07-1992/23-07-1992	**Co-ordinates:** E 393434.0 N 385695.5	**Ground Level:** 112.70 (m)	**EA 3RD SUPP 740**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 2 of 3

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
9.70-11.40			85.00 71.00 0.00				(1.40)	Black, dark grey and dark red-brown thinly and thickly laminated highly to completely weathered silty MUDSTONE, very weak. Bedding absent or 5 deg. *(continued)*		
						101.60	11.10			
11.40-12.50			32.00 0.00 0.00				(1.40)	Grey thickly laminated moderately weathered silty MUDSTONE, weak with beds of very thinly bedded silty fine grained sandstone, moderately weak.		
						100.20	12.50			
12.50-13.50			85.00 50.00 10.00				(2.20)	Dark grey highly to completely weathered silty MUDSTONE, very weak (soft). Occasional corestone or angular gravel sized fragments of light grey fine sandstone. 12.70m to 12.80m: corestone. Apparent dip of bedding 5 deg. Layers of carbonaceous mudstone and vitreous pyritised coal. Below 14.00m: completely weathered, recovered as angular gravel sized fragments and very soft clayey silt (possible workings?). Below 14.60m: very soft.		
13.50-14.70			96.00 8.00 8.00			98.00	14.70			
14.70-15.50			100.00 38.00 14.00				(3.25)	Grey thickly laminated moderately to highly weathered clayey SILTSTONE, weak. Corestones between silty clay and angular gravel non-intact zones. Grading in places to silty mudstone. Occasional light grey fine sandstone laminae. 15.50m to 15.80m: dark grey carbonaceous non-intact. Below 15.80m; thickly laminated apparent dip of bedding 5 deg, slightly to moderately weak, medium spaced discontinuities, subhorizontal (parallel to bedding) planar tight clayey occasionally non-intact. Below 17.50m: grey and dark grey, moderately weathered thinly laminated occasionally carbonaceous, closely spaced discontinuities or non-intact zones.		
15.50-17.50			100.00 55.00 43.00							
						94.75	17.95			
17.50-18.50			100.00 37.00 0.00				(0.45)	Grey thickly laminated silty fine grained slightly weathered SANDSTONE, moderately weak. Apparent dip of bedding 5 deg. Closely spaced discontinuities, subhorizontal (parallel to bedding), planar tight clayey. 18.15m to 18.40m: 60 deg irregular non-intact zones discontinuity.		
						94.30	18.40			
18.50-19.50			100.00 43.00 36.00				(0.60)	Light grey thickly laminated to very thinly bedded fine and medium grained slightly weathered SANDSTONE, moderately strong. Apparent dip of bedding 5 deg. Closely and medium spaced discontinuities, sub-horizontal (parallel to bedding) planar open.		
						93.70	19.00			
							(0.45)	Light grey and grey thinly laminated silty fine graiend moderately weathered SANDSTONE, weak. Apparent dip of bedding 5 deg. Many very thin beds and laminae of siltstone. Fractured with many randomly orientated discontinuities.		
						93.25	19.45			
						92.95	19.75			

Water Strikes				
Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RC

Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

BOREHOLE LOG

Project: SEMMS		**Job No:** 37732ISG	Borehole No.
Date: 15-07-1992/23-07-1992	**Co-ordinates:** E 393434.0 N 385695.5	**Ground Level:** 112.70 (m)	**EA 3RD SUPP 740**
Contractor: GEOTECHNICAL ENGINEERING LIMITED	**Engineer:** Faber Maunsell Ltd		Sheet: 3 of 3

Samples & Tests					Water/ (Flush Return)	Strata				Backfill/ Instrument
Depth	Type No	Test Results	TCR SCR RQD	If (mm)		O.D. Level	Depth (Thickness)	Description	Legend	
19.50-21.00			99.00 20.00 9.00				(1.50)	Light grey thickly laminated to very thinly bedded fine and medium grained slightly weathered SANDSTONE, moderately strong. Apparent dip of bedding 5 deg. 80 deg planar annealed discontinuity.		
21.00-21.60			93.00 0.00 0.00			91.45	21.25	Light grey and grey thinly laminated silty fine grained moderately weathered SANDSTONE, weak. Apparent dip of bedding 5 deg. Many beds and laminae of grey siltstone. Occasional light grey fine and medium grained slightly weathered moderately strong sandstone layers. Closely to medium spaced discontinuities, subhorizontal and subvertical planar tight clayey. Below 20.55m: non intact. Below 21.00m: fractured with randomly orientated subvertical and vertical stepped discontinuities. *(continued)*		
21.60-22.50			106.00 50.00 0.00			89.70	(1.75) 23.00	Grey occasionally dark grey and dark red-brown thinly and thickly laminated moderately weathered SILTSTONE, weak. Apparent dip of bedding 5 deg. 80 deg to vertical irregular closed clayey or non-intact zoned discontinuities. Below 21.60m: dark red-brown. 22.25m to 22.50m: bands of light grey and grey thinly laminated fine grained slightly weathered sandstone, weak with 70 deg irregular, rough green partially ironstained discontinuity. Below 22.50m: grey and dark red-brown.		
22.50-24.50			100.00 45.00 8.00			88.98	(0.72) 23.72	Light grey thickly laminated fine and medium grained slightly weathered SANDSTONE. Moderately strong. Apparent dip of bedding 5 deg. Closely spaced discontinuities, subhorizontal (parallel to bedding) planar open ironstained. 23.00m to 23.30m: 80 deg rough ironstained. Below 23.50m: moderately weathered with many grey and red-brown siltstone laminae.		
						88.20	(0.78) 24.50	Dark grey thinly laminated moderately weathered clayey SILTSTONE, weak. Grading in places to silty mudstone. Medium to widely spaced discontinuities, tight clayey subhorizontal.		
24.50-26.73			93.00 64.00 54.00			86.85	(1.35) 25.85	Grey and red-brown occasionally light and dark grey thinly laminated silty fine grained slightly weathered SANDSTONE, moderately weak. Apparent dip of bedding 5 deg. Closely to medium spaced discontinuities subhorizontal (parallel to bedding) planar tight. 24.50m to 24.80m: 80 deg irregular rough discontinuity, non-intact at 24.80m. 25.15m to 25.35m: 70 deg irregular rough non-intact discontinuity. Below 25.65m: very thinly and thinly bedded.		
						84.90	(1.95) 27.80	Dark grey and dark red-brown thinly and thickly laminated slightly weathered silty MUDSTONE, weak. Apparent dip of bedding 5 deg. Medium spaced discontinuities, subhorizontal (parallel to bedding) planar open clayey occasionally non-intact. Many ironstone nodules (<40mm). Below 27.57m: dark grey and grey.		
						84.55	28.15	Black cleated thinly and thickly laminated dull dusty thinly and thickly laminated fine sandy COAL , weak. Tending to carbonaceous fine sandy mudstone.		
26.73-29.87			102.00 75.00 70.00			84.13	(0.42) 28.57	Black cleated vitreous thinly and thickly laminated slightly weathered COAL, weak. Occasional pyrite veins.		
						82.83	(1.30) 29.87	Grey occasionally light and dark grey thinly laminated slightly weathered silty MUDSTONE, weak. Apparent dip of bedding 5 deg. Closely to medium spaced discontinuities, subhorizontal (parallel to bedding) planar tight clayey.		
								End of Borehole		

Water Strikes				
Strike Depth	Casing Depth	Post Mins	Post Depth	Flow Remarks

Method, Equipment and Remarks

Method: RC

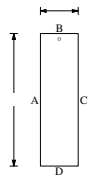
Scale: 1:50 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**

AGS3_NEW.GLB | SW BH LOG (CP/RC) | K:\4.7060785 - SEMMS\05.0 PROJECT INFORMATION\GINT\4.7060785-SEMMS.GPJ | AGS3_NEW.GDT | 23/11/2011 | 09:09:43

TRIAL PIT LOG

Project: SEMMS		**Job No:** 37732ISG	Trial Pit No.
Date: 23-01-1990/23-01-1990	**Co-ordinates:** E 393334.5 N 385730.5	**Ground Level:** 109.90 (m)	**SM 2ND SUPP TP515**
Contractor: GEOTECHNICAL ENGINEERING LIMITED		**Engineer:** Faber Maunsell Ltd	Sheet: 1 of 1

Samples & Tests			Strata				
Depth	**Type No**	**Test Result**	**Reduced Level**	**Depth (Thickness)**	**Description**	**Legend**	**Backfill/ Instrument**
			109.75	0.15	Dark brown TOPSOIL with a little angular to rounded fine to medium gravel and occasional roots and rootlets		
0.55	D			(0.90)	Stiff light brown becoming mottled orange brown slightly sandy CLAY with a little subangular to rounded fine to medium quartz and sandstone gravel. Occasional rootlets, root tracks and 10mmdia. Worm tubes		
1.00	D		108.85	1.05			
1.26	D			(0.95)	Stiff orange brown mottled light grey locally slightly sandy occasionally thinly laminated CLAY with occasional bands (350mmx50mm) of dense grey medium sand and a little fine gravel. Discontinuities are weathered to grey colour		
2.00	D		107.90	2.00			
2.14	D			(0.70)	Moderately dense orange brown medium SAND with a little subangular to rounded medium gravel and occasional pockets of firm brown and orange brown clay (150x150mm) and yellow brown silt (200x200mm)		
2.70	D		107.20	2.70			
				(0.40)	Firm yellow brown becoming mottled red purple with depth thickly laminated SILT with occasional angular purple and yellow sandstone cobbles. At 2.90m, silt contains clay lumps (probably completely weathered bedrock.		
3.14	D		106.80	3.10			
				(0.35)	Red purple fine to medium highly weathered SANDSTONE, recovered as gravel and cobbles with rare boulders (250x300mm) with a little sand and clay.		
			106.45	3.45	End of Trial Pit		

Groundwater Observations		Orientation	Method, Equipment and Remarks	Stability:
Depth	**Flow**		**Method / Equipment:**	**Shoring:**

Scale: 1:25 @ A4	**Client:** STOCKPORT METROPOLITAN BOROUGH COUNCIL	**Logged By:**	**Data Checked By:**