

Annexure E – Hydrogeochemical plots

Annexure E – Figures

Piper diagrams

E1.1	All Lithologies – June 2016	E3.3	Ashfield Shale – Aug 2016
E1.2	All Lithologies – July 2016	E3.4	Ashfield Shale – Sep 2016
E1.3	All Lithologies – Aug 2016	E3.5	Ashfield Shale – Oct 2016
E1.4	All Lithologies – Sep 2016	E3.6	Ashfield Shale – Nov 2016
E1.5	All Lithologies – Oct 2016	E3.7	Ashfield Shale – Dec 2016
E1.6	All Lithologies – Nov 2016	E3.8	Ashfield Shale – Jan 2017
E1.7	All Lithologies – Dec 2016	E3.9	Ashfield Shale – Feb 2017
E1.8	All Lithologies – Jan 2017	E3.10	Ashfield Shale – March 2017
E1.9	All Lithologies – Feb 2017	E3.11	Ashfield Shale – April 2017
E1.10	All Lithologies – March 2017	E3.12	Ashfield Shale – May 2017
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E2.3	Alluvium – Aug 2016	E4.5	Hawkesbury Sandstone – Oct 2016
E2.4	Alluvium – Sep 2016	E4.6	Hawkesbury Sandstone – Nov 2016
E2.5	Alluvium – Oct 2016	E4.7	Hawkesbury Sandstone – Dec 2016
E2.6	Alluvium – Nov 2016	E4.8	Hawkesbury Sandstone – Jan 2017
E2.7	Alluvium – Dec 2016	E4.9	Hawkesbury Sandstone – Feb 2017
E2.8	Alluvium – Jan 2017	E4.10	Hawkesbury Sandstone – March 2017
E2.9	Alluvium – Feb 2017	E4.11	Hawkesbury Sandstone – April 2017
E2.10	Alluvium – March 2017	E4.12	Hawkesbury Sandstone – May 2017
E2.11	Alluvium – April 2017	E5.1	Alluvium June 2016 – May 2017
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E3.1	Ashfield Shale – June 2016	E5.3	Hawkesbury Sandstone June 2016 – May 2017
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Annexure E – Figures

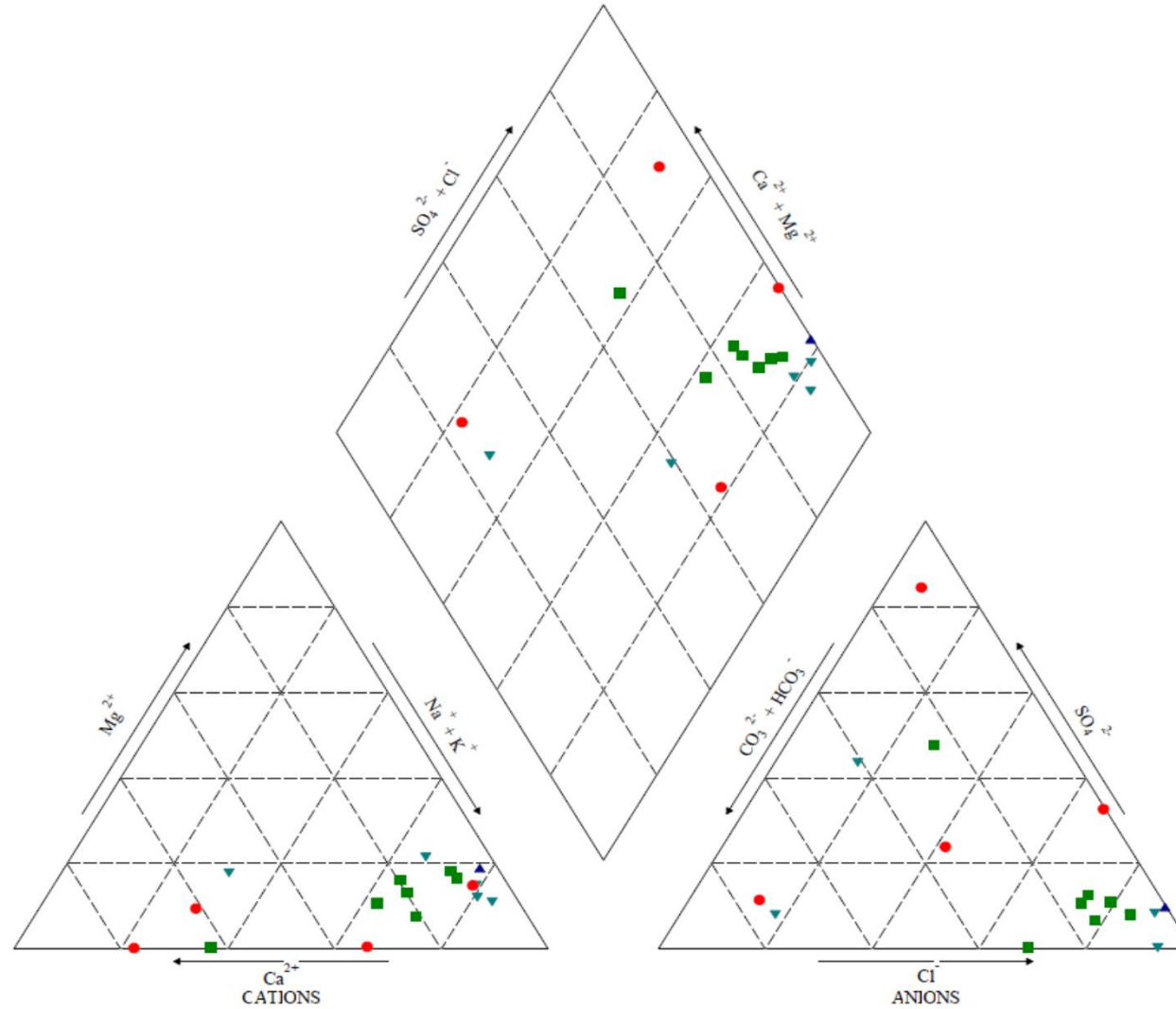
Schoeller Diagrams – Metals

E6.1	Alluvium at Haberfield HB_BH08s
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E6.3	Alluvium at Rozelle RZ_BH44s
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E6.6	Alluvium at The Crescent TC_BH01s
E6.7	Alluvium at The Crescent TC_BH06s
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E8.6	Hawkesbury Sandstone at The Crescent TC_BH09d

All lithologies June 2016

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water
- ▼ Alluvium
- Ashfield Shale



Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

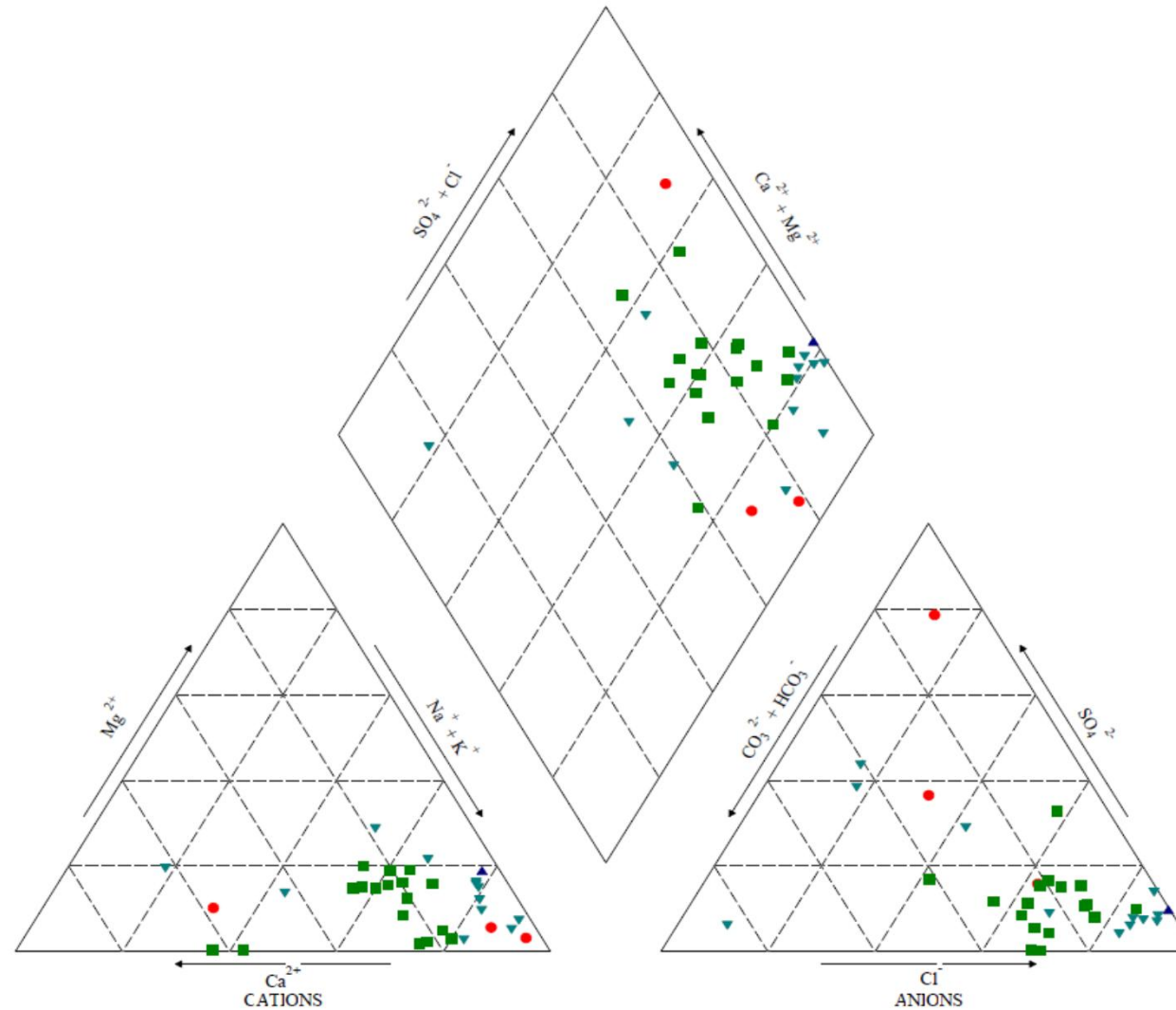
Aquifer: All lithologies
 Month: June 2016

Figure: E1.1
 Project No: 60493796

All lithologies July 2016

EXPLANATION

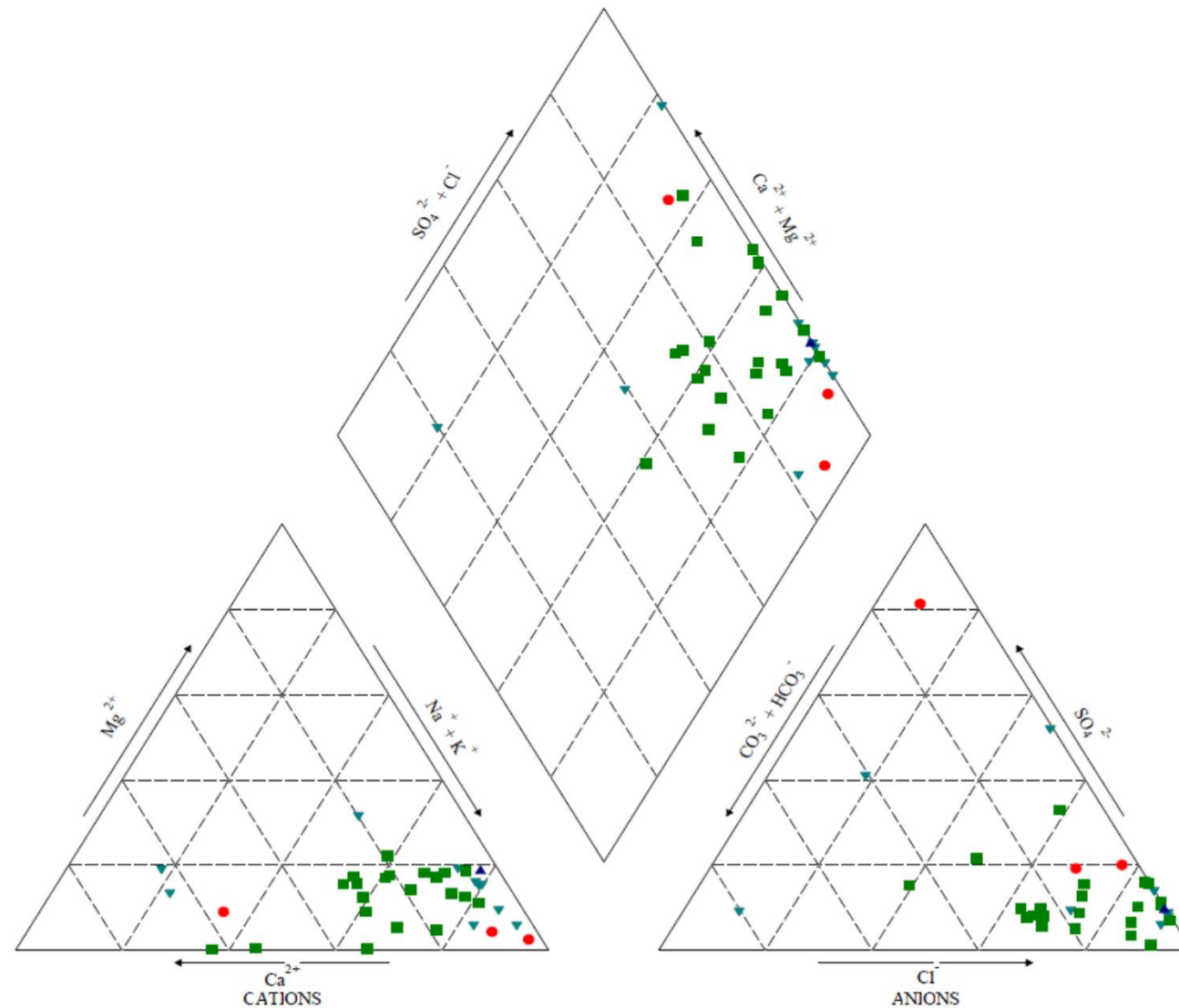
- Hawkesbury Sandstone
- ▲ Sea Water
- ▼ Alluvium
- Ashfield Shale



All lithologies August 2016

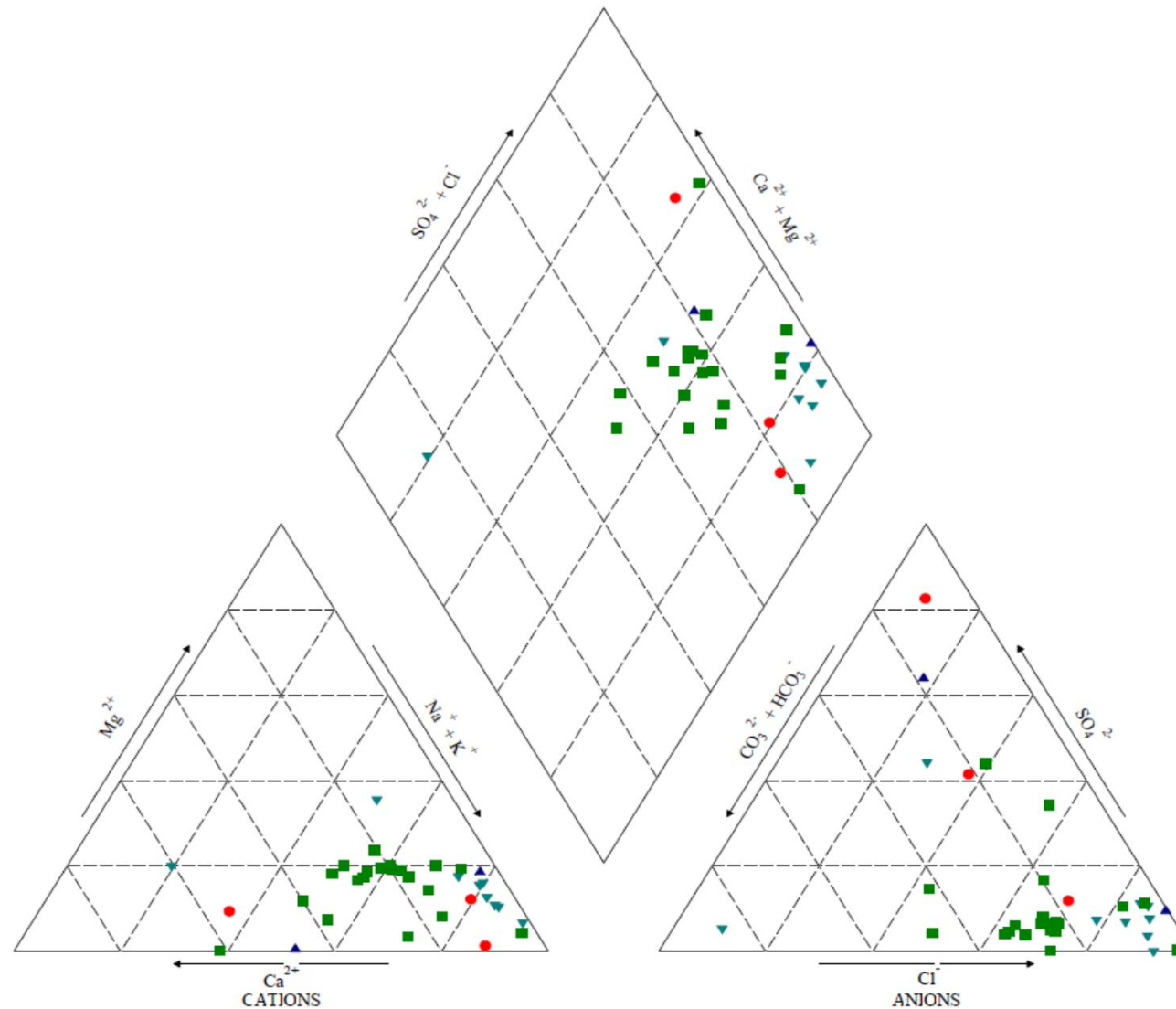
EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water
- ▼ Alluvium
- Ashfield Shale



All lithologies September 2016

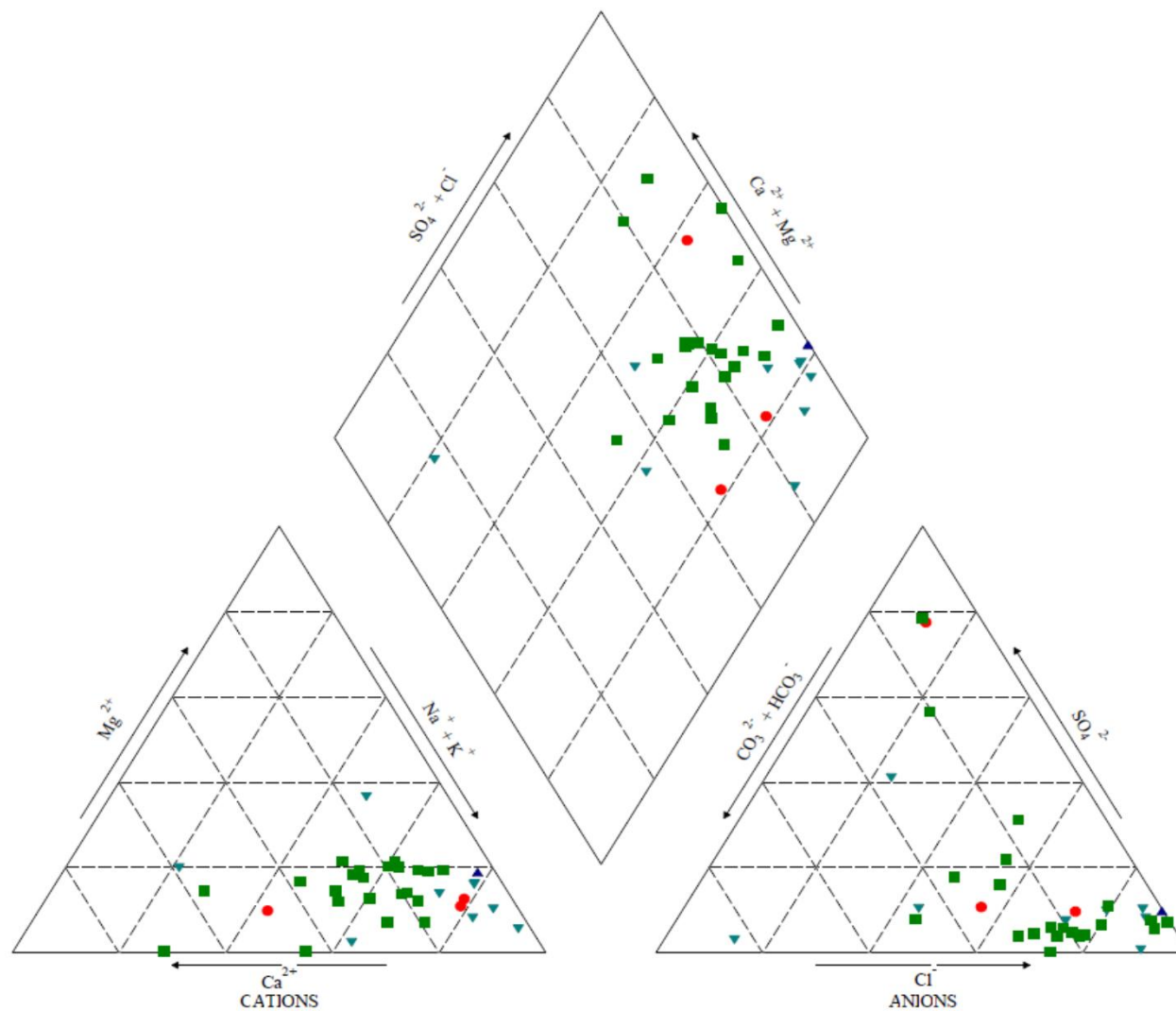
- EXPLANATION
- Hawkesbury Sandstone
 - ▲ Sea Water
 - ▼ Alluvium
 - Ashfield Shale



All lithologies October 2016

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water
- ▼ Alluvium
- Ashfield Shale



AECOM

Title: Piper Diagram
Project: M4-M5 Link WestConnex
Client: Sydney Motorway Corporation
Location: Inner West Sydney

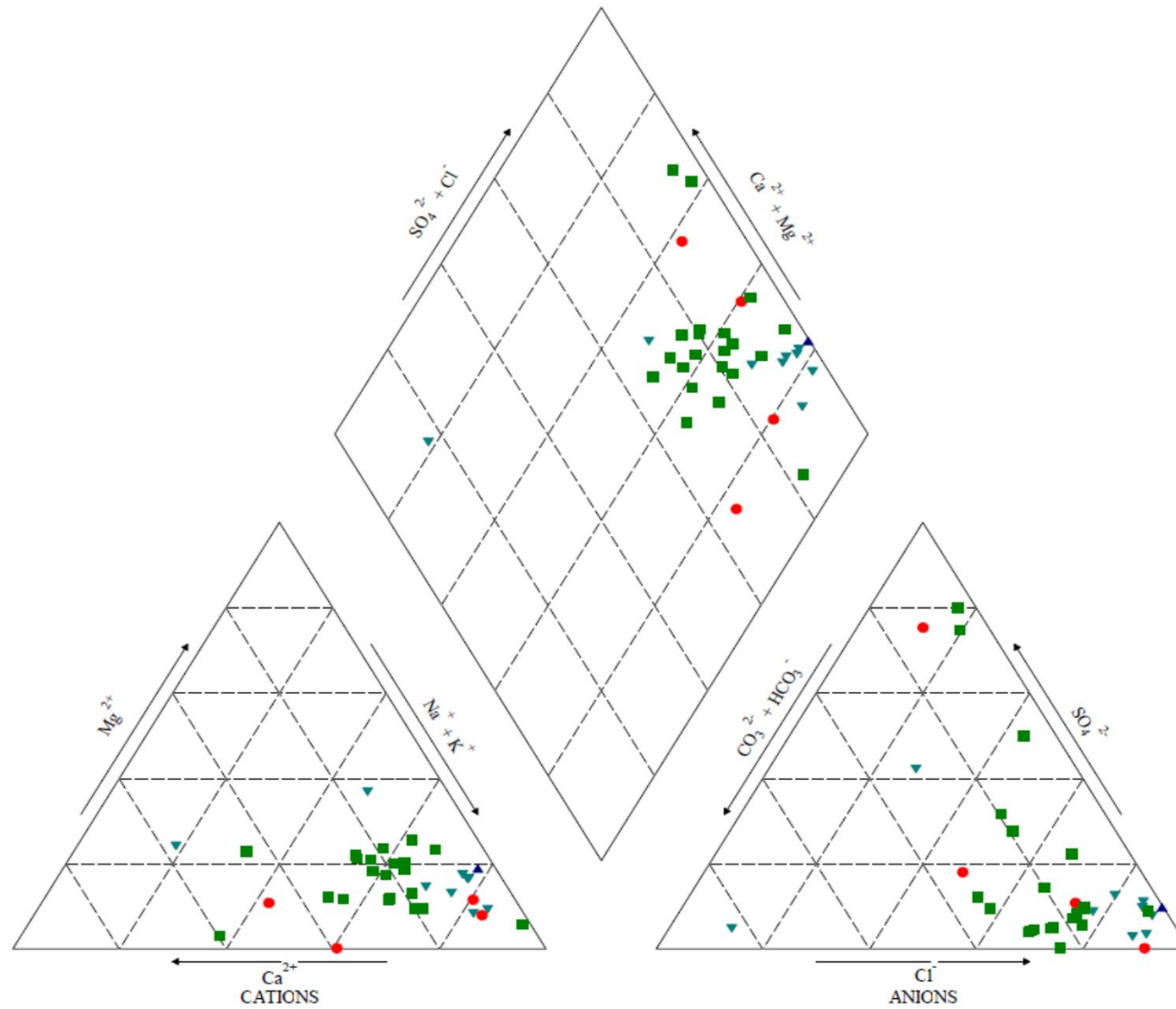
Aquifer: All lithologies
Month: October 2016

Figure: E1.5
Project No: 60493796

All lithologies November 2016

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water
- ▼ Alluvium
- Ashfield Shale



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

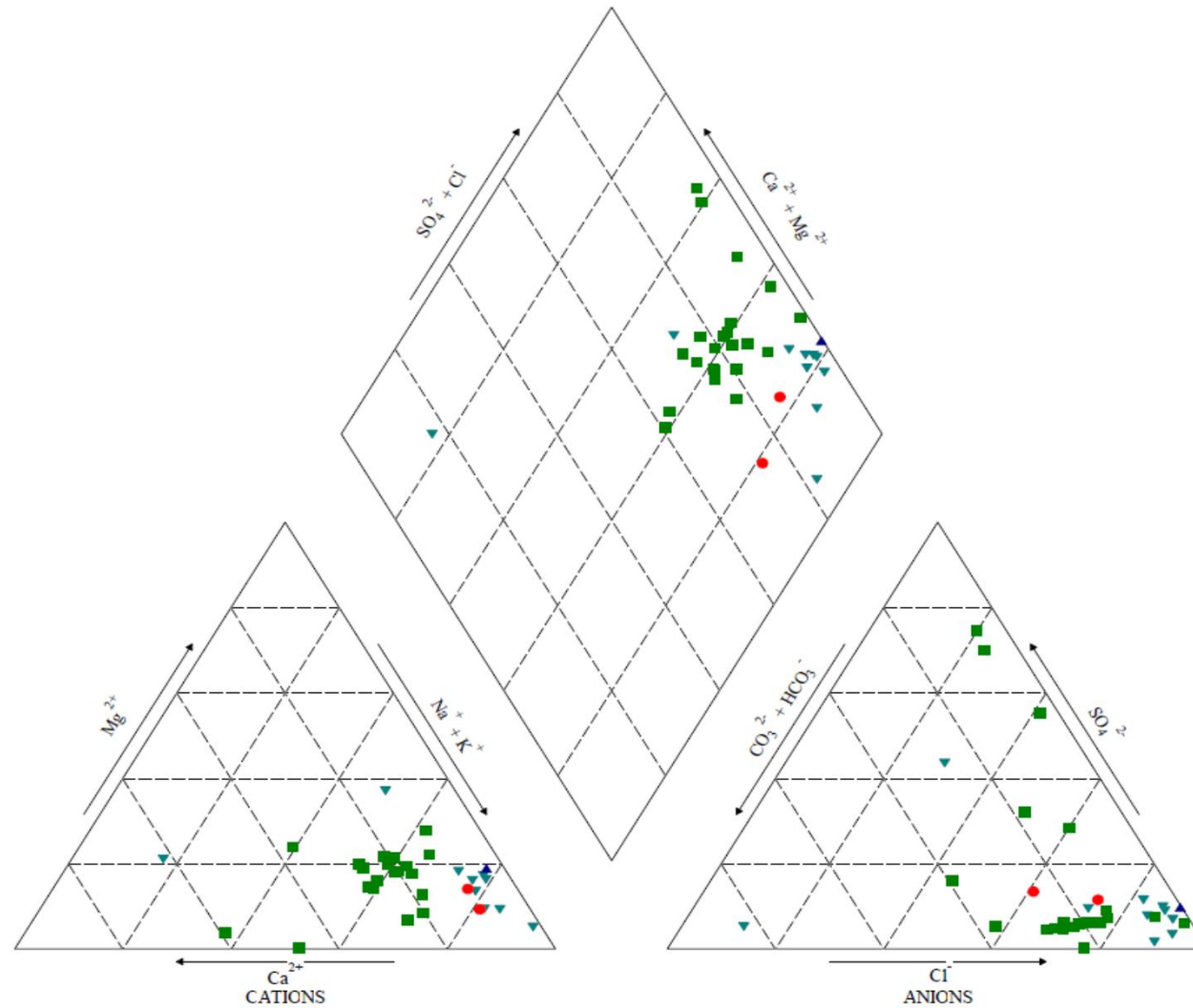
Aquifer: All lithologies
 Month: November 2016

Figure: E1.6
 Project No: 60493796

All lithologies December 2016

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water
- ▼ Alluvium
- Ashfield Shale



Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

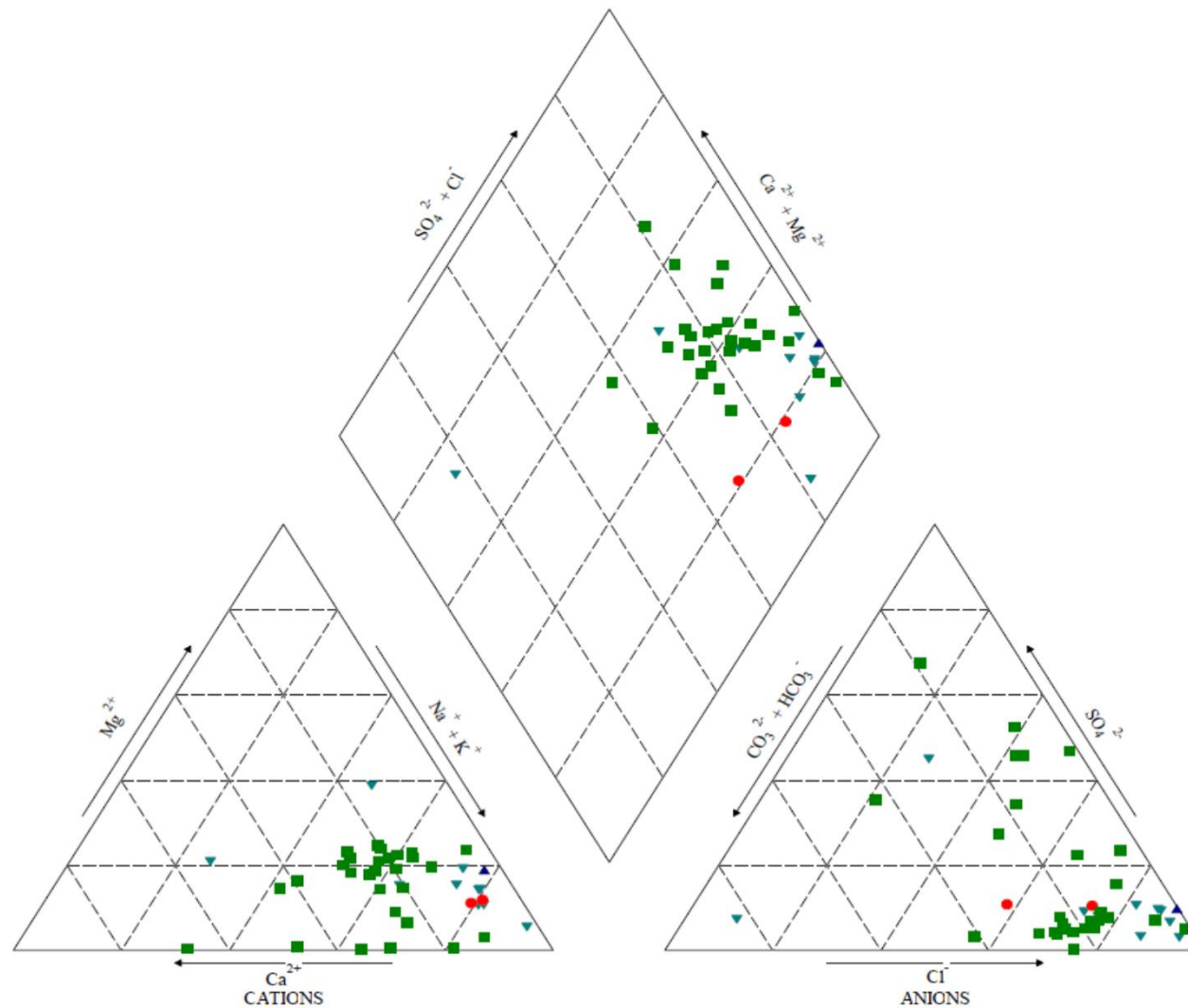
Aquifer: All lithologies
 Month: December 2016

Figure: E1.7
 Project No: 60493796

All lithologies January 2017

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water
- ▼ Alluvium
- Ashfield Shale



Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

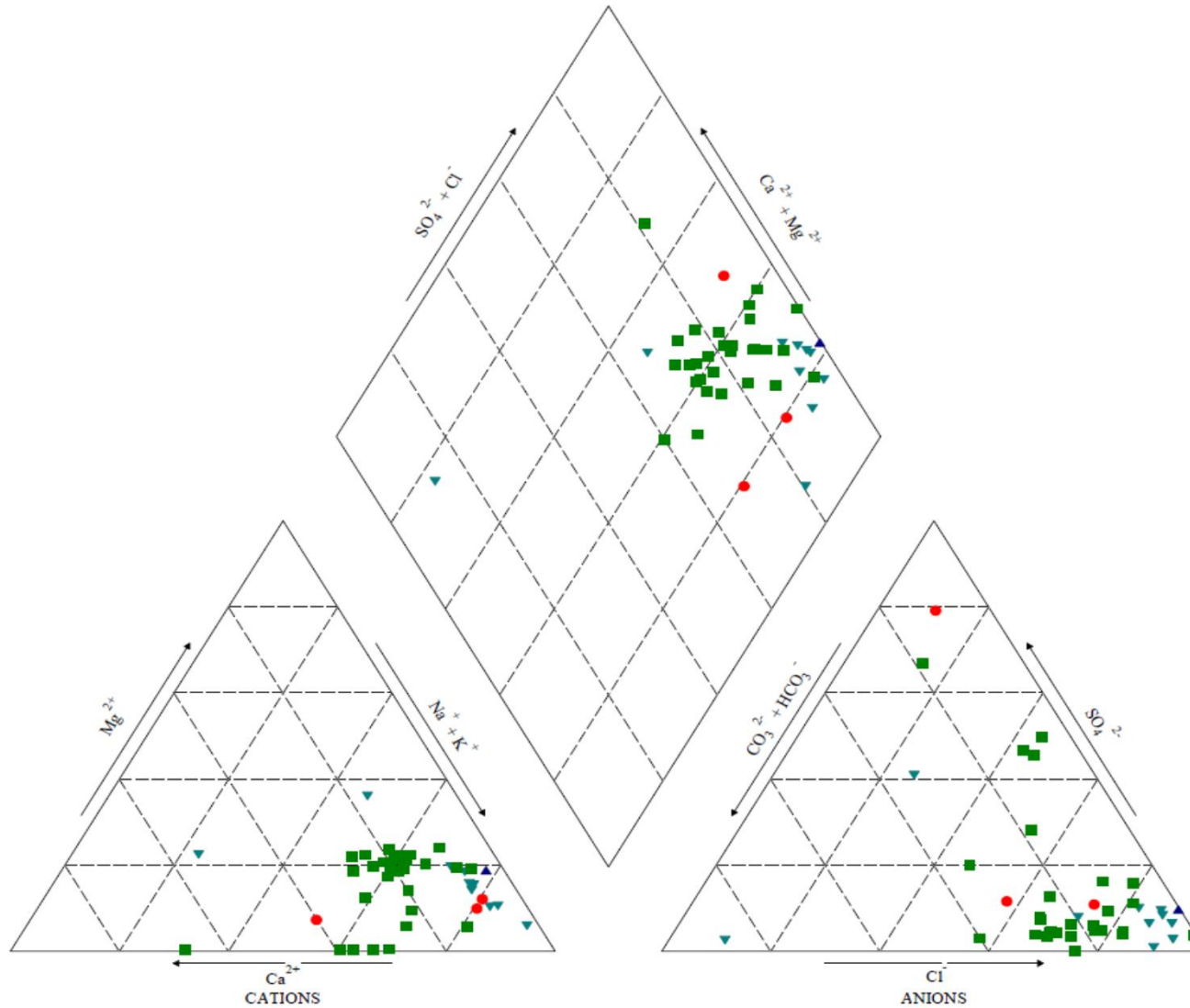
Aquifer: All lithologies
 Month: January 2017

Figure: E1.8
 Project No: 60493796

All lithologies February 2017

EXPLANATION

- ▼ Alluvium
- Ashfield Shale
- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
Project: M4-M5 Link WestConnex
Client: Sydney Motorway Corporation
Location: Inner West Sydney

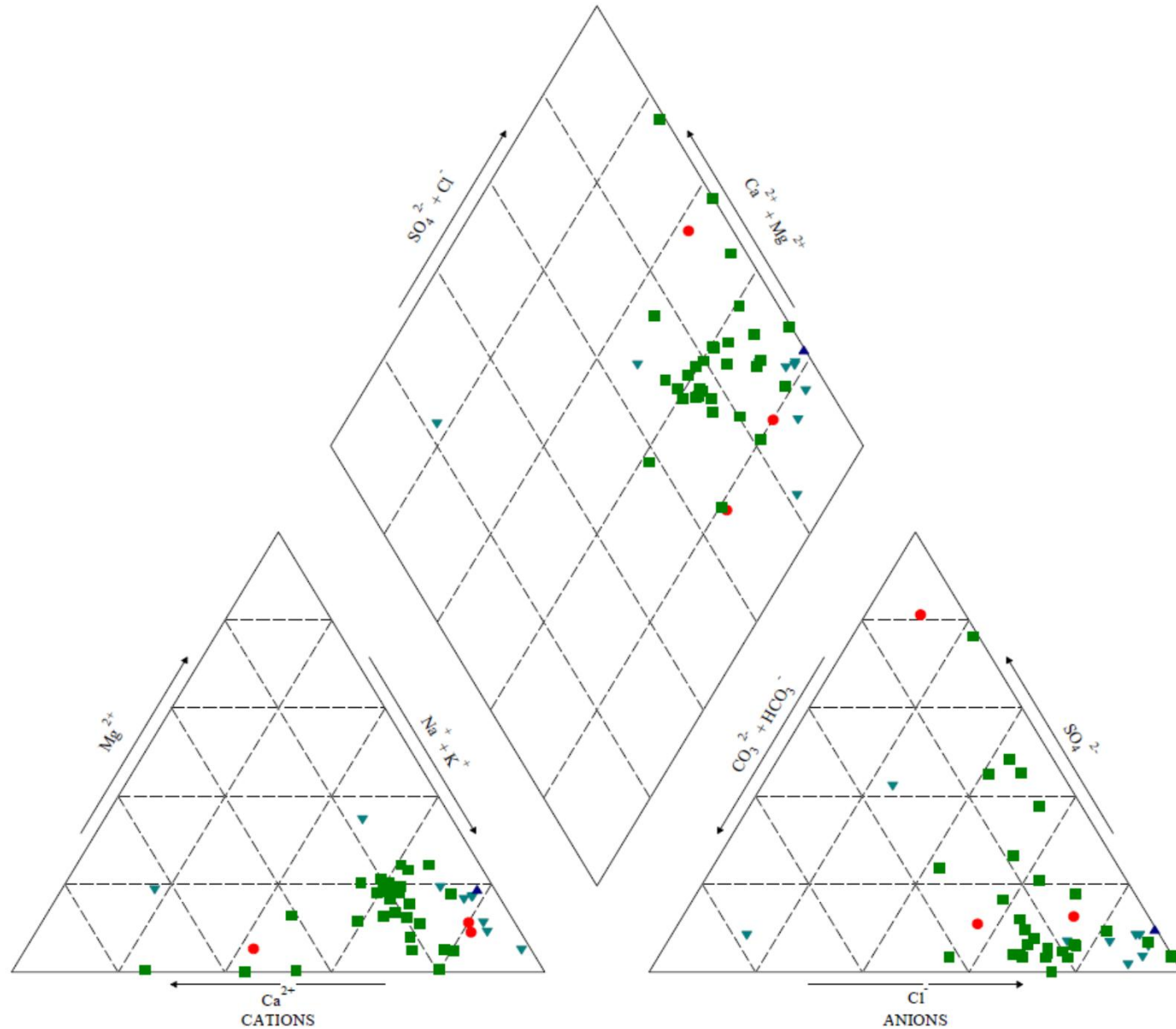
Aquifer: All lithologies
Month: February 2017

Figure: E1.9
Project No: 60493796

All lithologies March 2017

EXPLANATION

- ▼ Alluvium
- Ashfield Shale
- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

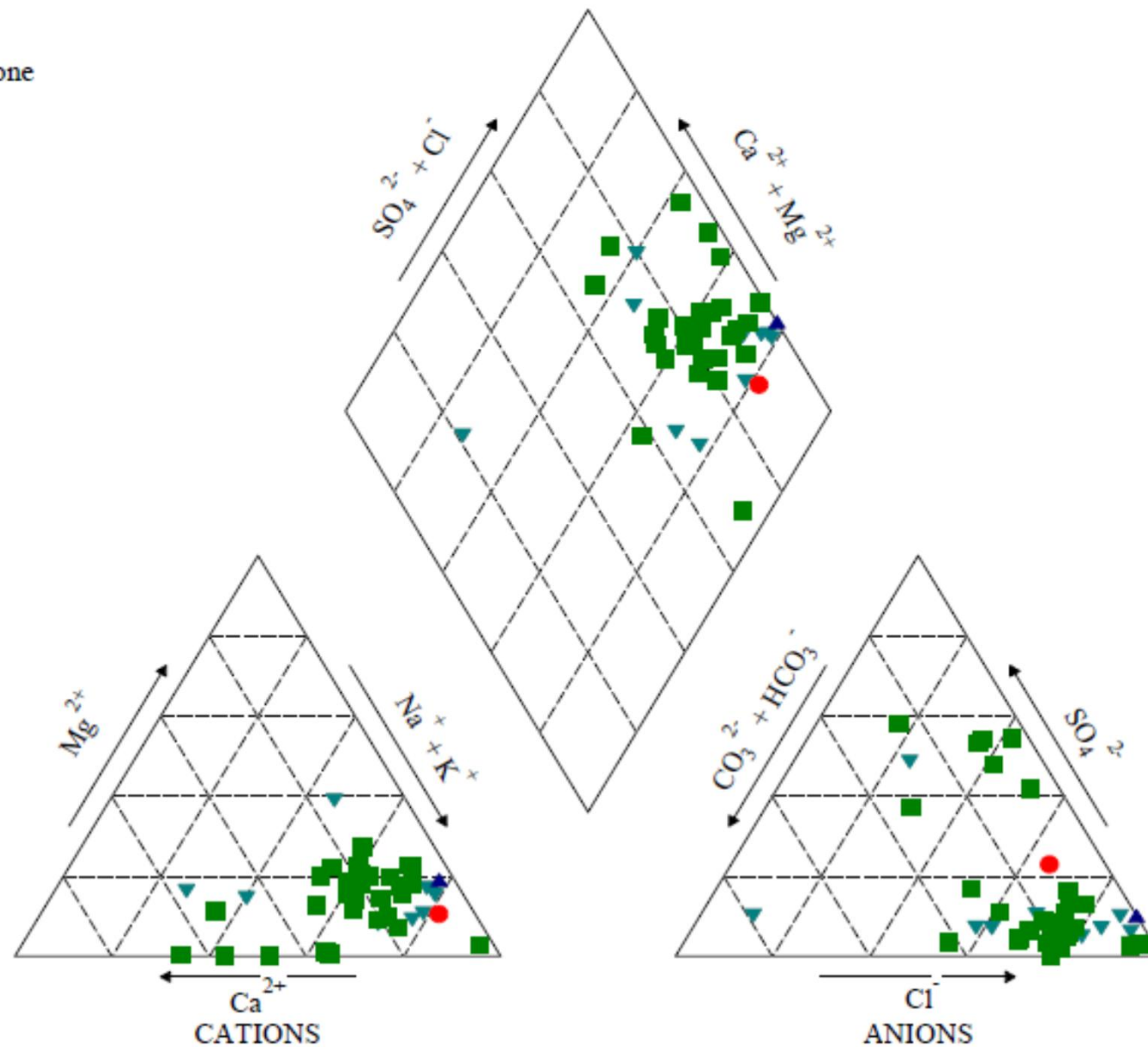
Aquifer: All lithologies
 Month: March 2017

Figure: E1.10
 Project No: 60493796

All lithologies April 2017

EXPLANATION

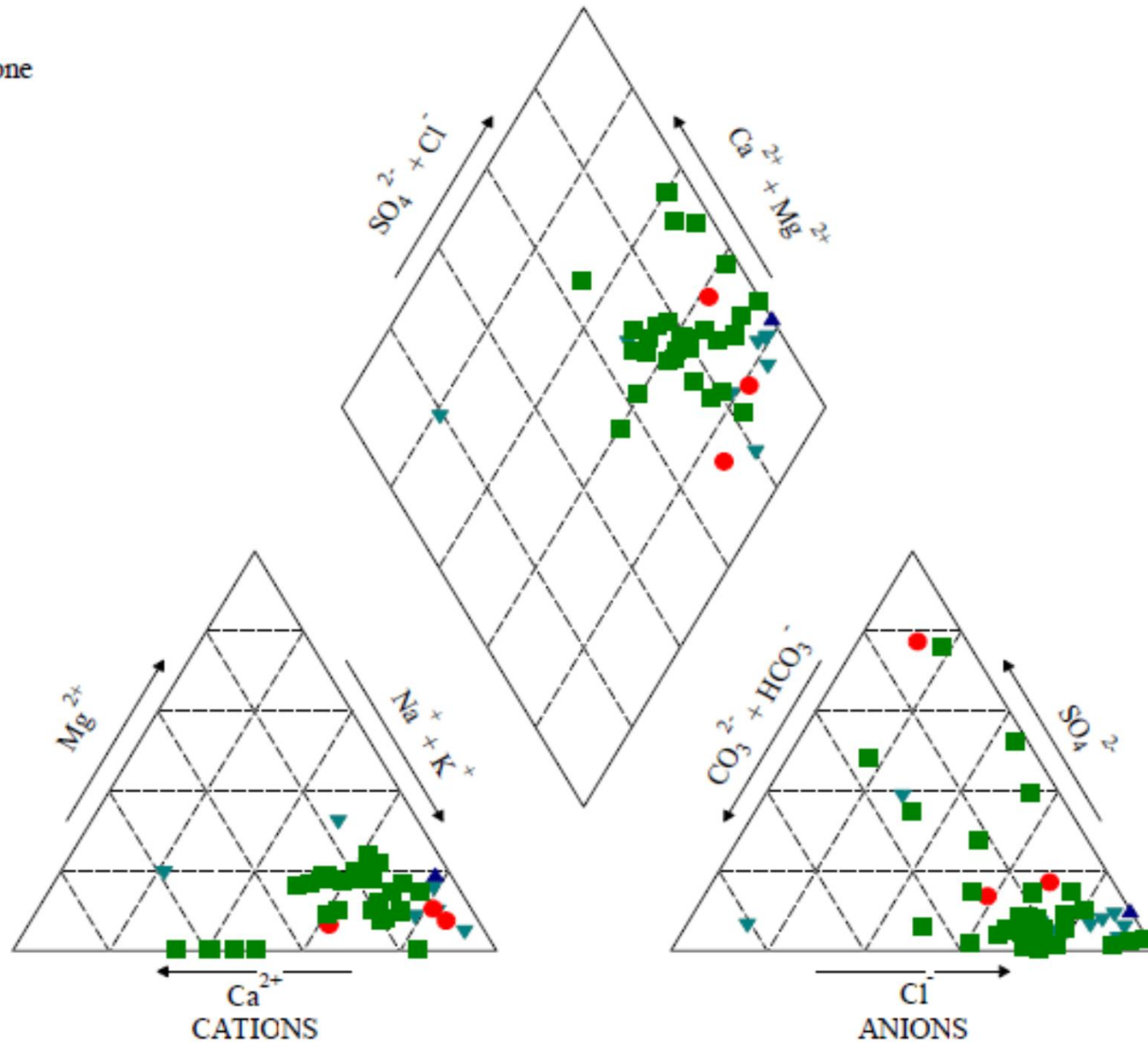
- Hawkesbury Sandstone
- ▲ Sea Water
- ▼ Alluvium
- Ashfield Shale



All lithologies May 2017

EXPLANATION

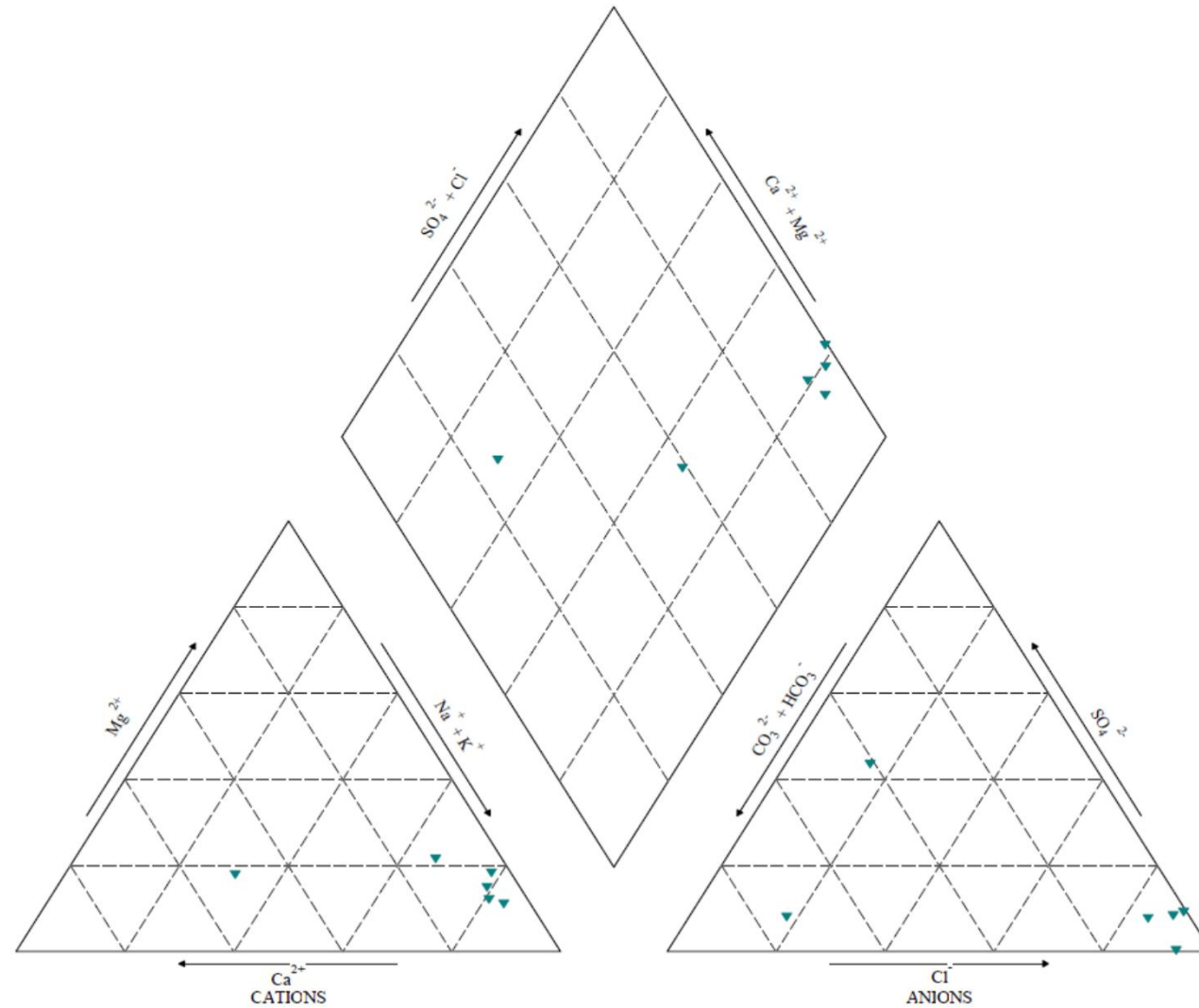
- Hawkesbury Sandstone
- ▲ Sea Water
- ▼ Alluvium
- Ashfield Shale



Alluvium June 2016

EXPLANATION

- ▼ Alluvium
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

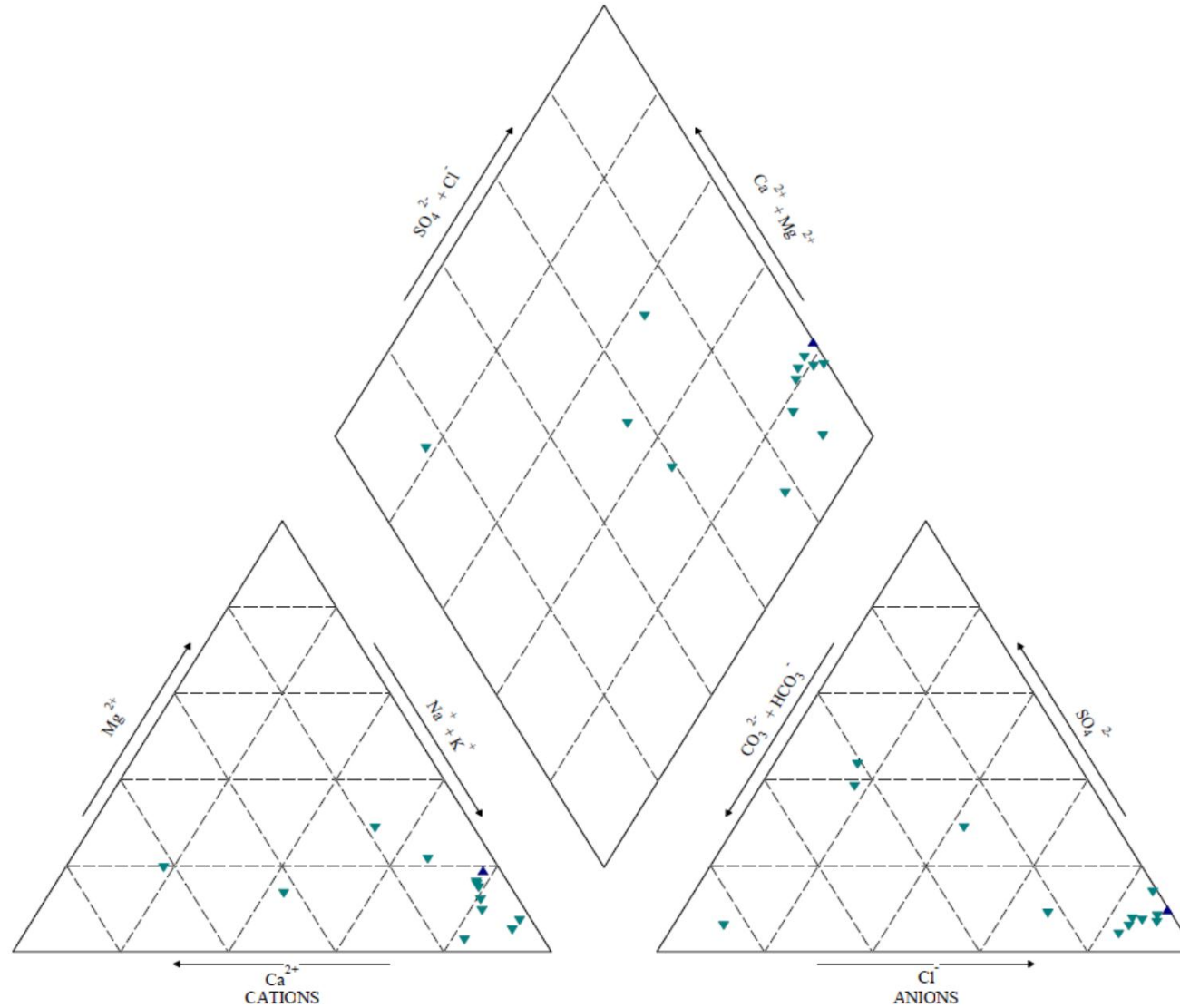
Aquifer: Alluvium
 Month: June 2016

Figure: E2.1
 Project No: 60493796

Alluvium July 2016

EXPLANATION

- ▼ Alluvium
- ▲ Sea Water



Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

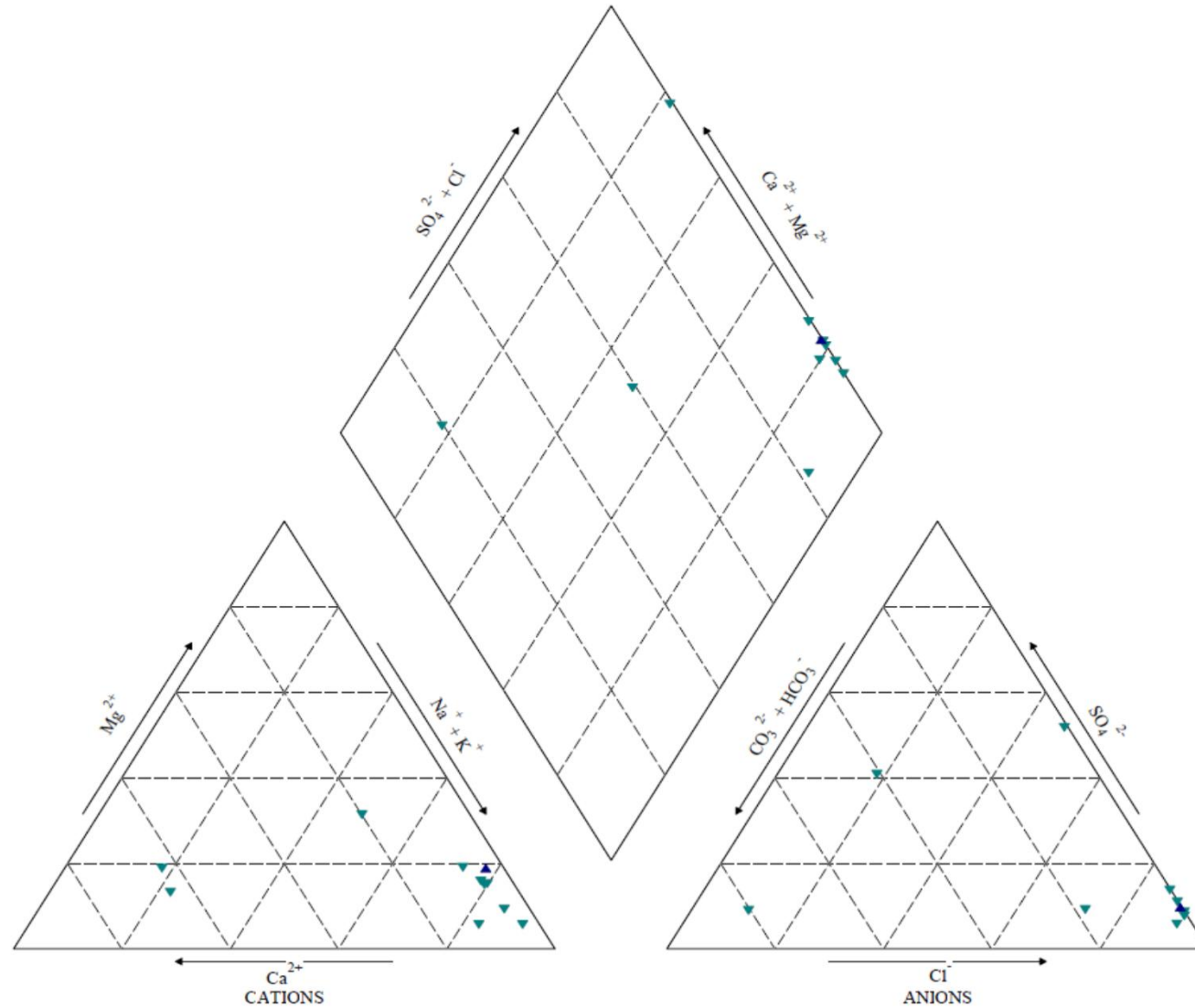
Aquifer: Alluvium
 Month: July 2016

Figure: E2.2
 Project No: 60493796

Alluvium August 2016

EXPLANATION

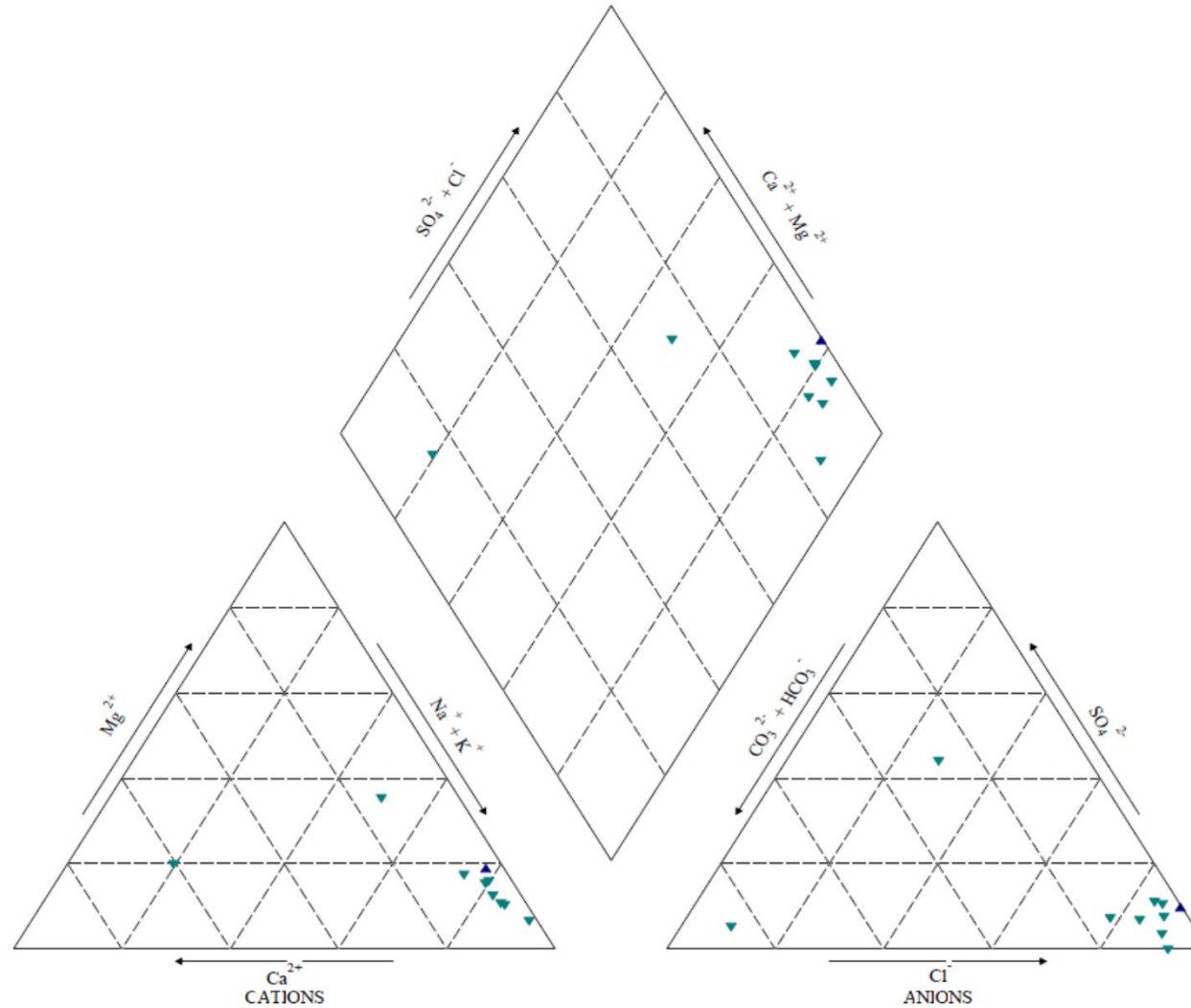
- ▼ Alluvium
- ▲ Sea Water



Alluvium September 2016

EXPLANATION

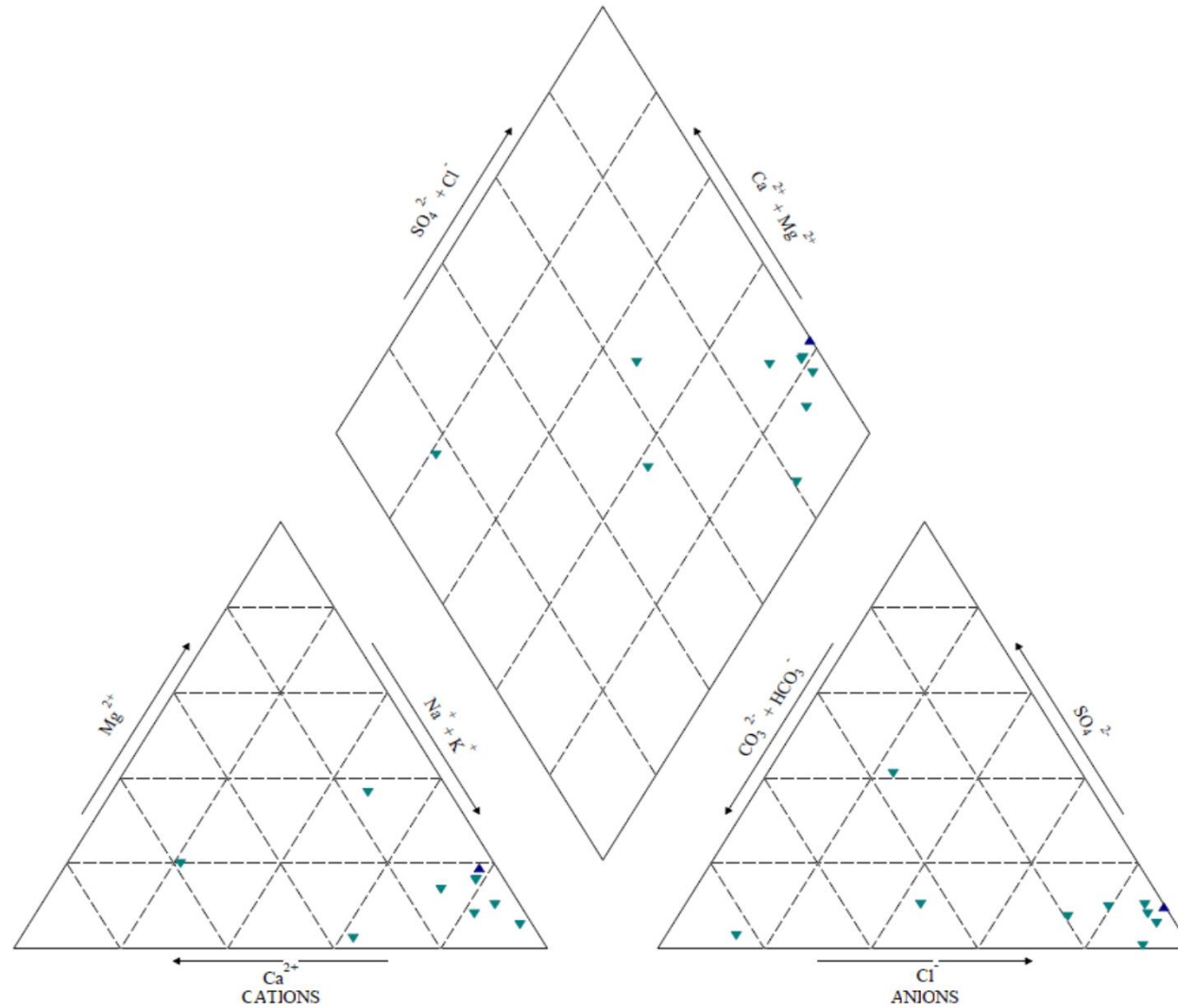
- ▼ Alluvium
- ▲ Sea Water



Alluvium October 2016

EXPLANATION

- ▼ Alluvium
- ▲ Sea Water



Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

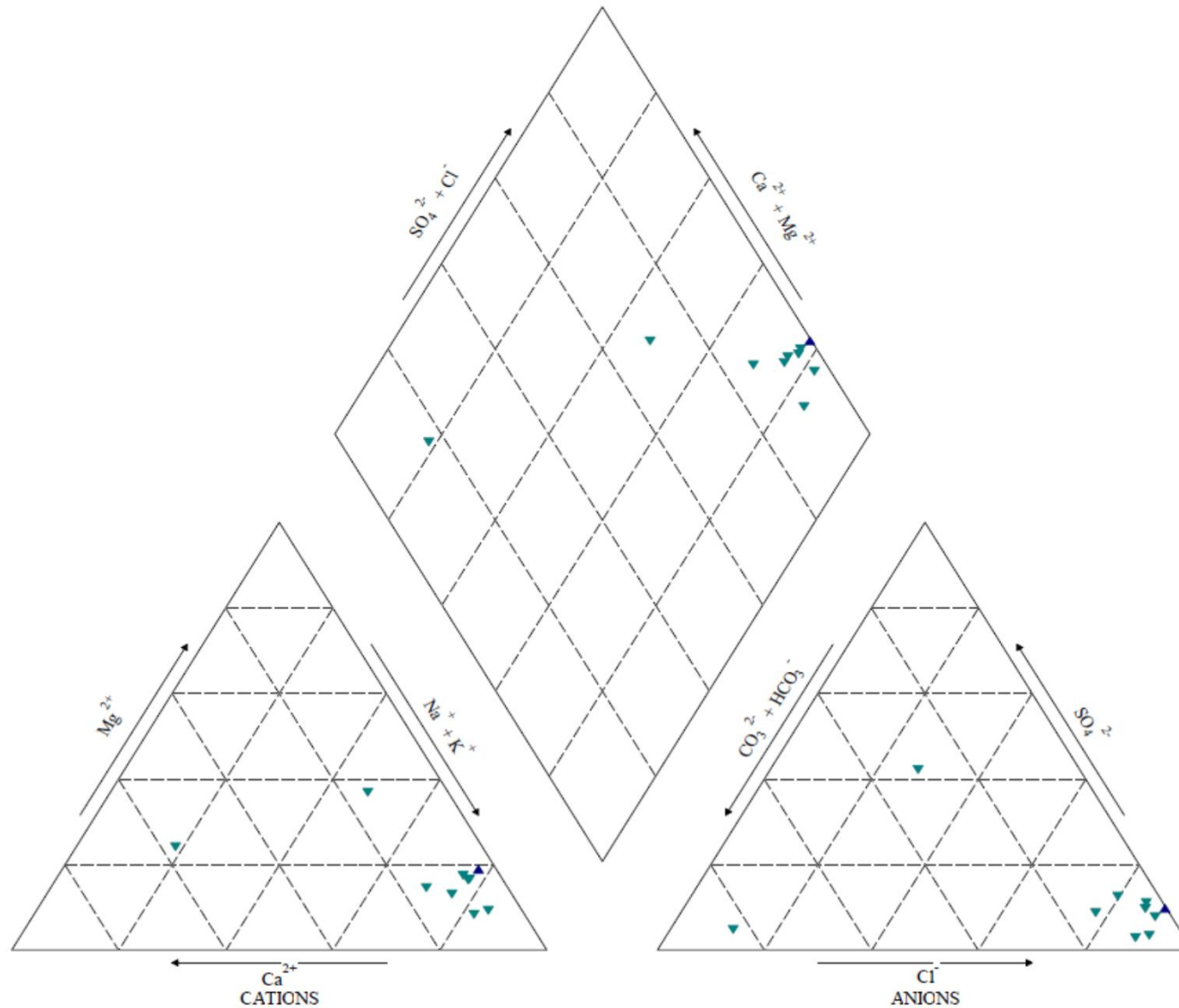
Aquifer: Alluvium
 Month: October 2016

Figure: E2.5
 Project No: 60493796

Alluvium November 2016

EXPLANATION

- ▼ Alluvium
- ▲ Sea Water



Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

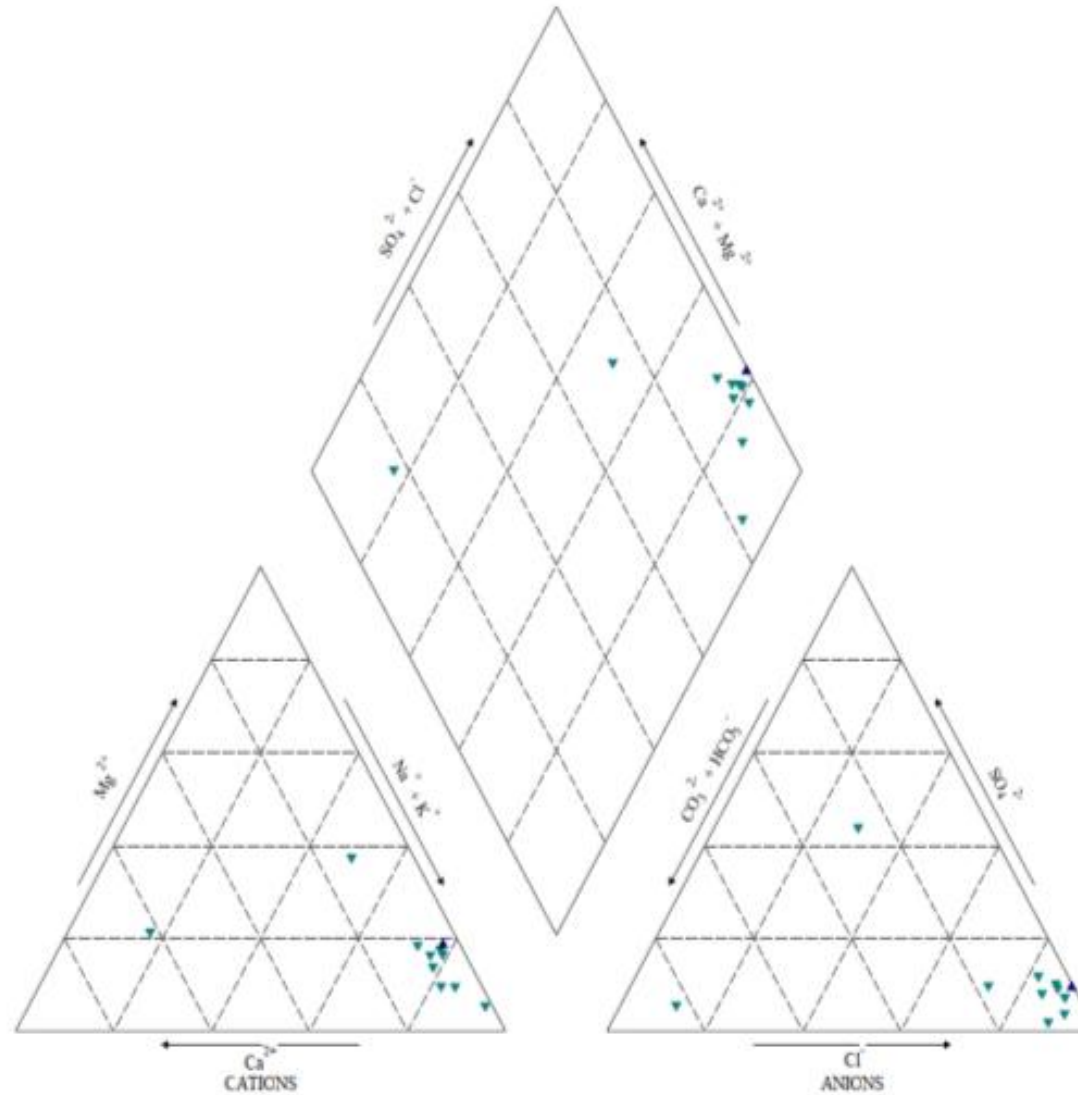
Aquifer: Alluvium
 Month: November 2016

Figure: E2.6
 Project No: 60493796

Alluvium December 2016

EXPLANATION

- ▼ Alluvium
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

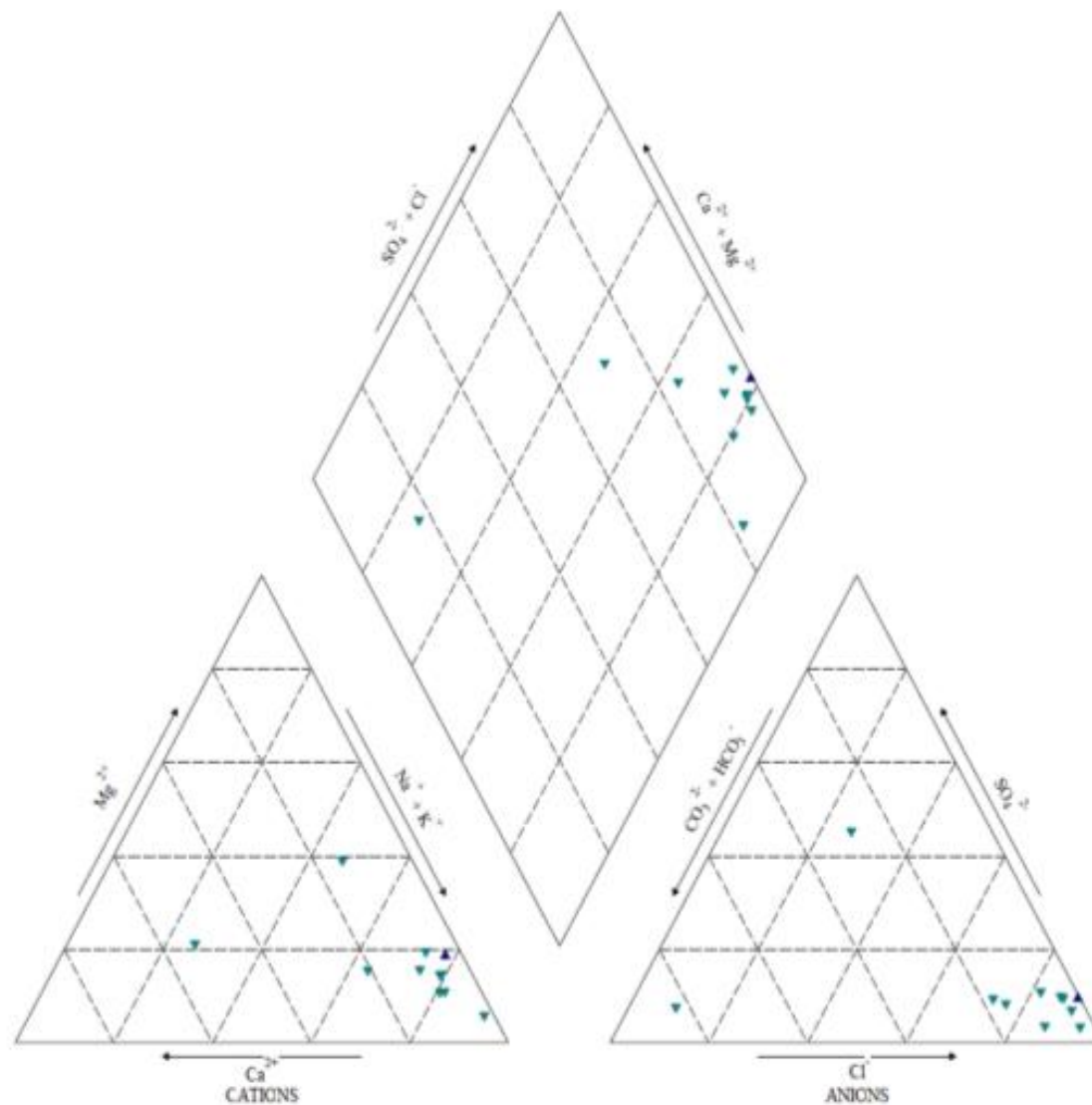
Aquifer: Alluvium
 Month: December 2016

Figure: E2.7
 Project No: 60493796

Alluvium January 2017

EXPLANATION

- ▼ Alluvium
- ▲ Sea Water



Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

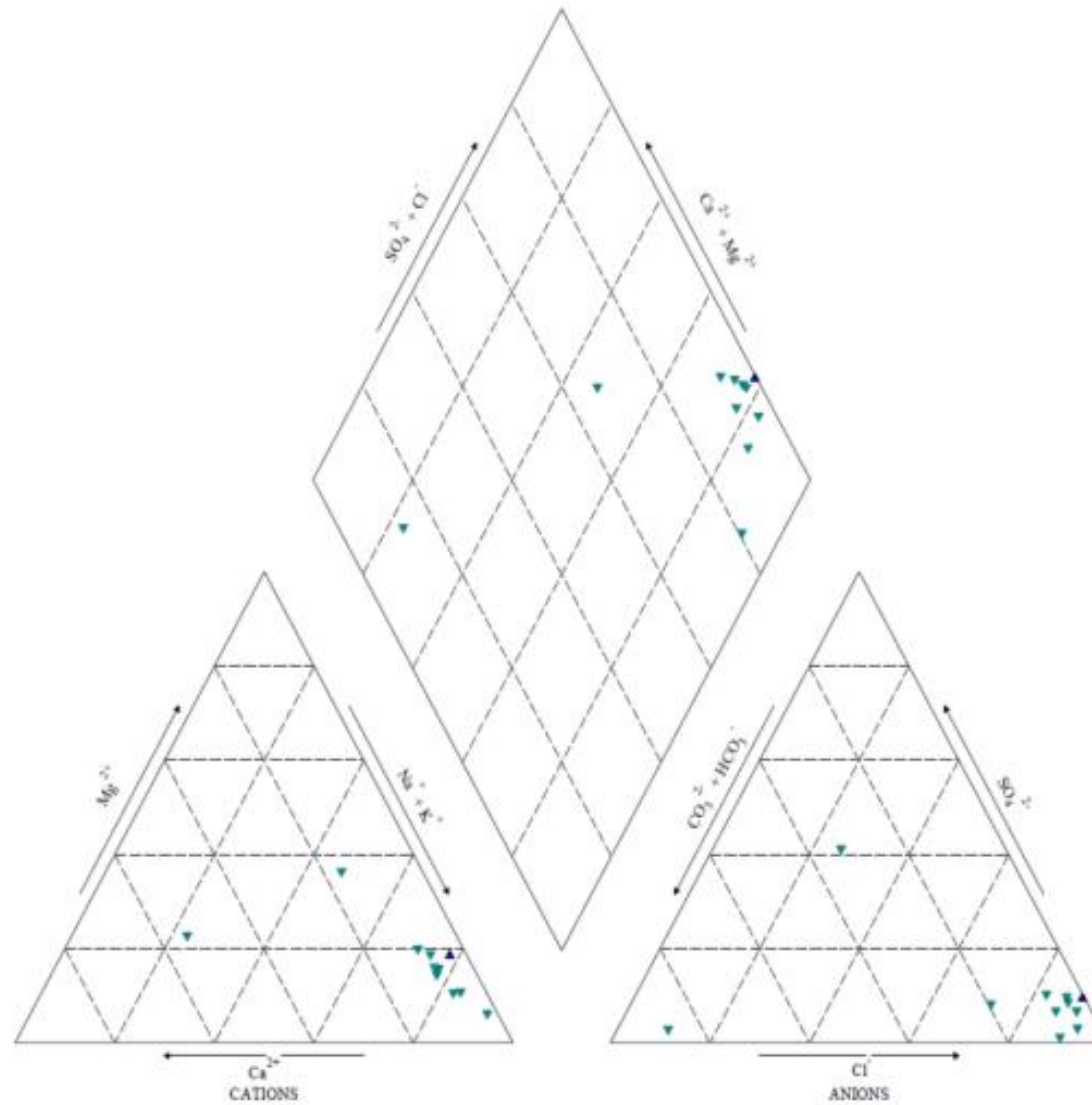
Aquifer: Alluvium
 Month: January 2017

Figure: E2.8
 Project No: 60493796

Alluvium February 2017

EXPLANATION

- ▼ Alluvium
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

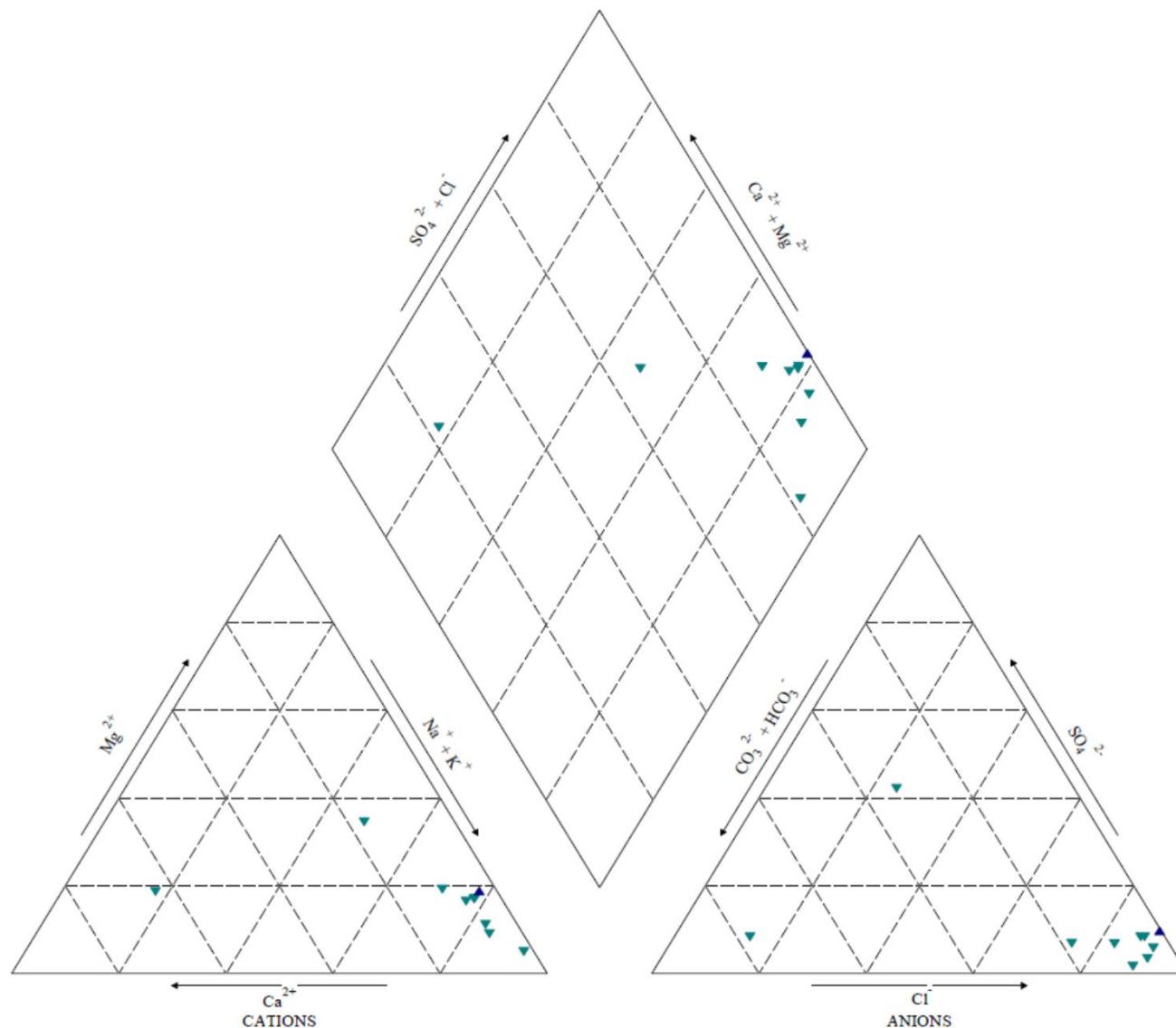
Aquifer: Alluvium
 Month: February 2017

Figure: E2.9
 Project No: 60493796

Alluvium March 2017

EXPLANATION

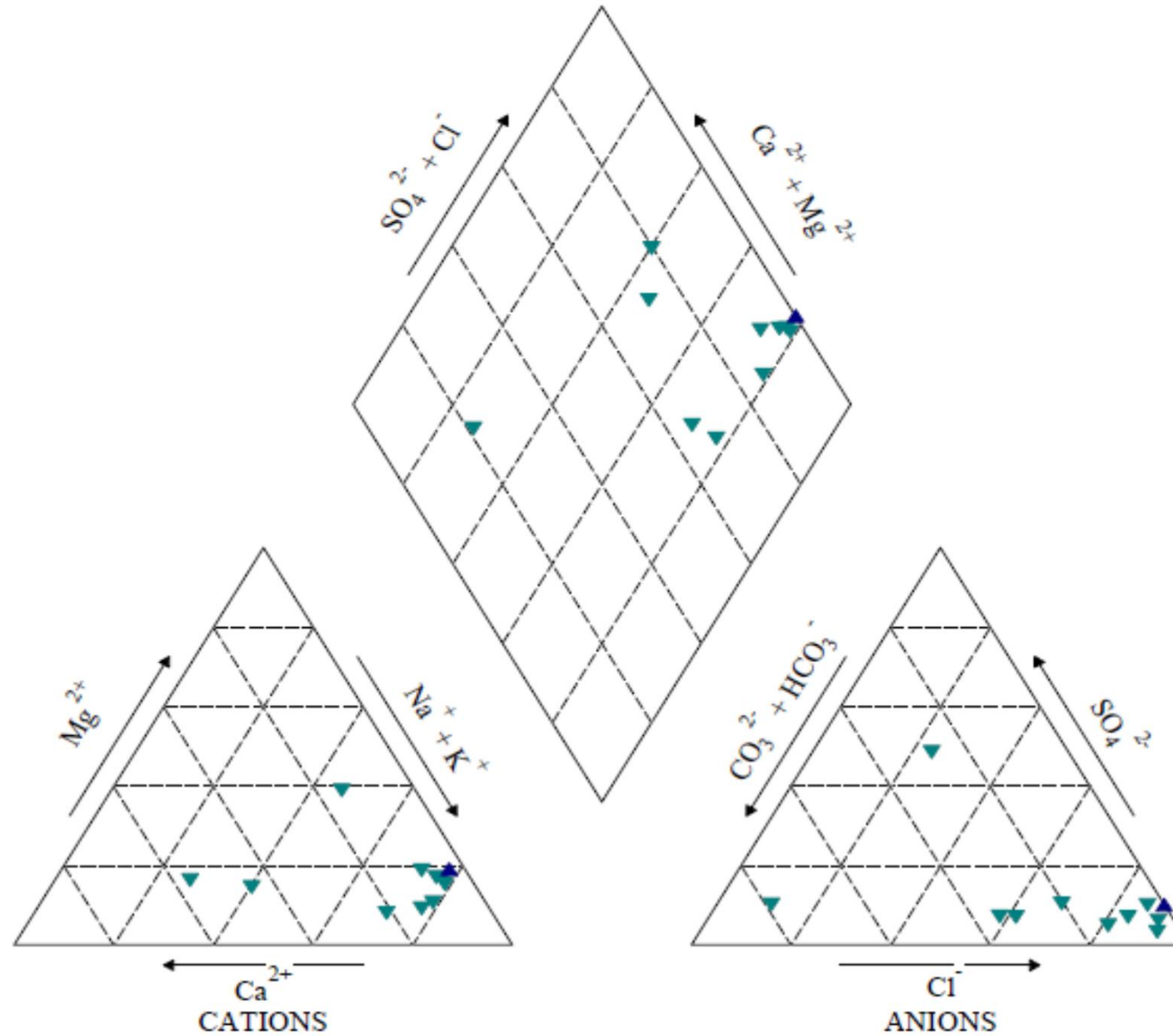
- ▼ Alluvium
- ▲ Sea Water



Alluvium April 2017

EXPLANATION

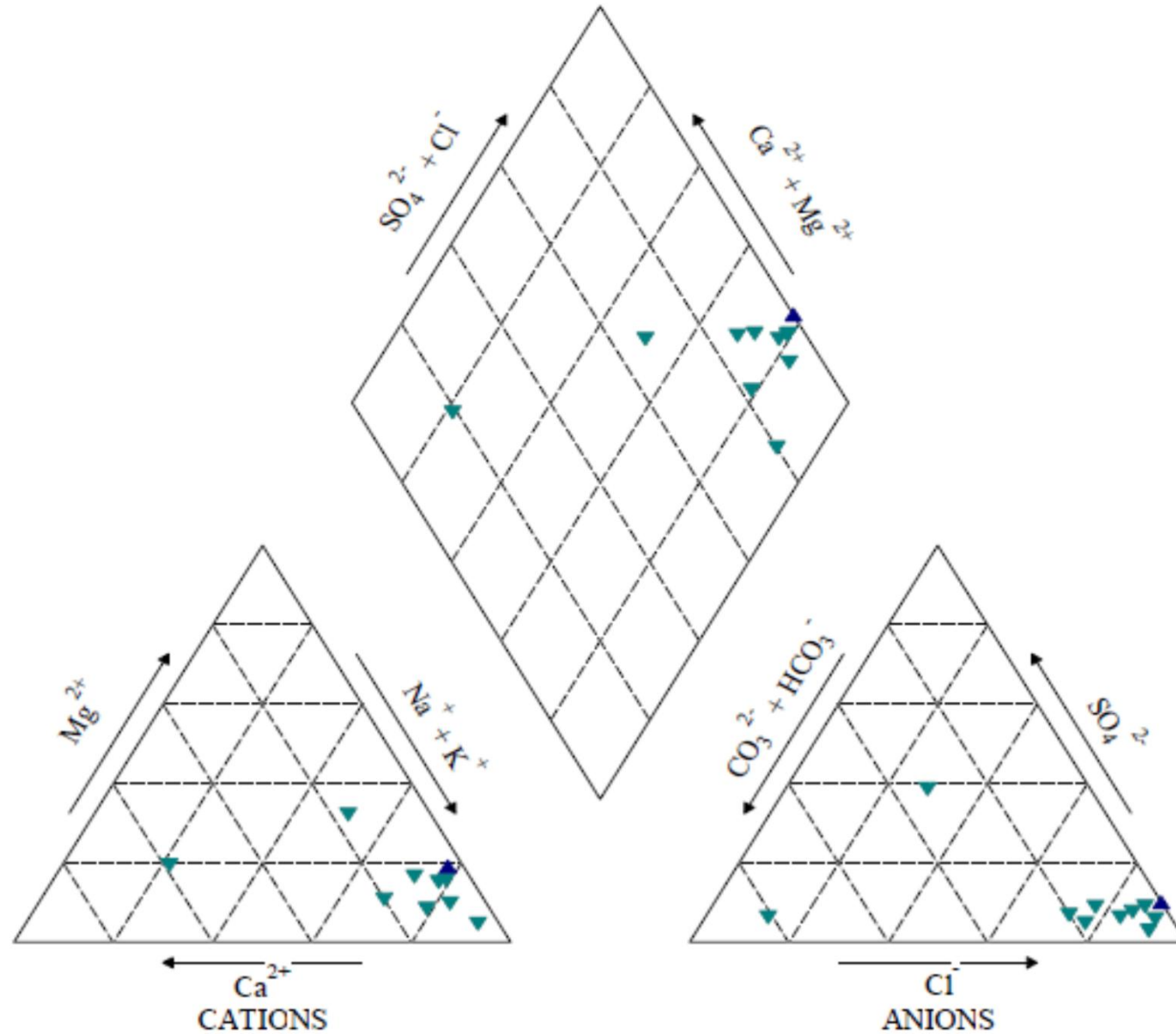
- ▼ Alluvium
- ▲ Sea Water



Alluvium May 2017

EXPLANATION

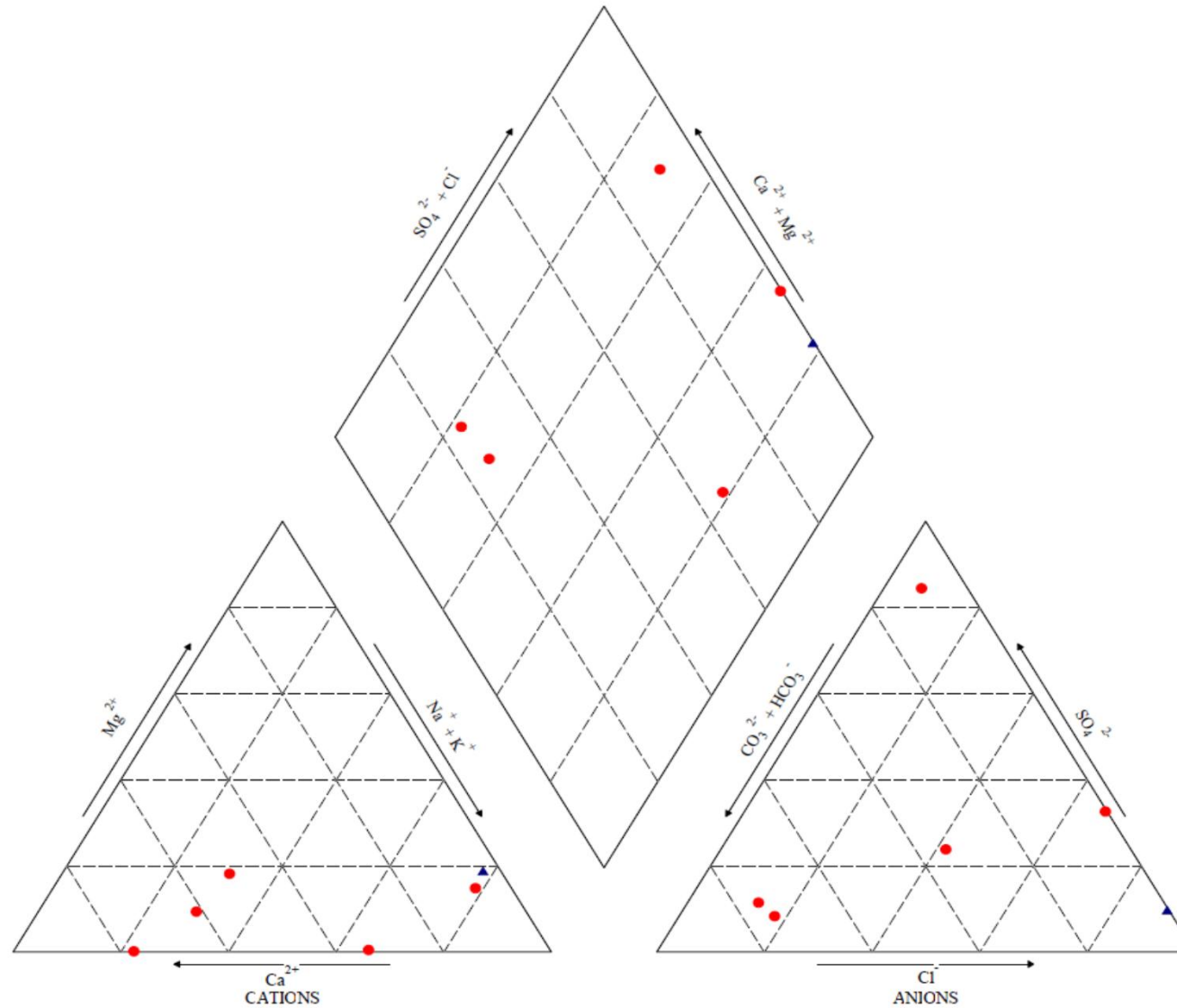
- ▼ Alluvium
- ▲ Sea Water



Ashfield Shale June 2016

EXPLANATION

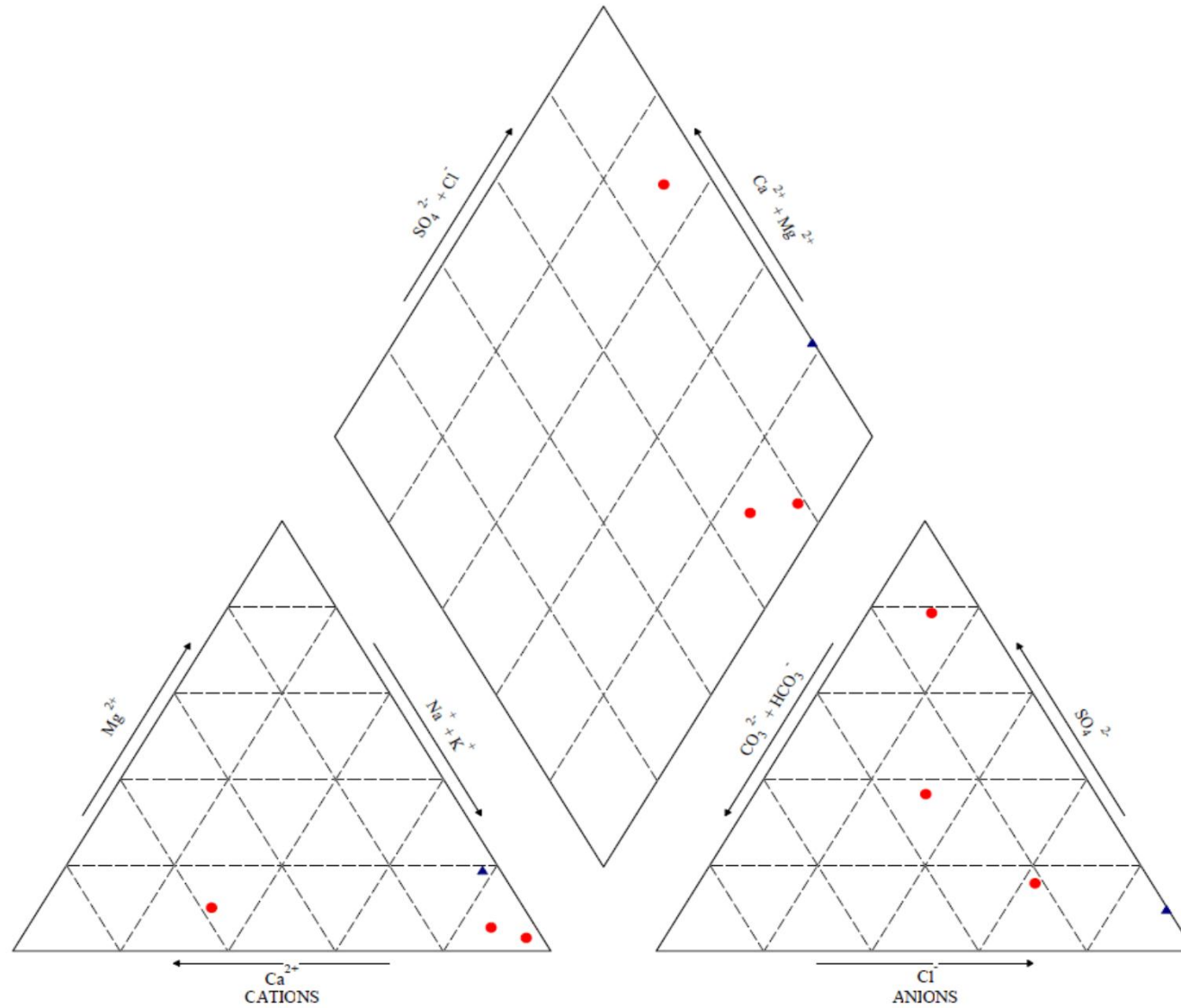
- Shale
- ▲ Sea Water



Ashfield Shale July 2016

EXPLANATION

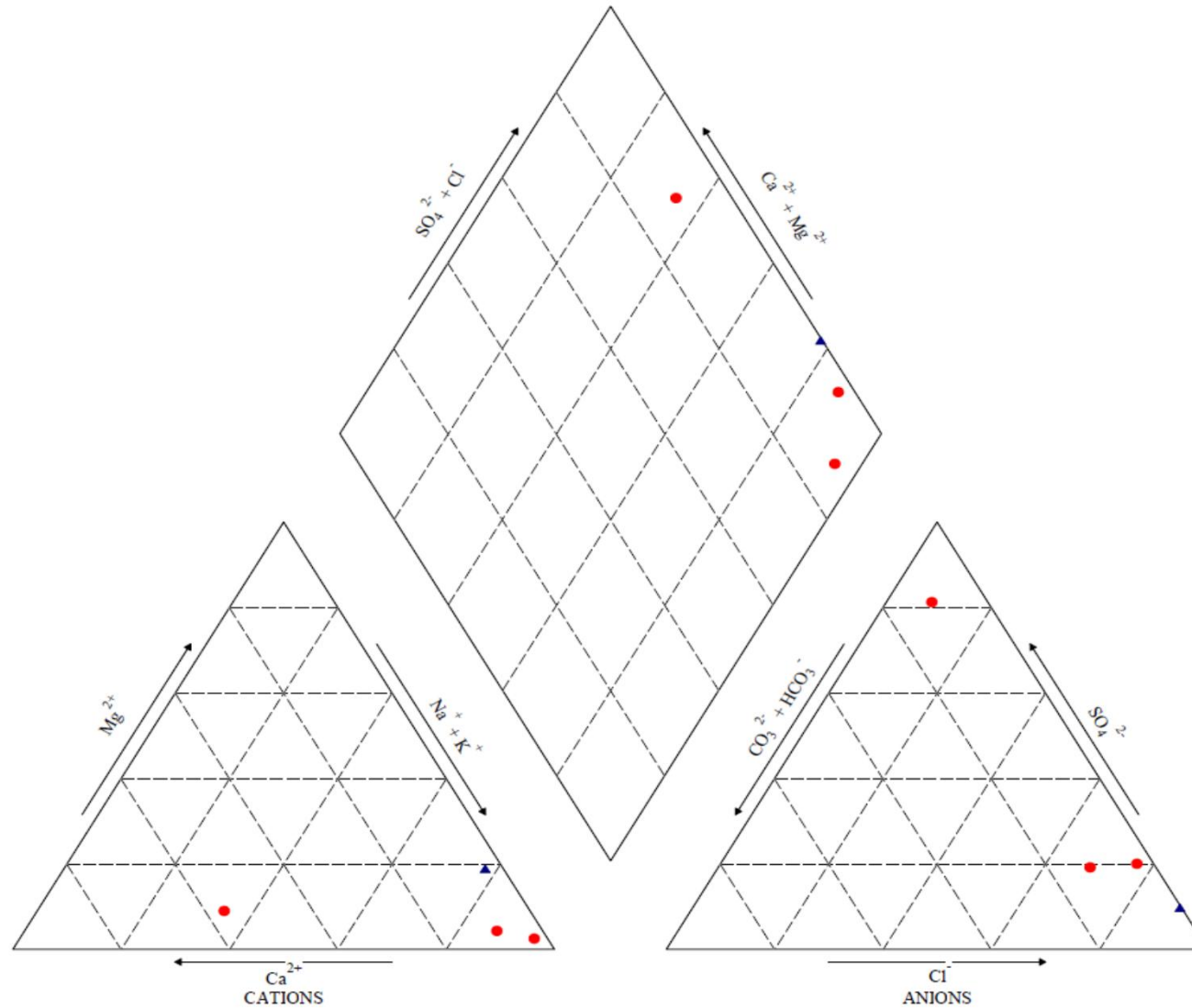
- Ashfield Shale
- ▲ Sea Water



Ashfield Shale August 2016

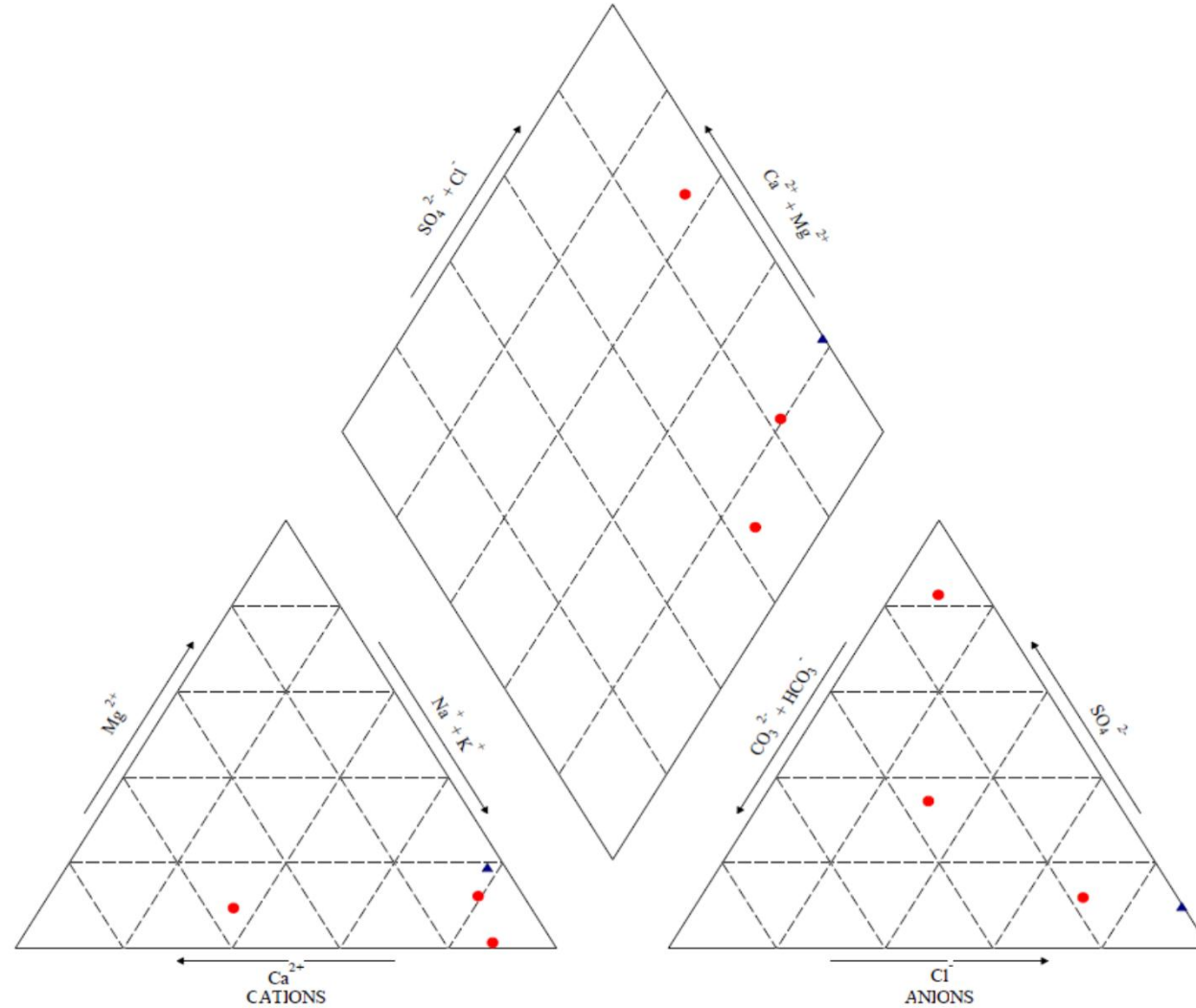
EXPLANATION

- Ashfield Shale
- ▲ Sea Water



Ashfield Shale September 2016

EXPLANATION
 ● Ashfield Shale
 ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

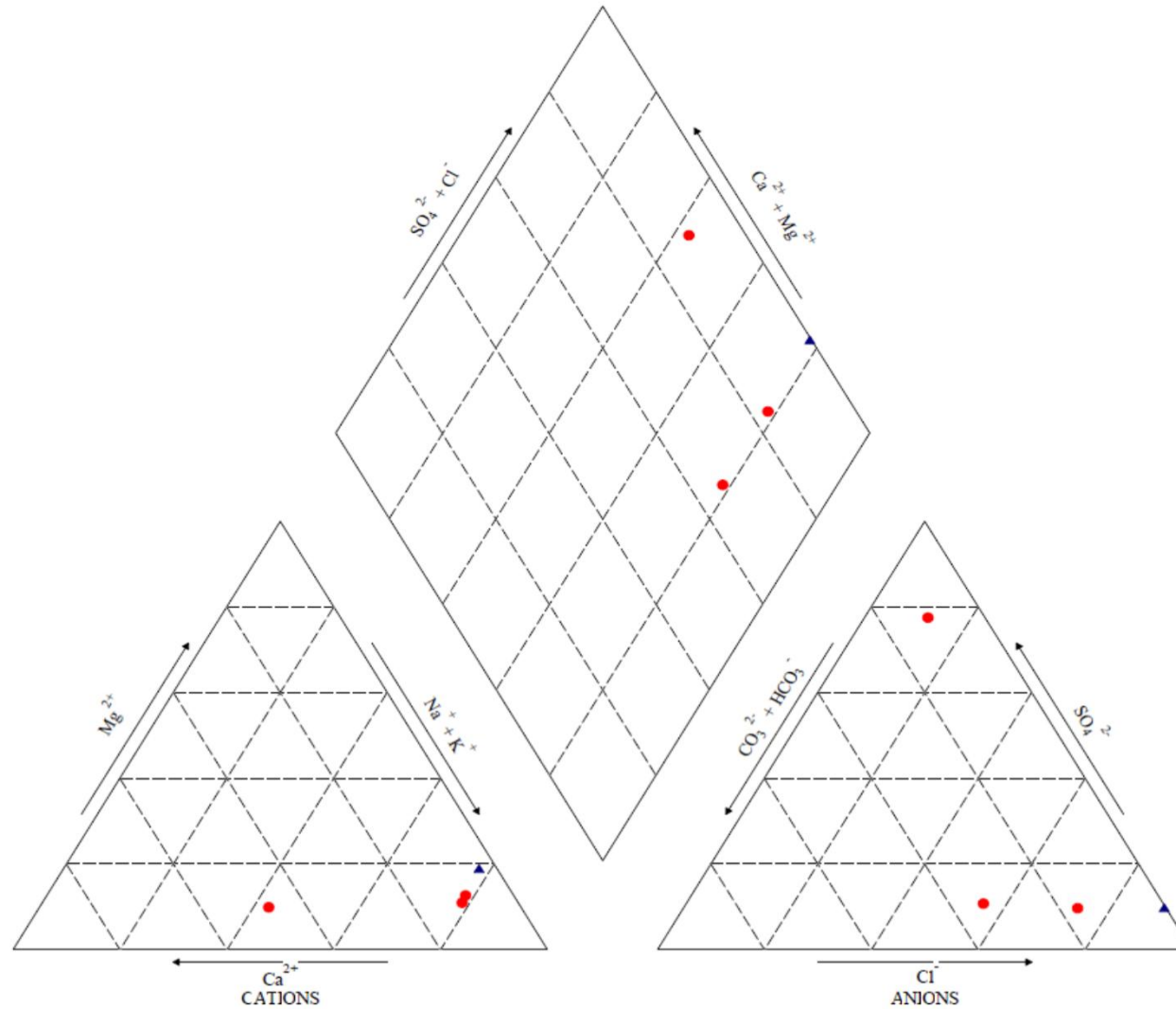
Aquifer: Ashfield Shale
 Month: September 2016

Figure: E3.4
 Project No: 60493796

Ashfield Shale October 2016

EXPLANATION

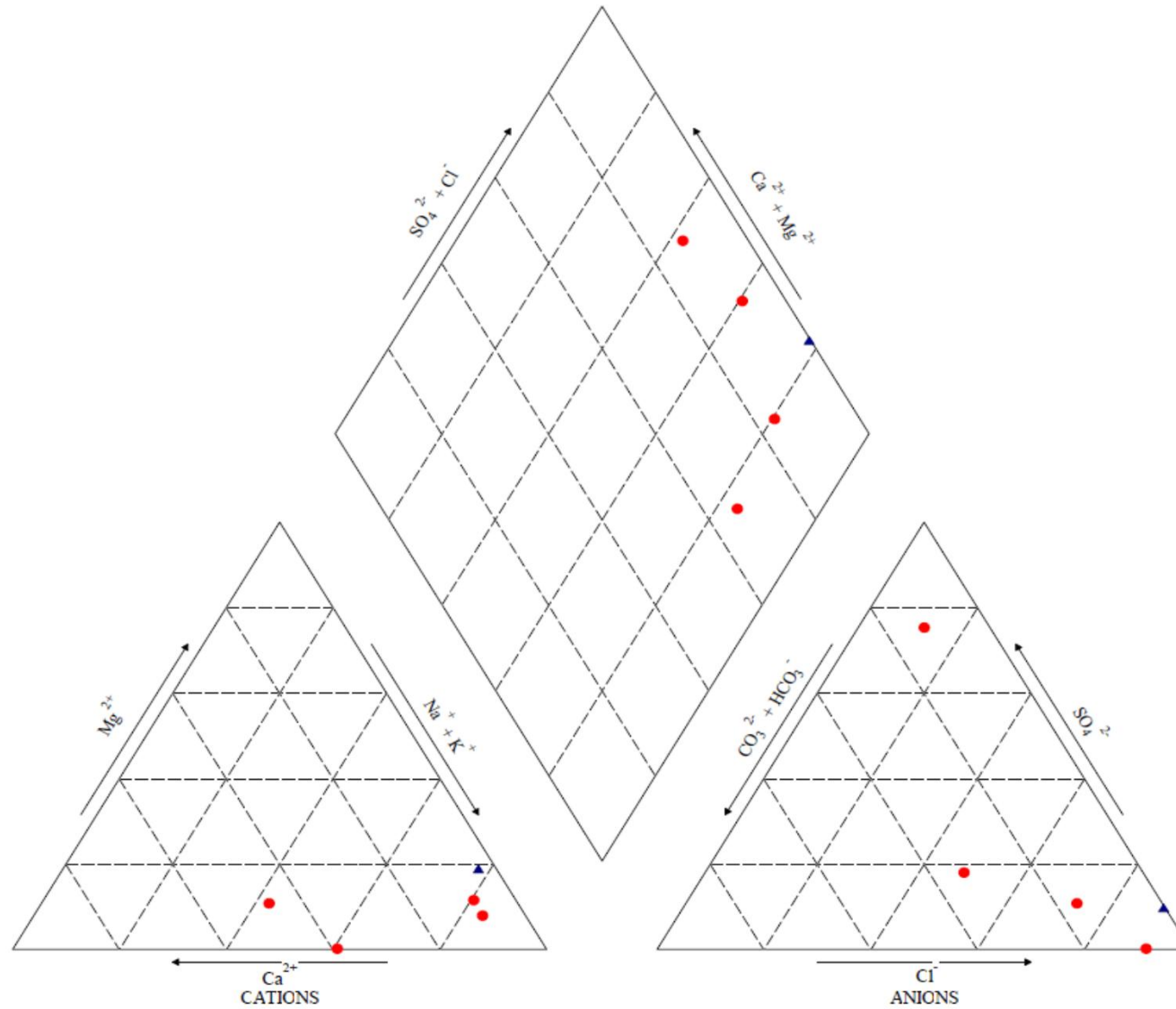
- Shale
- ▲ Sea Water



Ashfield Shale November 2016

EXPLANATION

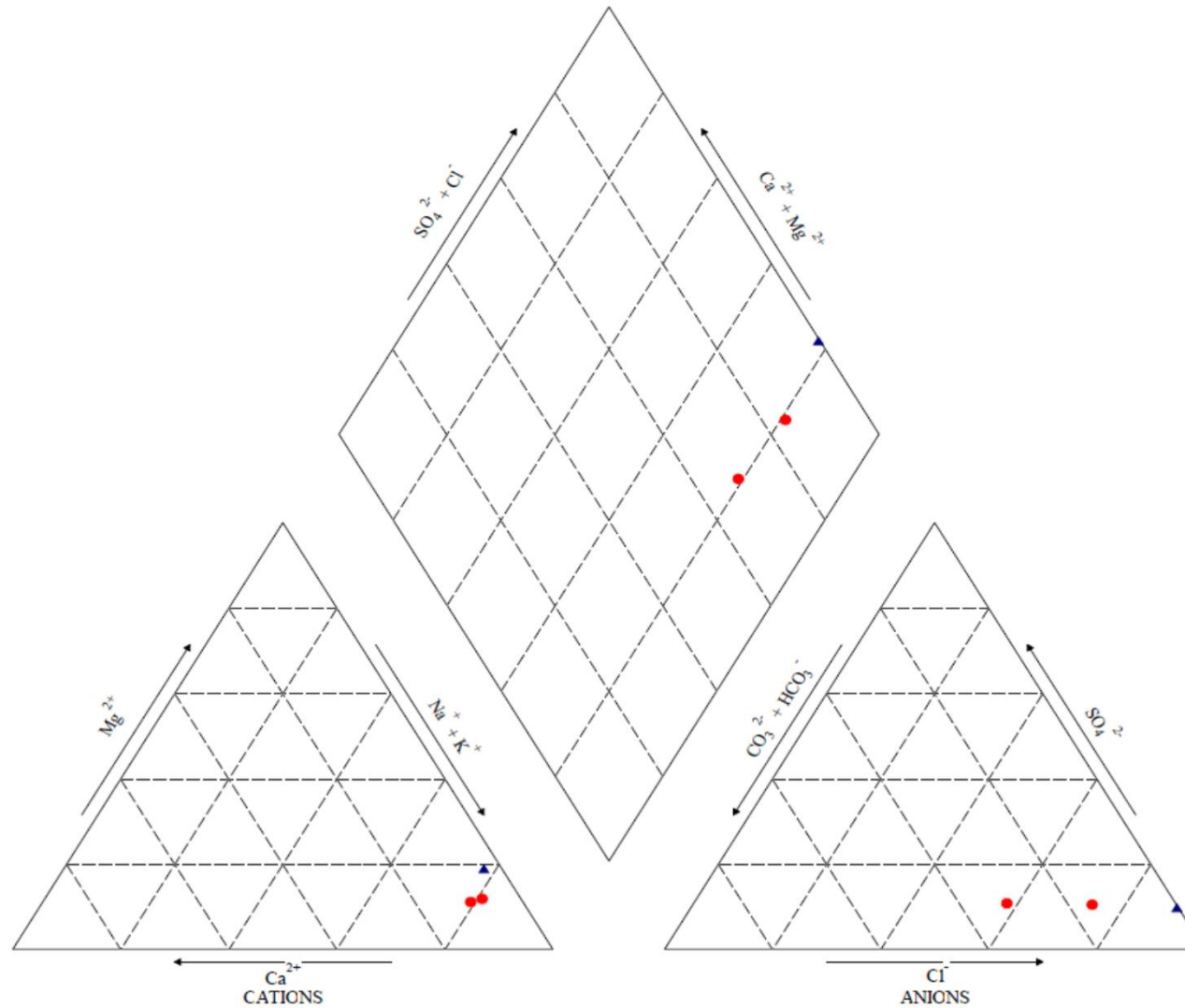
- Shale
- ▲ Sea Water



Ashfield Shale December 2016

EXPLANATION

- Shale
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

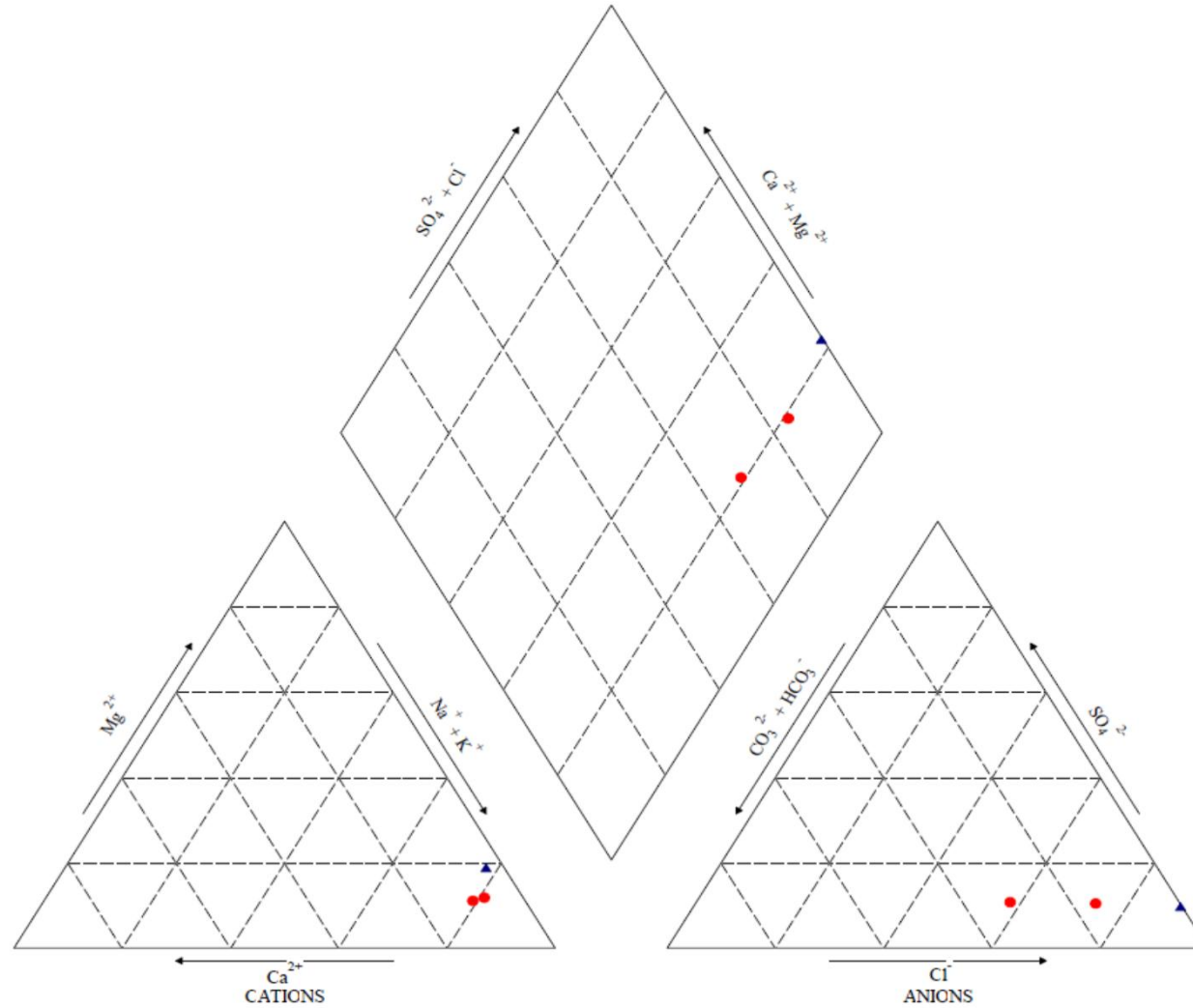
Aquifer: Ashfield Shale
 Month: December 2016

Figure: E3.7
 Project No: 60493796

Ashfield Shale January 2017

EXPLANATION

- Shale
- ▲ Sea Water



Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

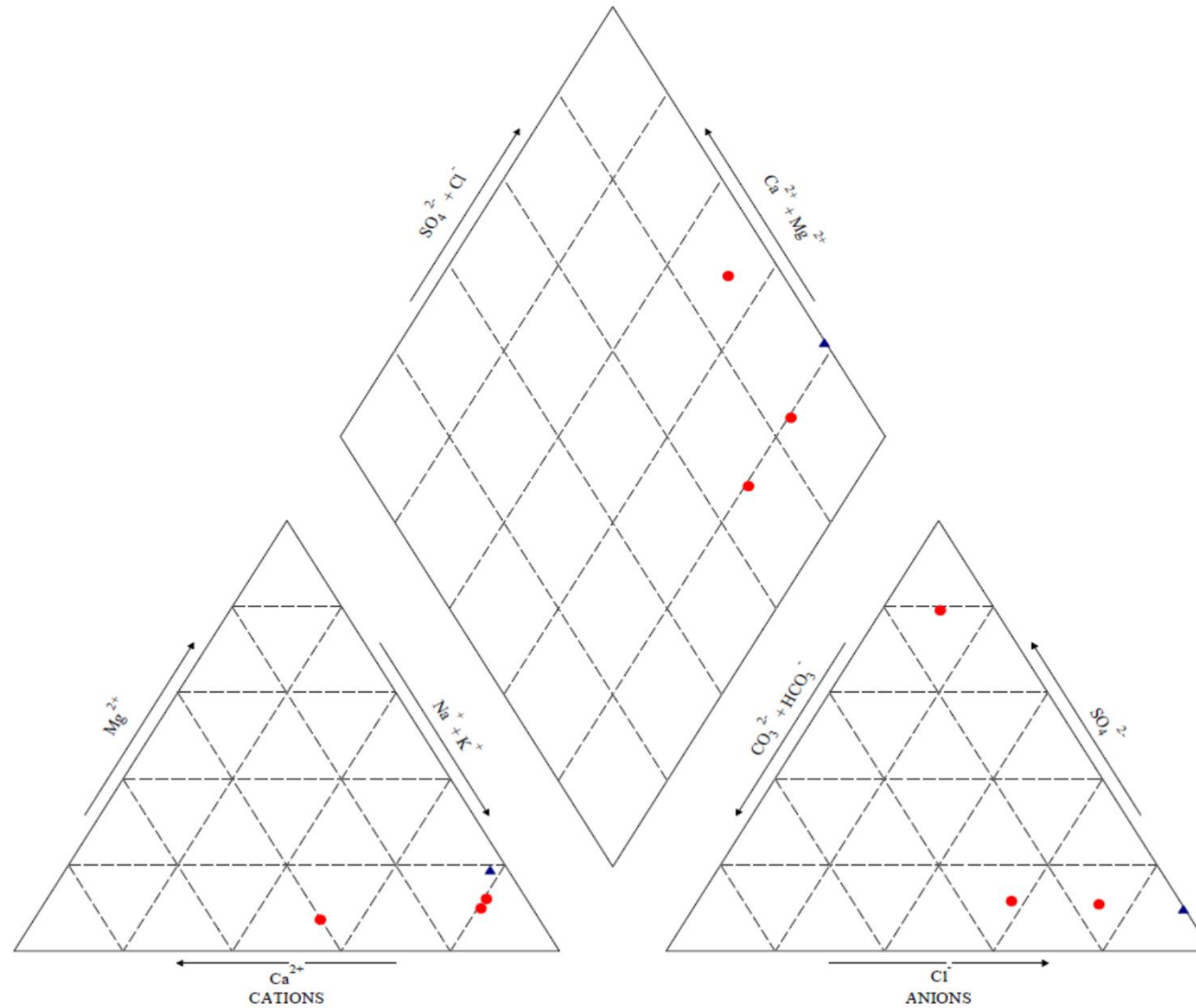
Aquifer: Ashfield Shale
 Month: January 2017

Figure: E3.8
 Project No: 60493796

Ashfield Shale February 2017

EXPLANATION

- Shale
- ▲ Sea Water



AECOM

Title: Piper Diagram
Project: M4-M5 Link WestConnex
Client: Sydney Motorway Corporation
Location: Inner West Sydney

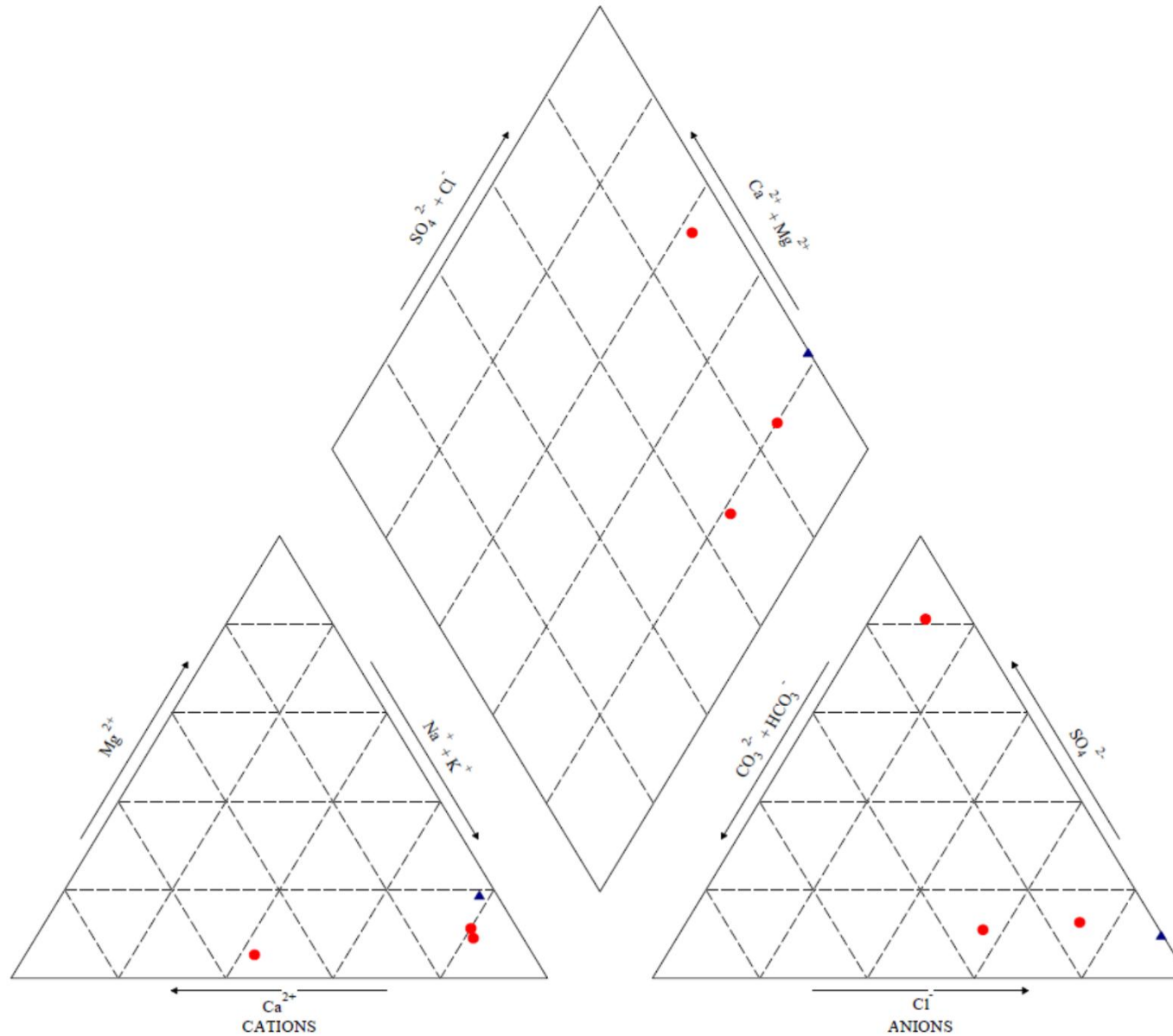
Aquifer: Ashfield Shale
Month: Febuary 2017

Figure: E3.9
Project No: 60493796

Ashfield Shale March 2017

EXPLANATION

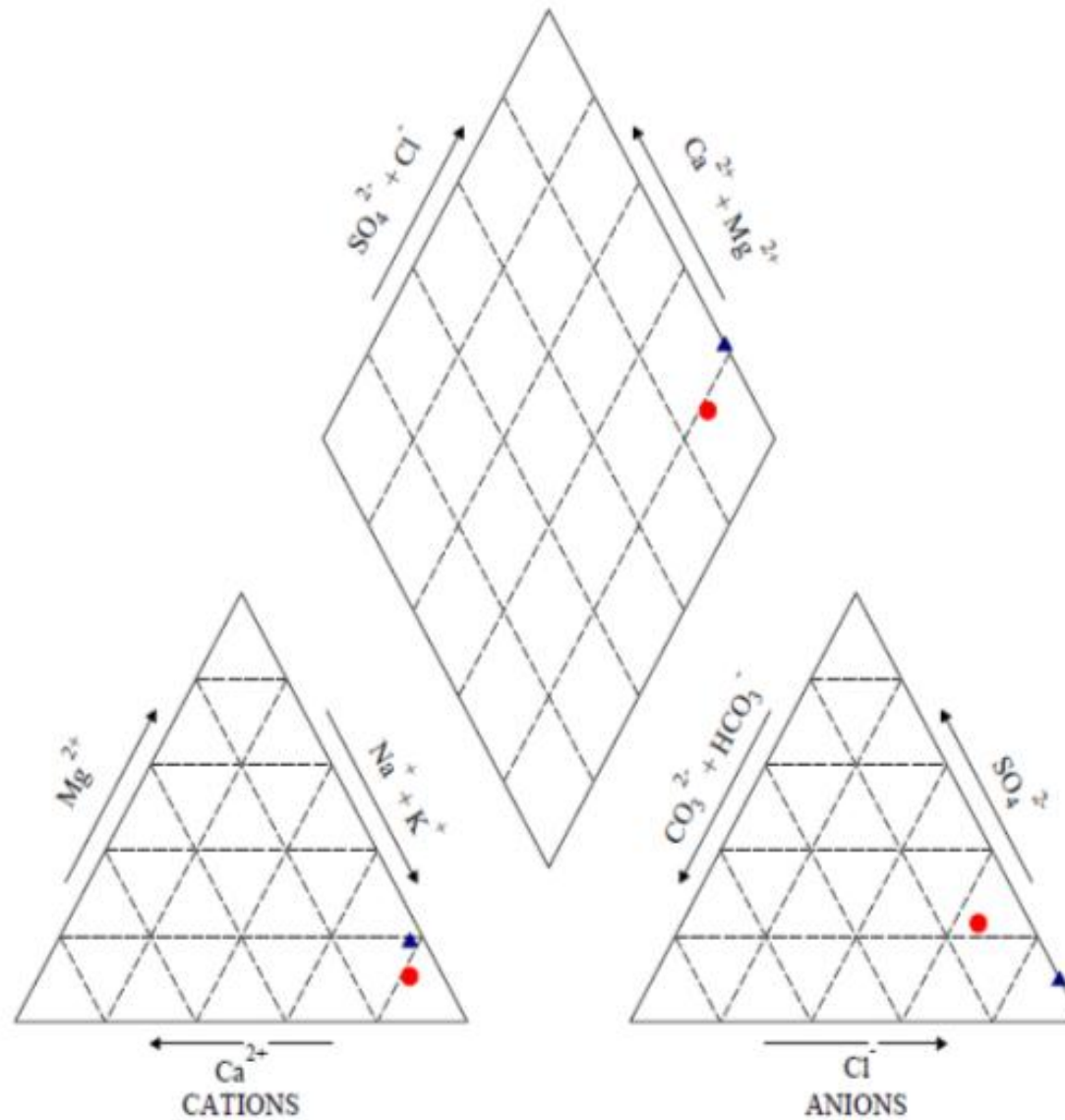
- Shale
- ▲ Sea Water



Ashfield Shale April 2017

EXPLANATION

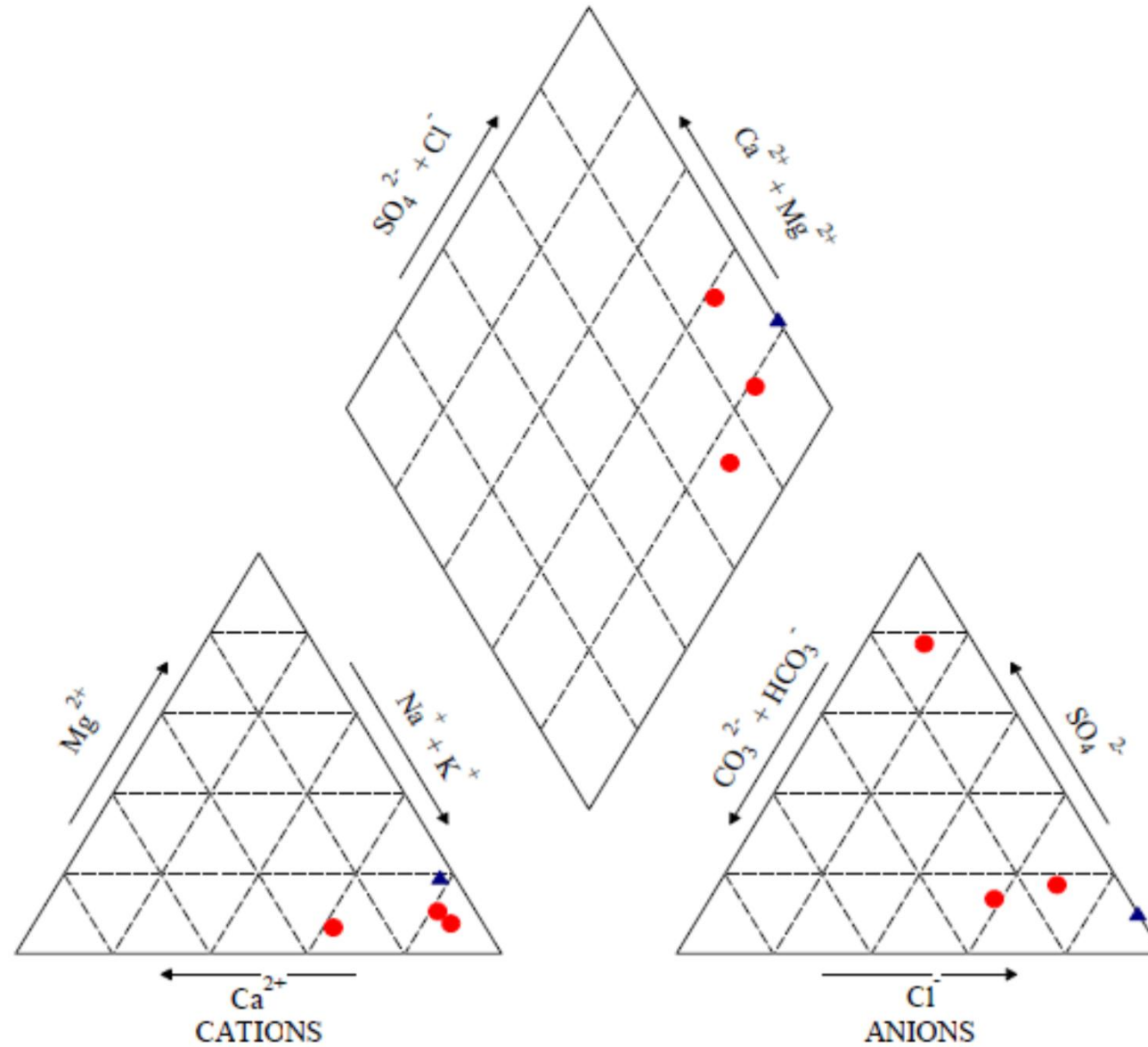
- Shale
- ▲ Sea Water



Ashfield Shale May 2017

EXPLANATION

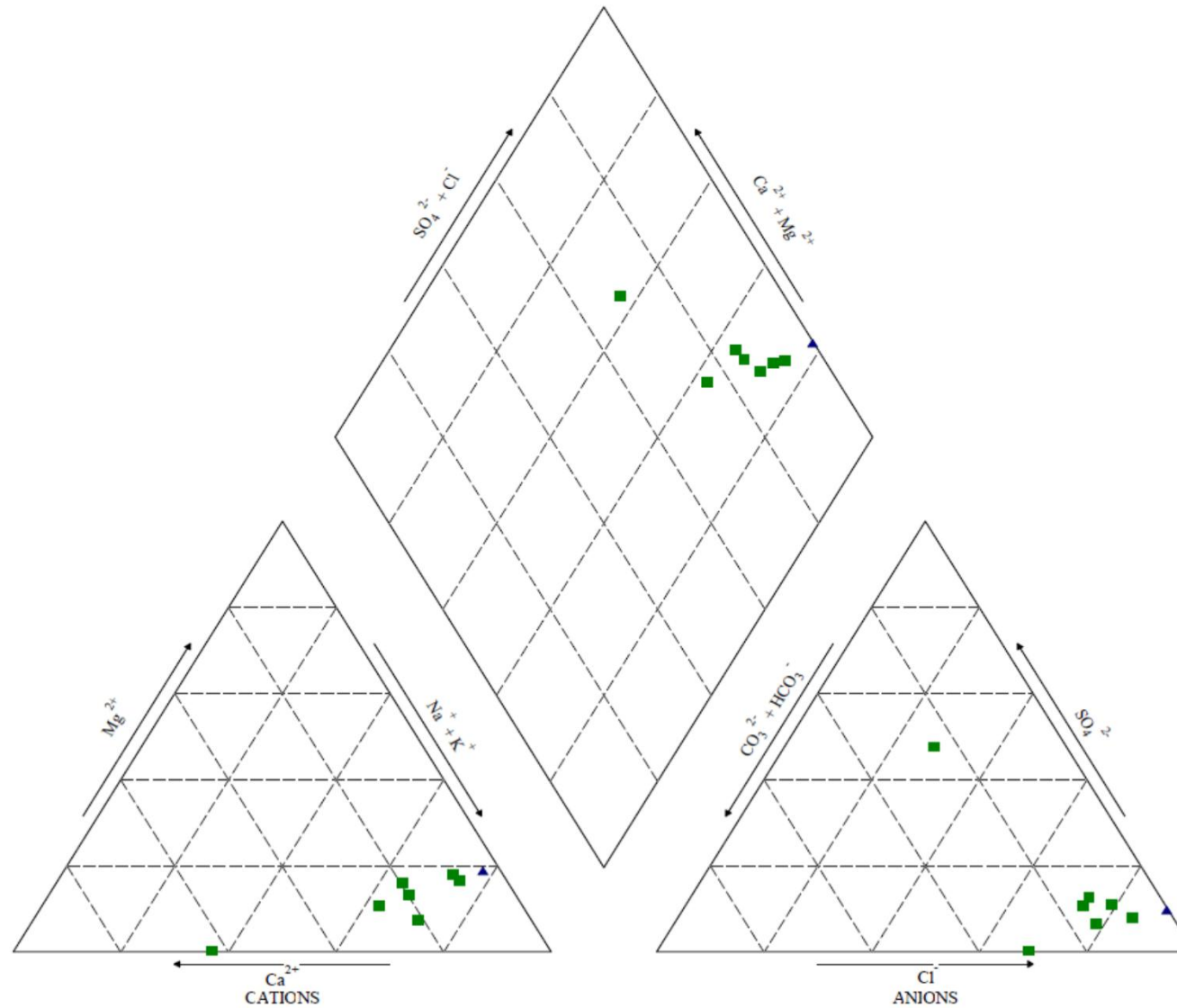
- Shale
- ▲ Sea Water



Hawkesbury Sandstone June 2016

EXPLANATION

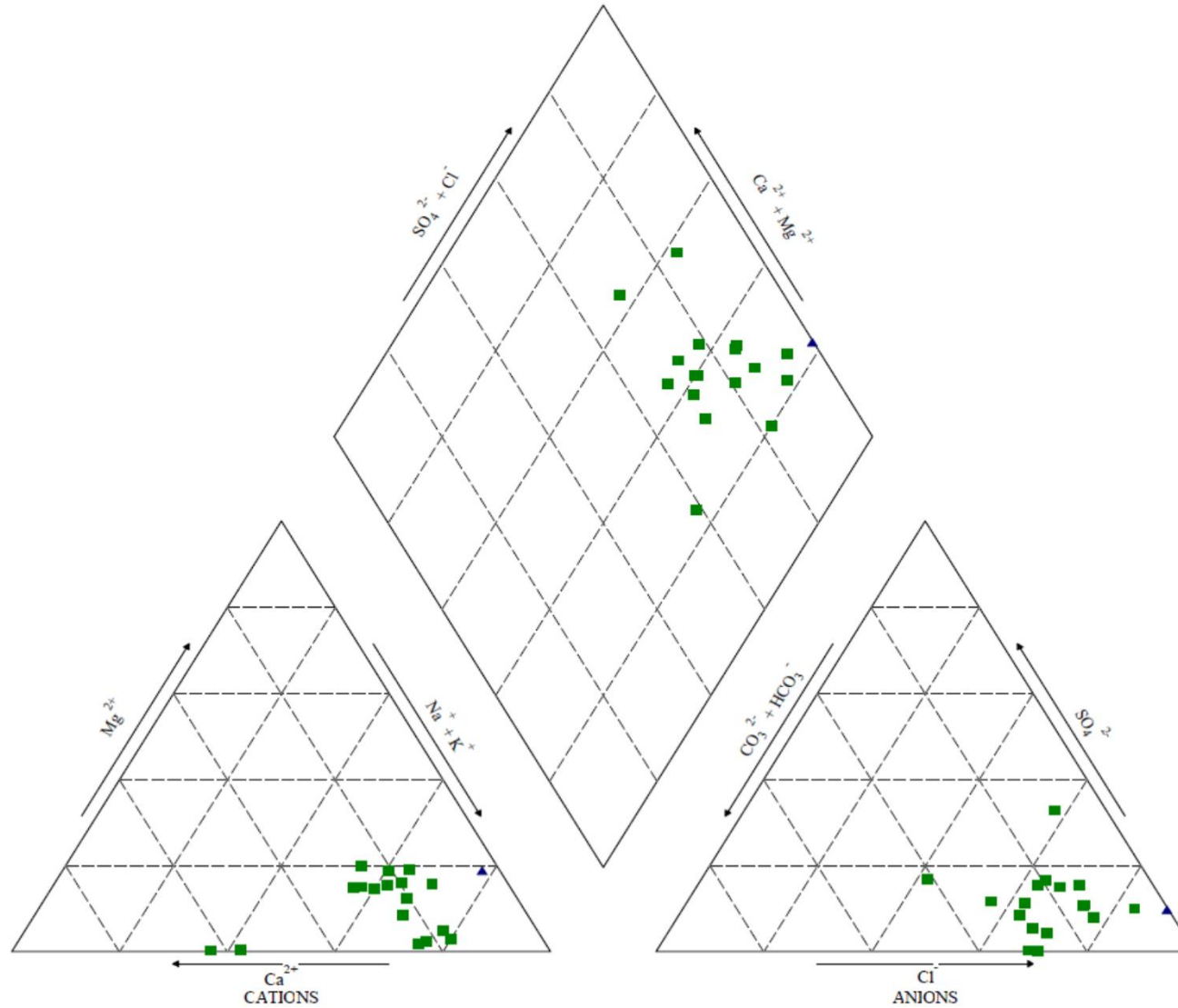
- Hawkesbury Sandstone
- ▲ Sea Water



Hawkesbury Sandstone July 2016

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
Project: M4-M5 Link WestConnex
Client: Sydney Motorway Corporation
Location: Inner West Sydney

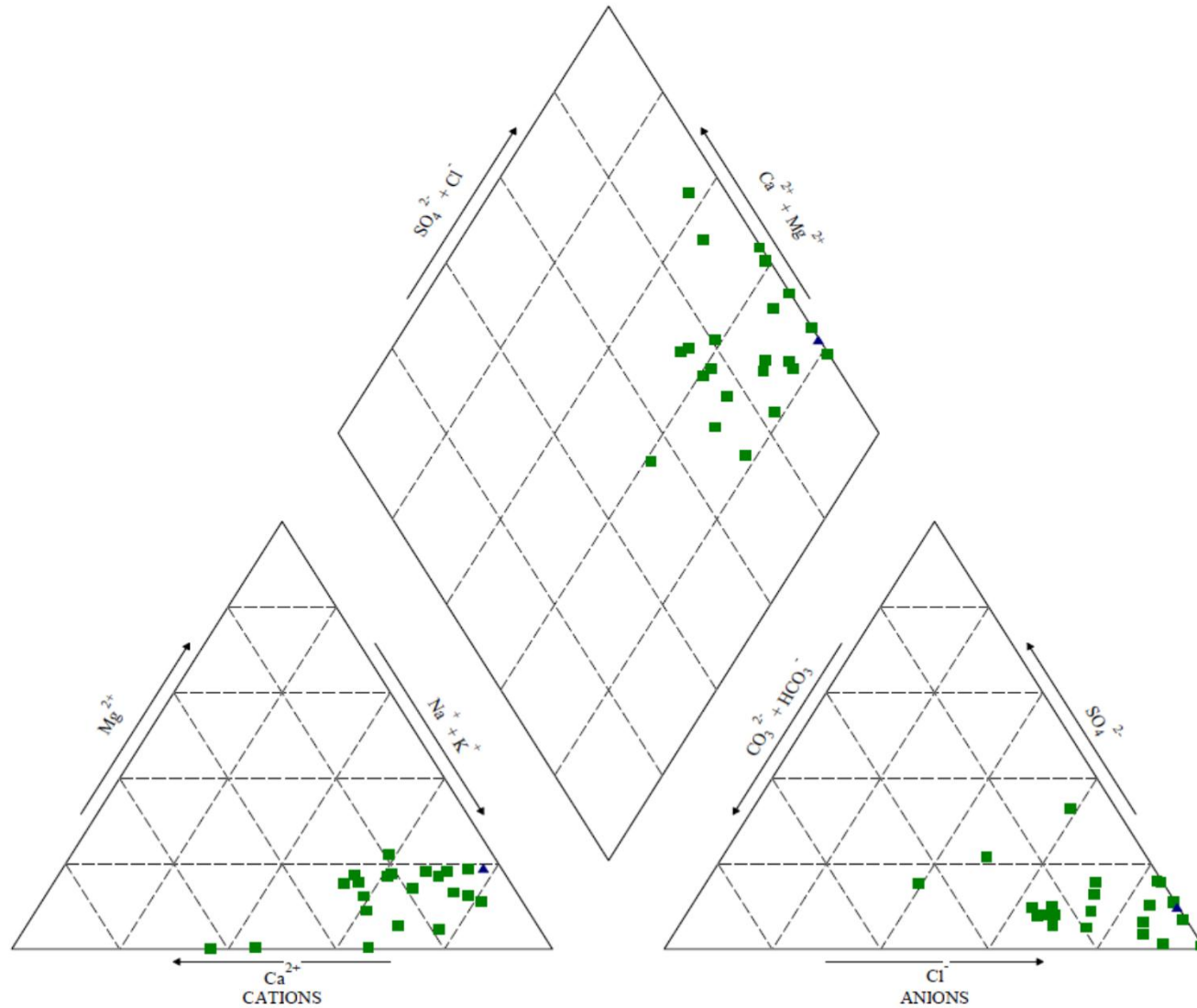
Aquifer: Hawkesbury Sandstone
Month: July 2016

Figure: E4.2
Project No: 60493796

Hawkesbury Sandstone August 2016

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
Project: M4-M5 Link WestConnex
Client: Sydney Motorway Corporation
Location: Inner West Sydney

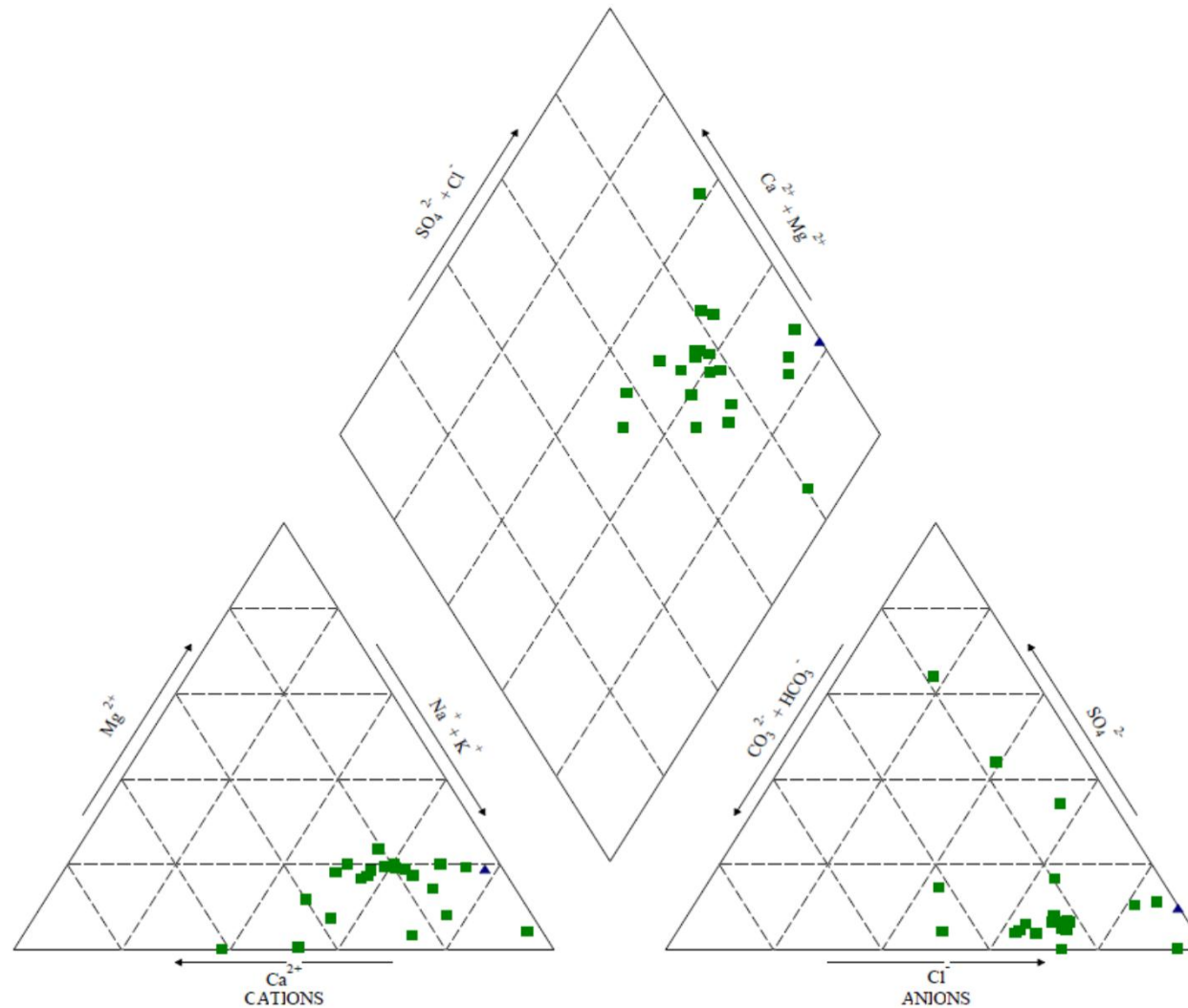
Aquifer: Hawkesbury Sandstone
Month: August 2016

Figure: E4.3
Project No: 60493796

Hawkesbury Sandstone September 2016

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

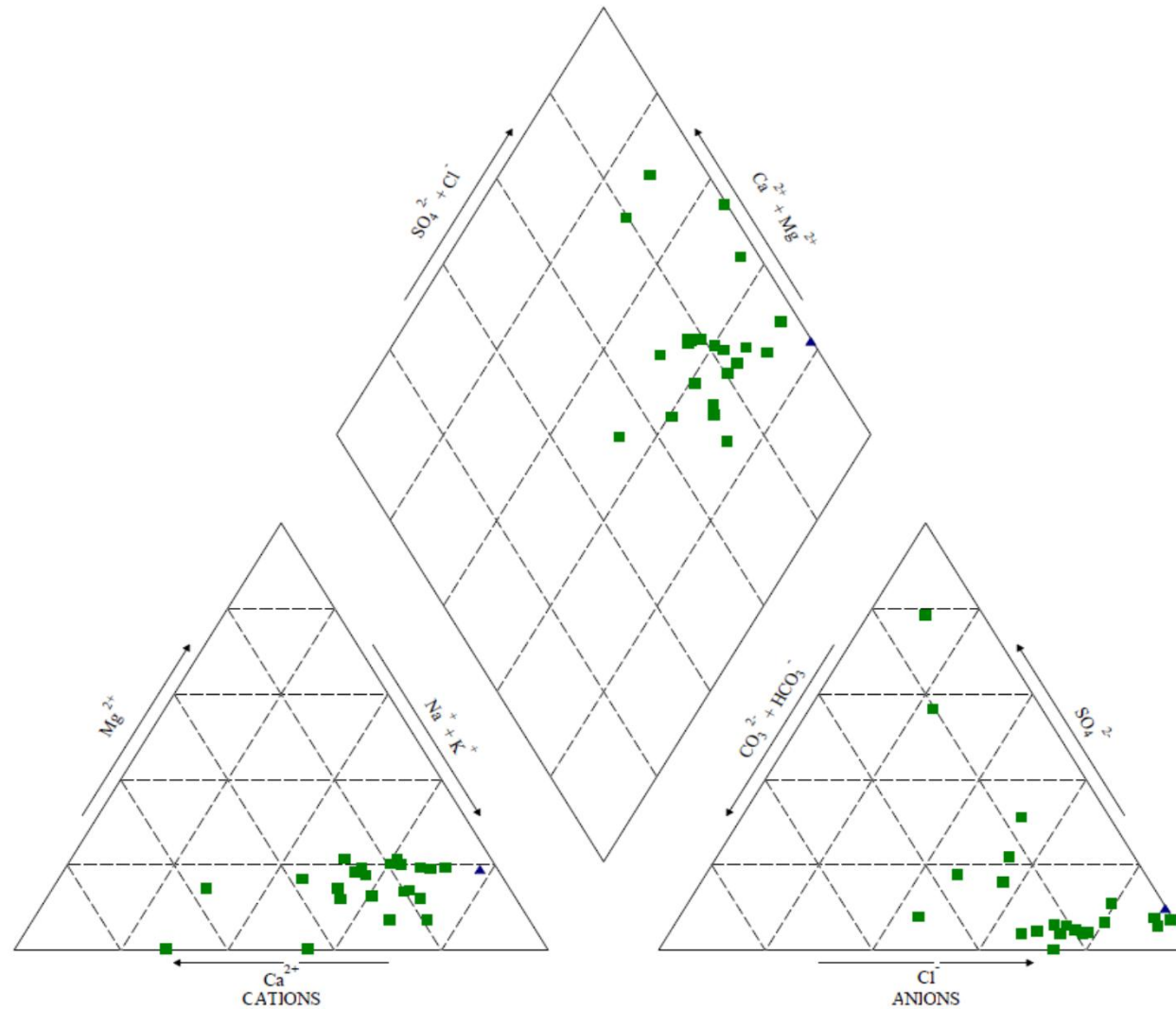
Aquifer: Hawkesbury Sandstone
 Month: September 2016

Figure: E4.4
 Project No: 60493796

Hawkesbury Sandstone October 2016

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

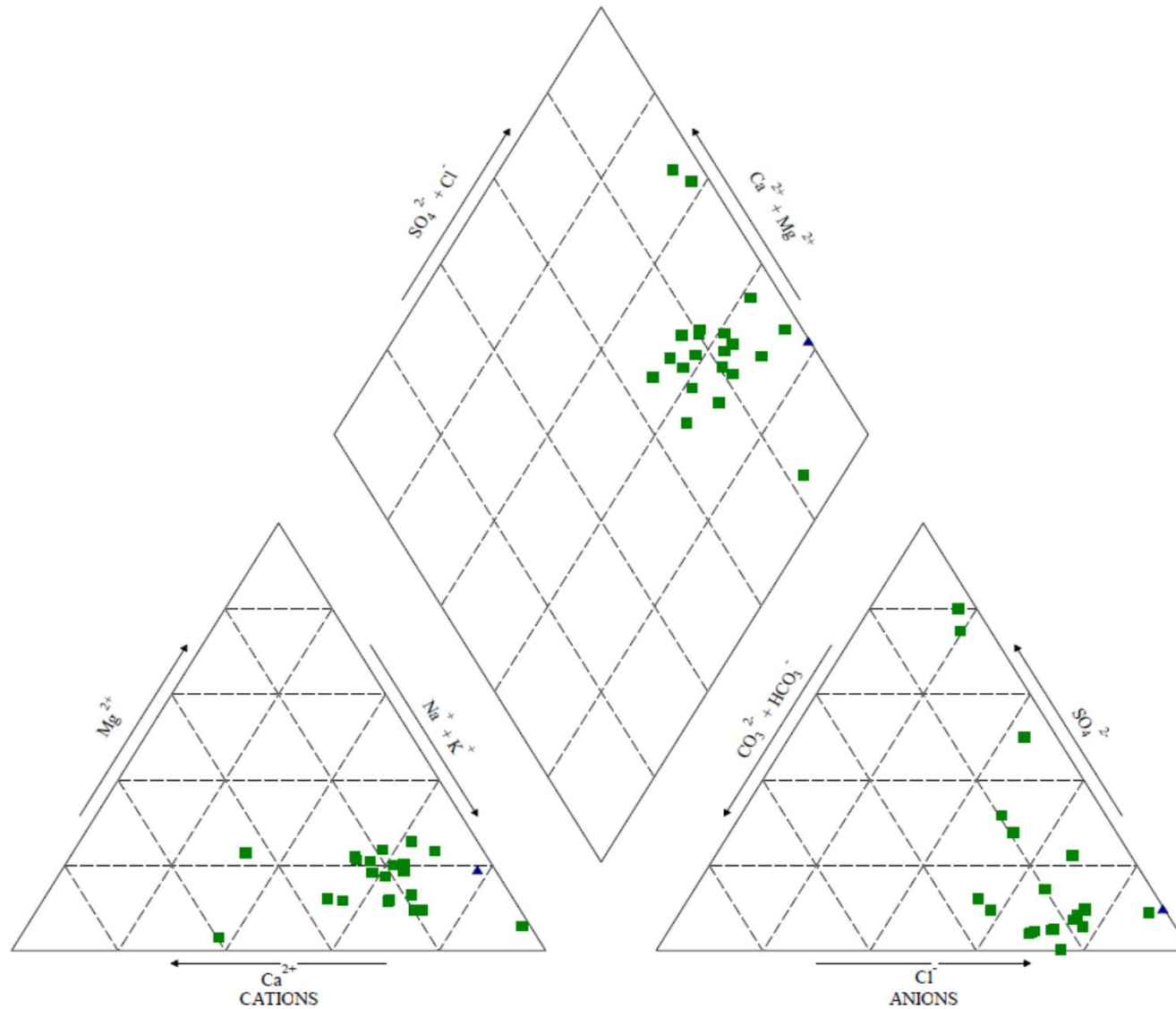
Aquifer: Hawkesbury Sandstone
 Month: October 2016

Figure: E4.5
 Project No: 60493796

Hawkesbury Sandstone November 2016

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

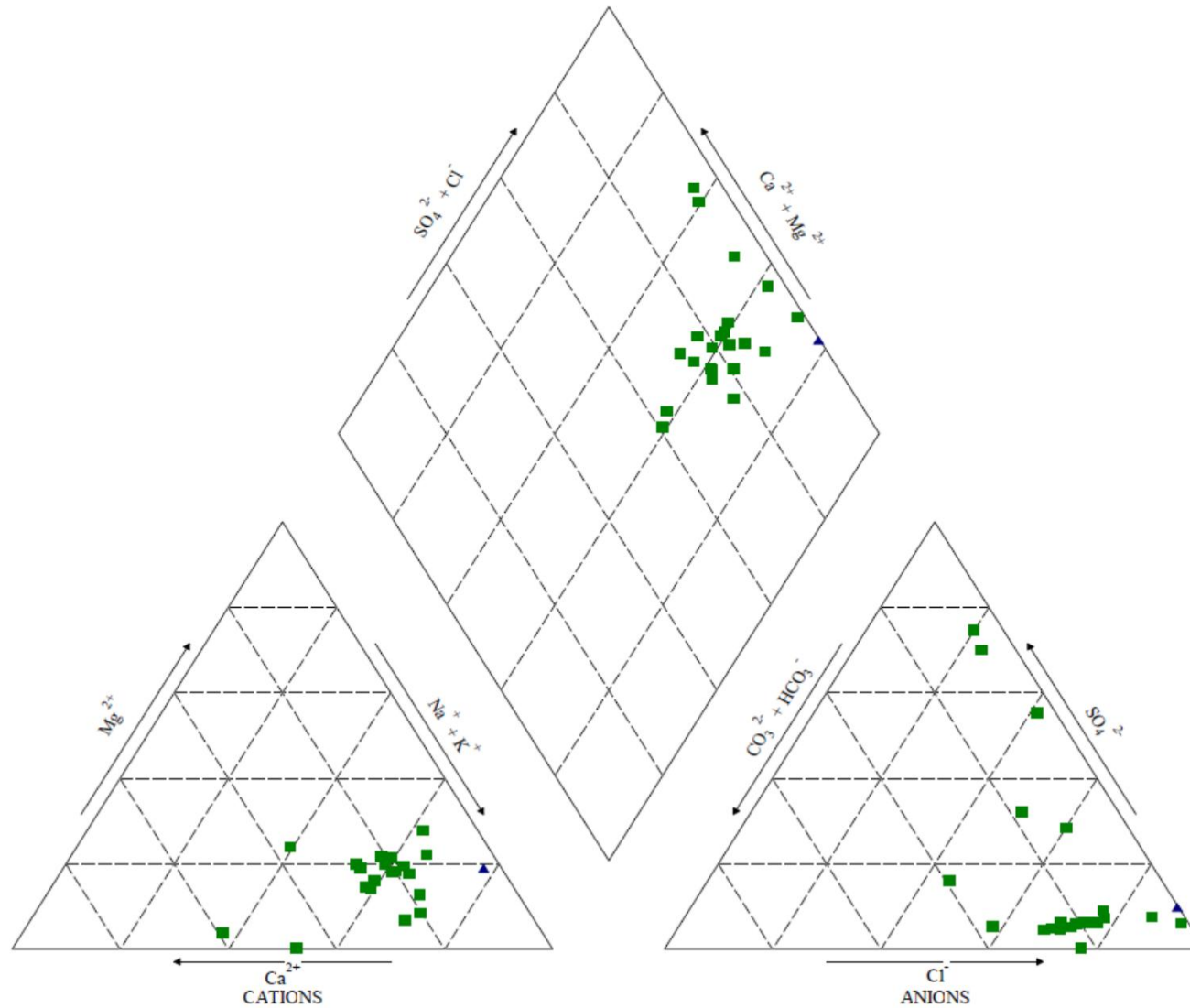
Aquifer: Hawkesbury Sandstone
 Month: November 2016

Figure: E4.6
 Project No: 60493796

Hawkesbury Sandstone December 2016

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

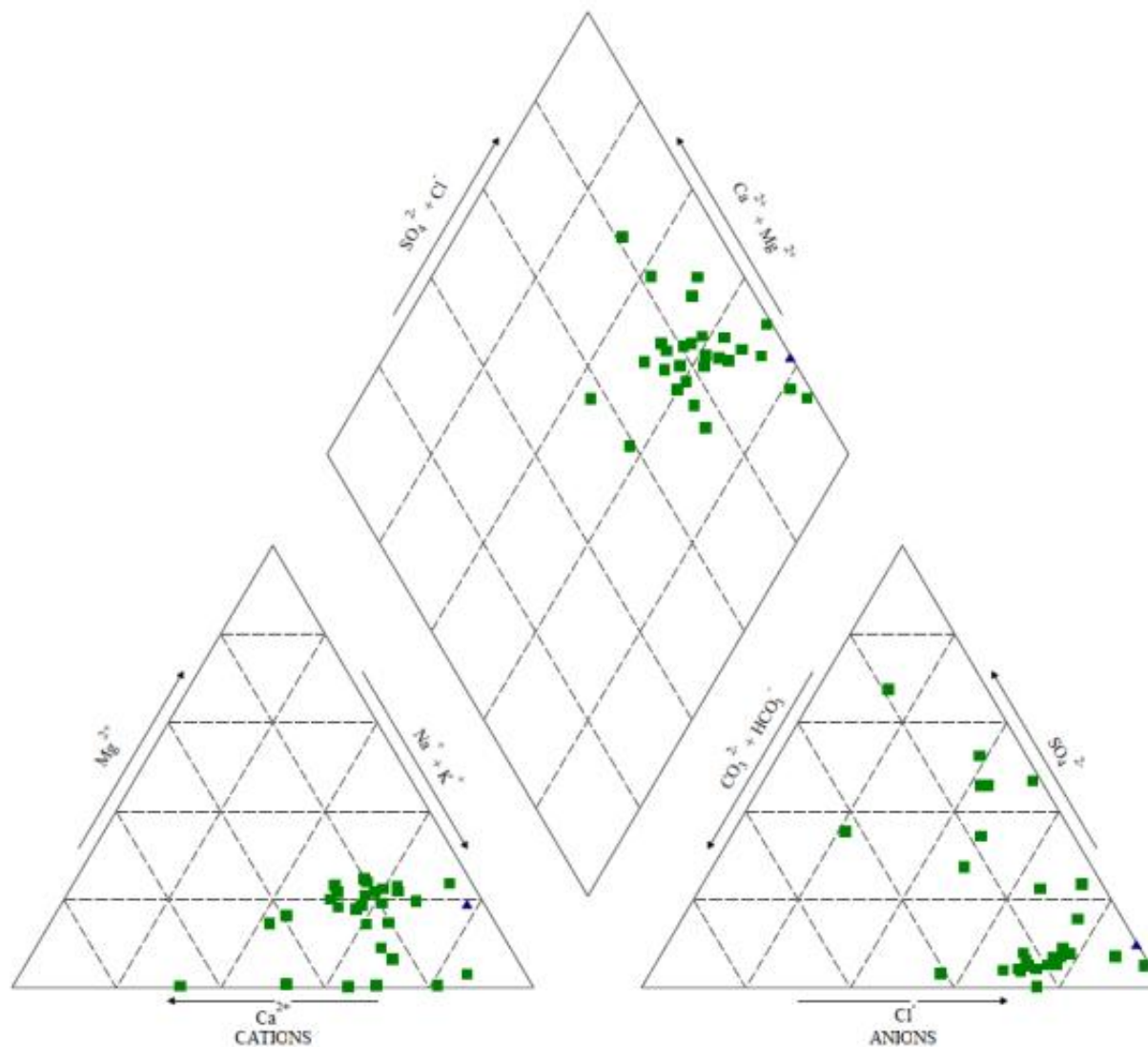
Aquifer: Hawkesbury Sandstone
 Month: December 2016

Figure: E4.7
 Project No: 60493796

Hawkesbury Sandstone January 2017

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
Project: M4-M5 Link WestConnex
Client: Sydney Motorway Corporation
Location: Inner West Sydney

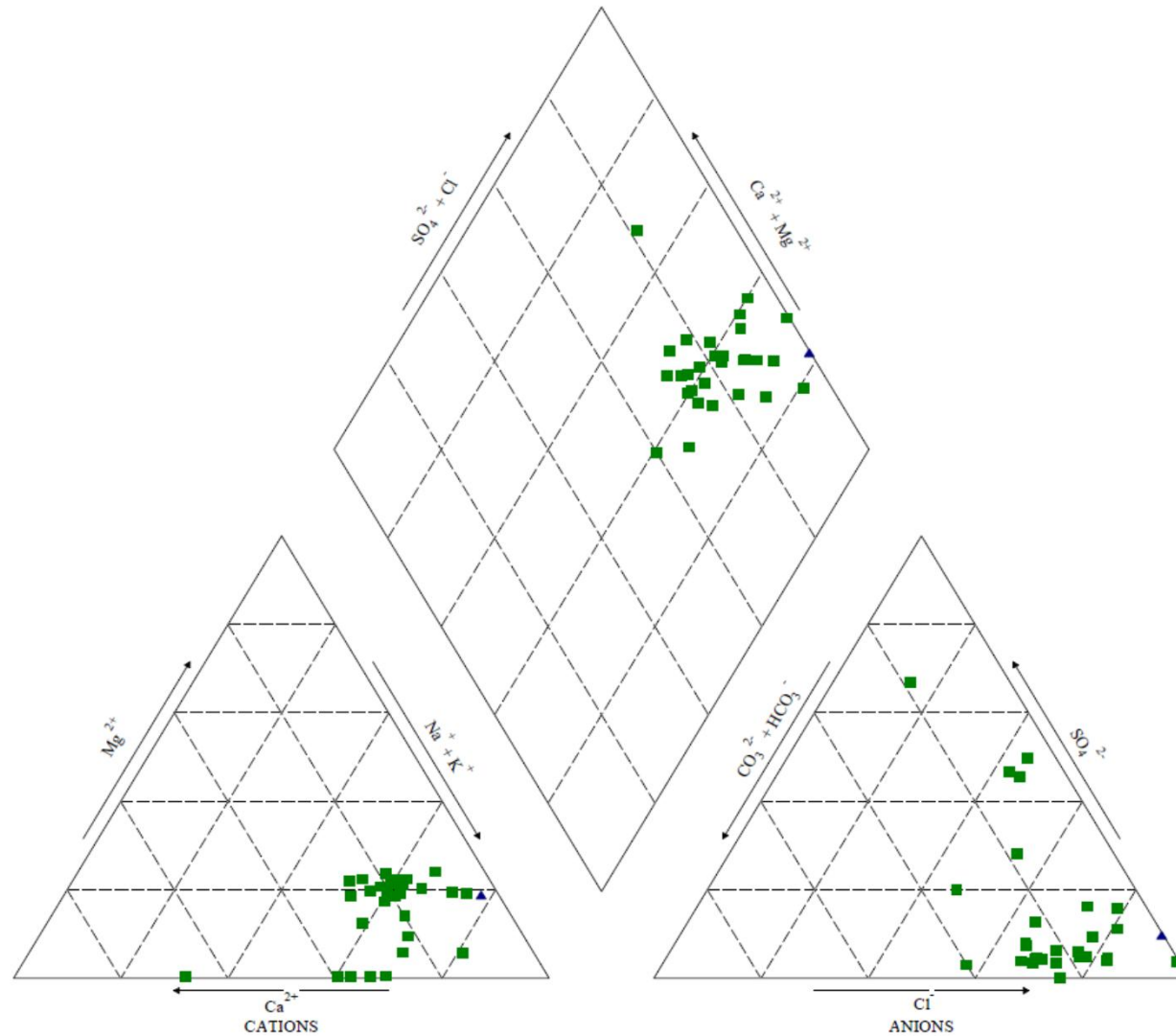
Aquifer: Hawkesbury Sandstone
Month: January 2017

Figure: E4.8
Project No: 60493796

Hawkesbury Sandstone February 2017

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

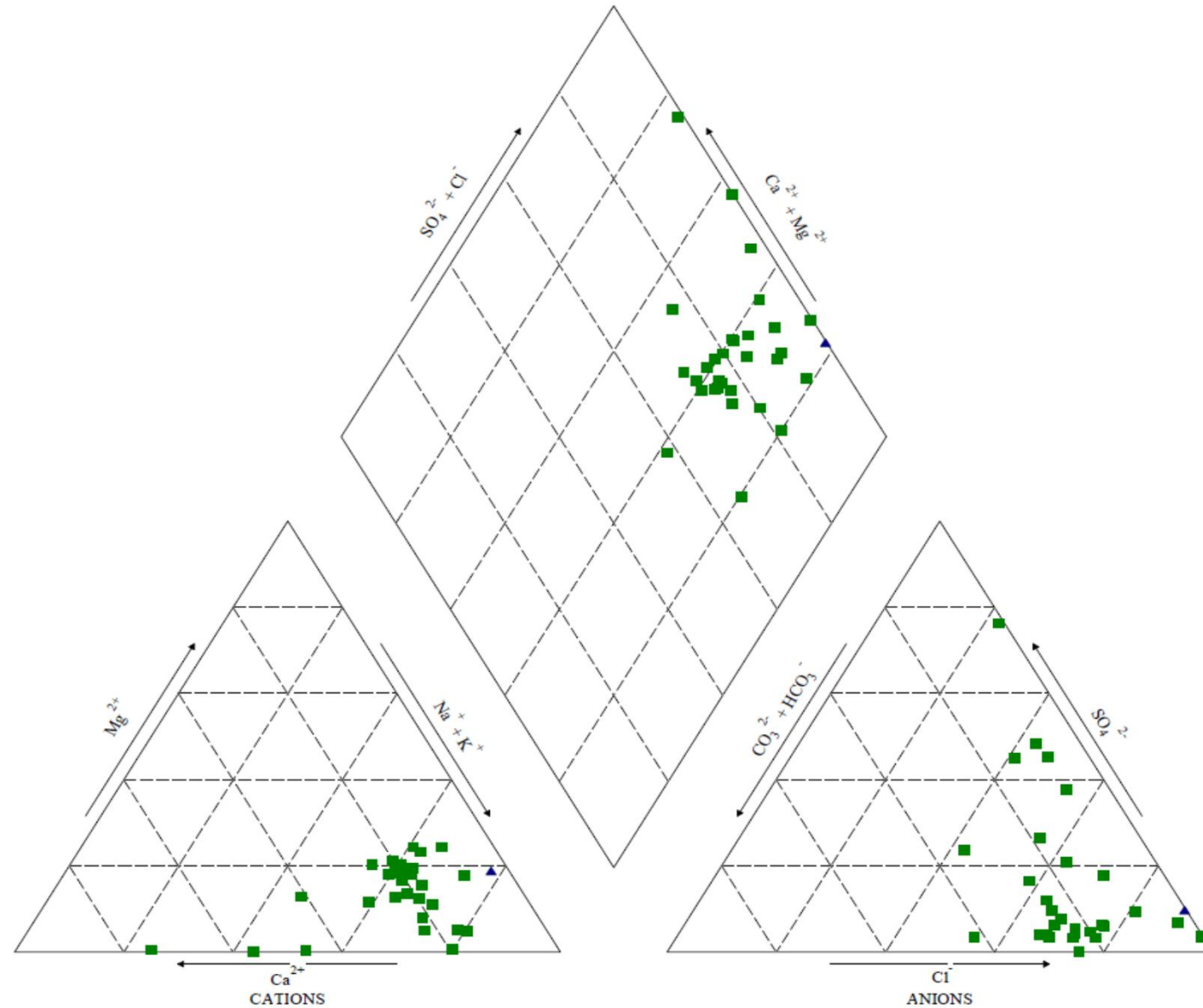
Aquifer: Hawkesbury Sandstone
 Month: February 2017

Figure: E4.9
 Project No: 60493796

Hawkesbury Sandstone March 2017

EXPLANATION

- Hawkesbury Sandstone
- ▲ Sea Water



AECOM

Title: Piper Diagram
 Project: M4-M5 Link WestConnex
 Client: Sydney Motorway Corporation
 Location: Inner West Sydney

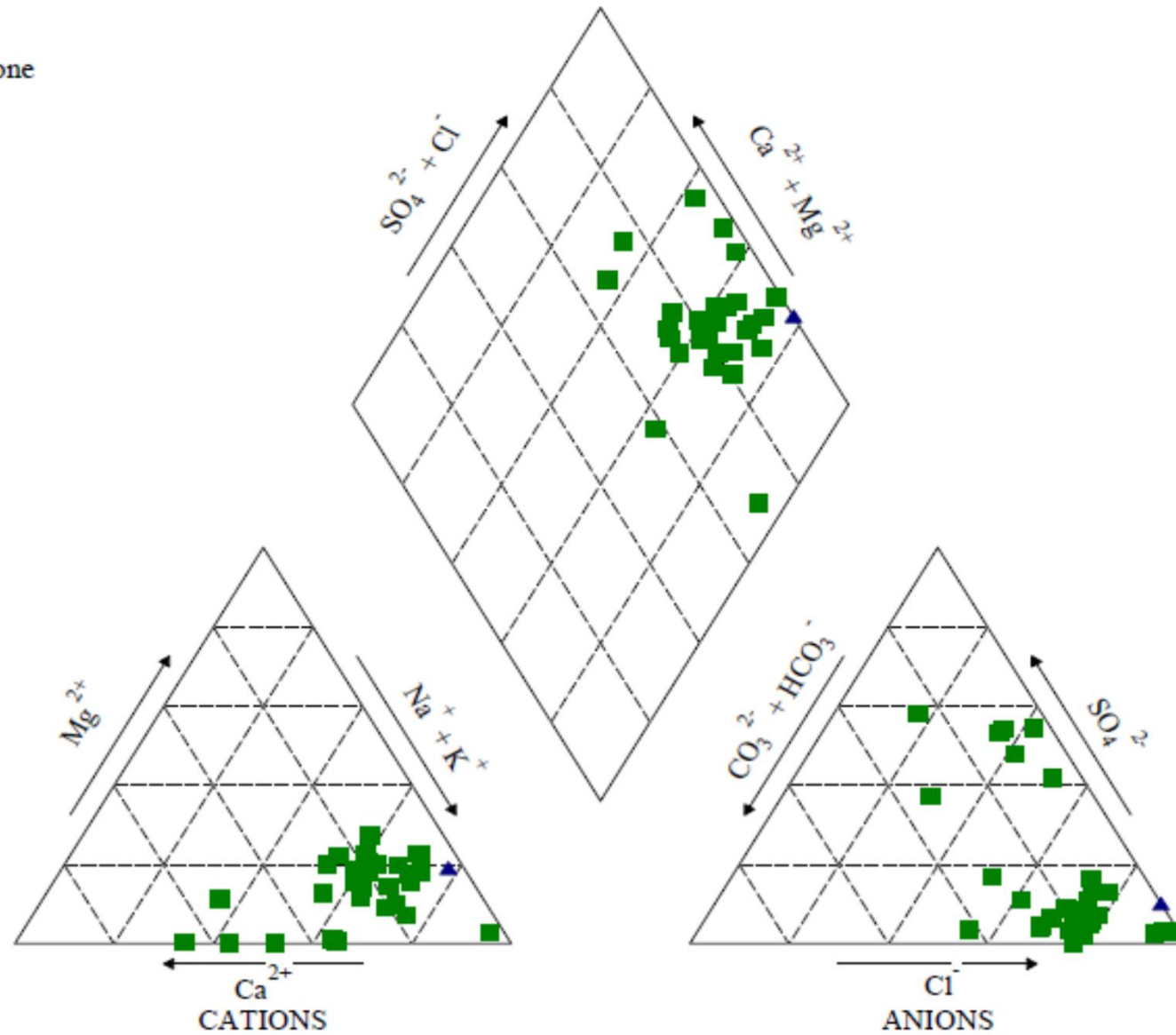
Aquifer: Hawkesbury Sandstone
 Month: March 2017

Figure: E4.10
 Project No: 60493796

Hawkesbury Sandstone April 2017

EXPLANATION

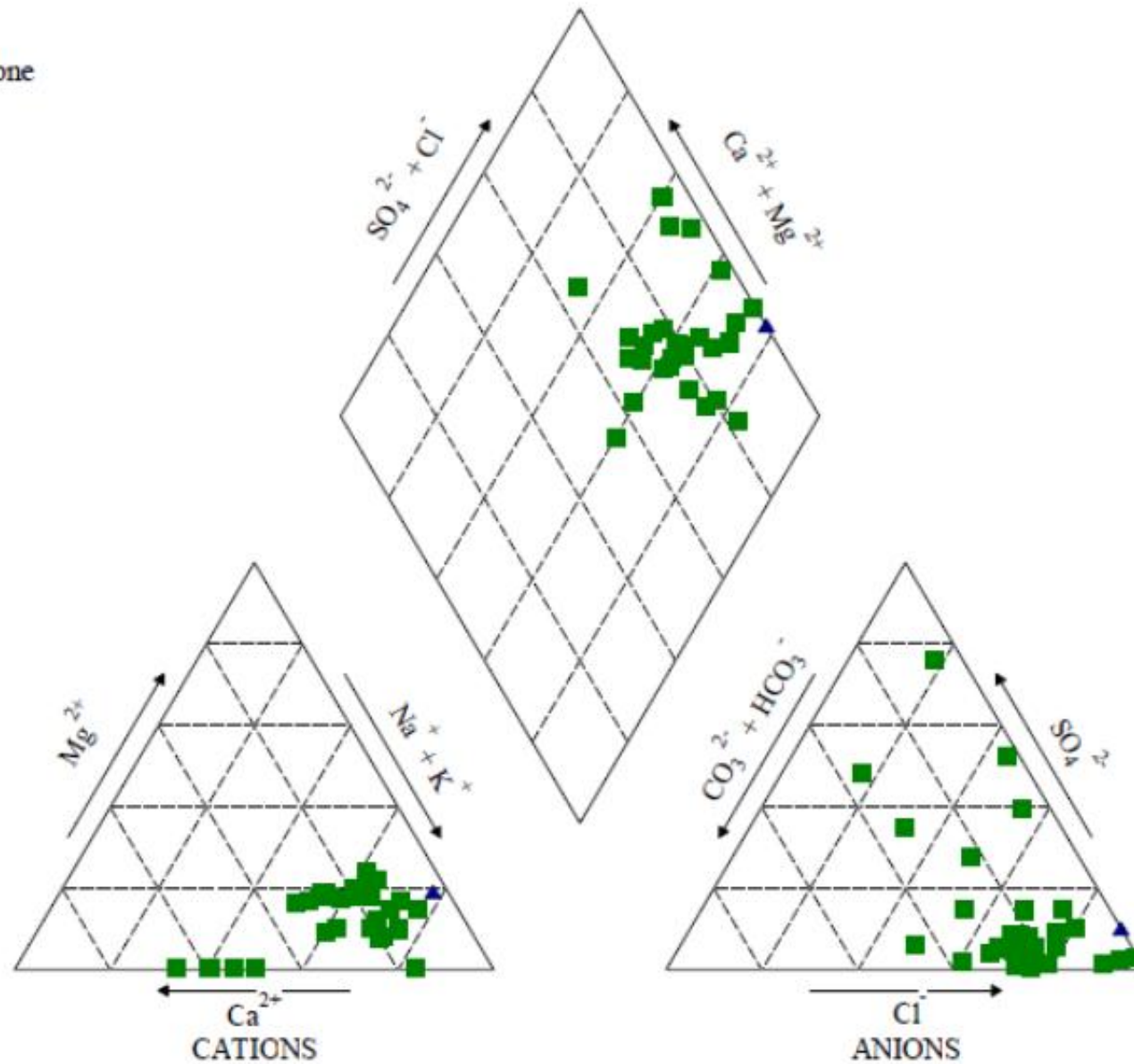
- Hawkesbury Sandstone
- ▲ Sea Water



Hawkesbury Sandstone May 2017

EXPLANATION

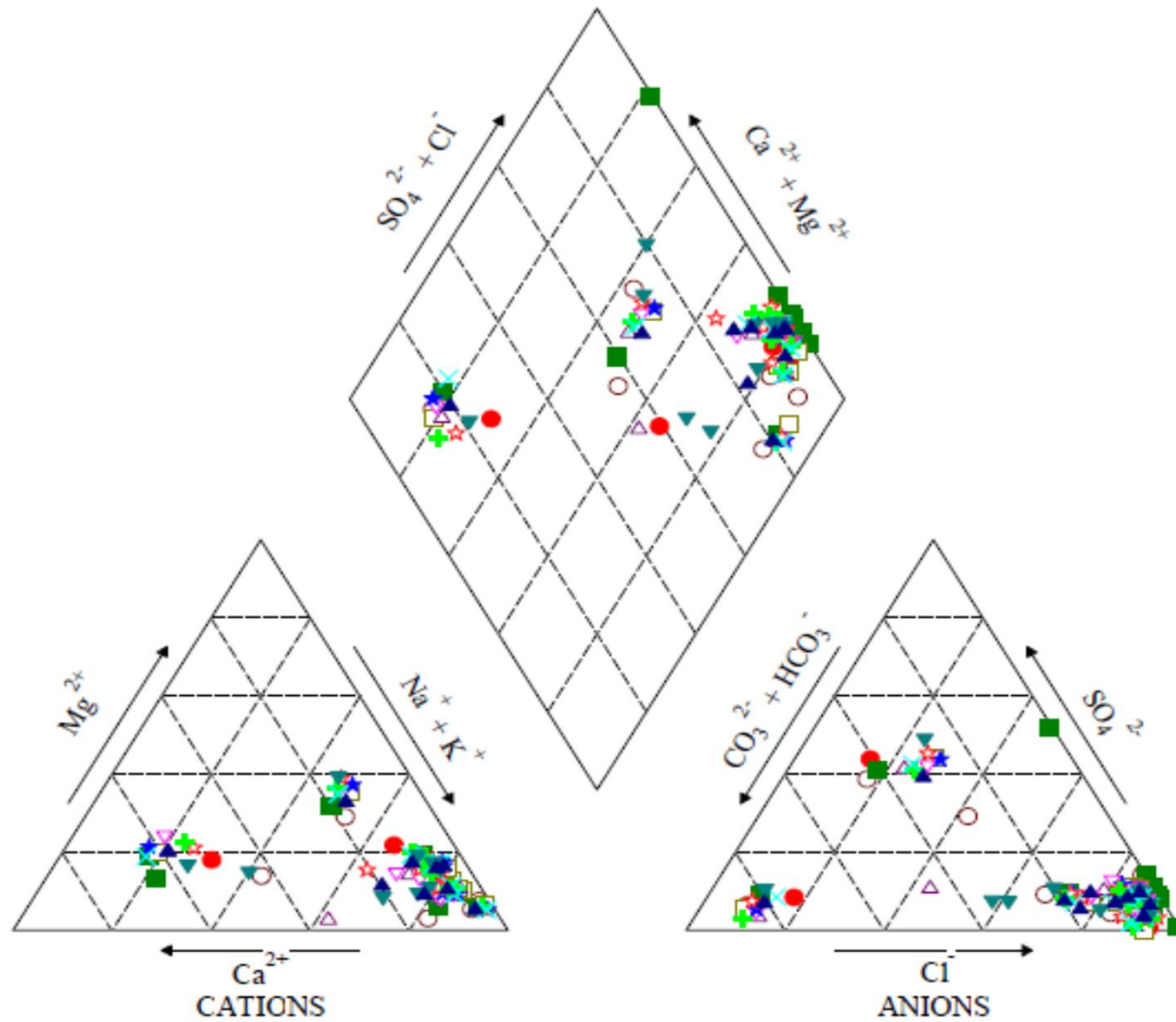
- Hawkesbury Sandstone
- ▲ Sea Water



Alluvium Monthly

EXPLANATION

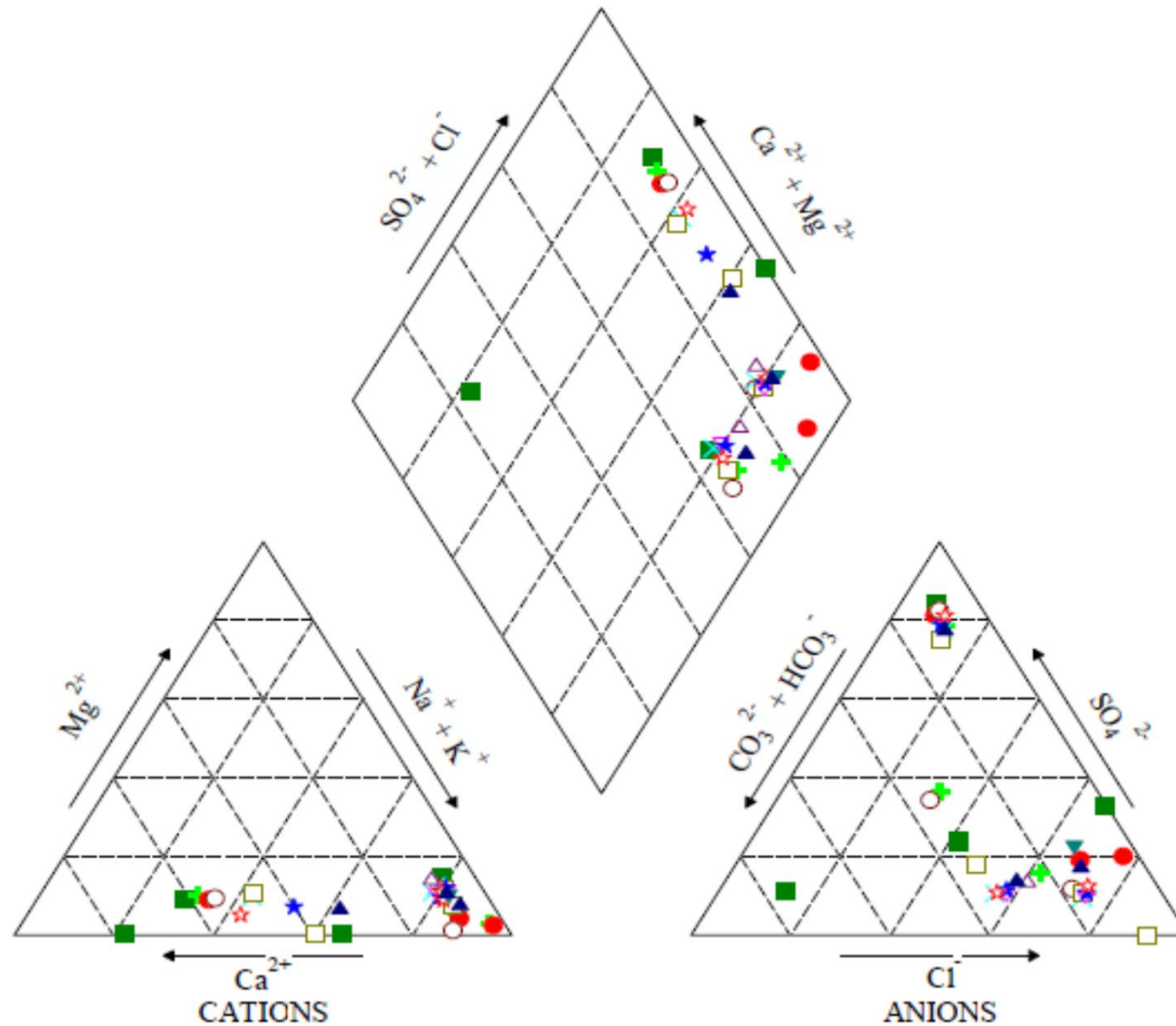
- June 2016
- July 2016
- August 2016
- September 2016
- △ October 2016
- ▽ November 2016
- ★ December 2016
- ☆ January 2017
- ✚ February 2017
- ✕ March 2017
- ▼ April 2017
- ▲ May 2017



Ashfield Shale Monthly

EXPLANATION

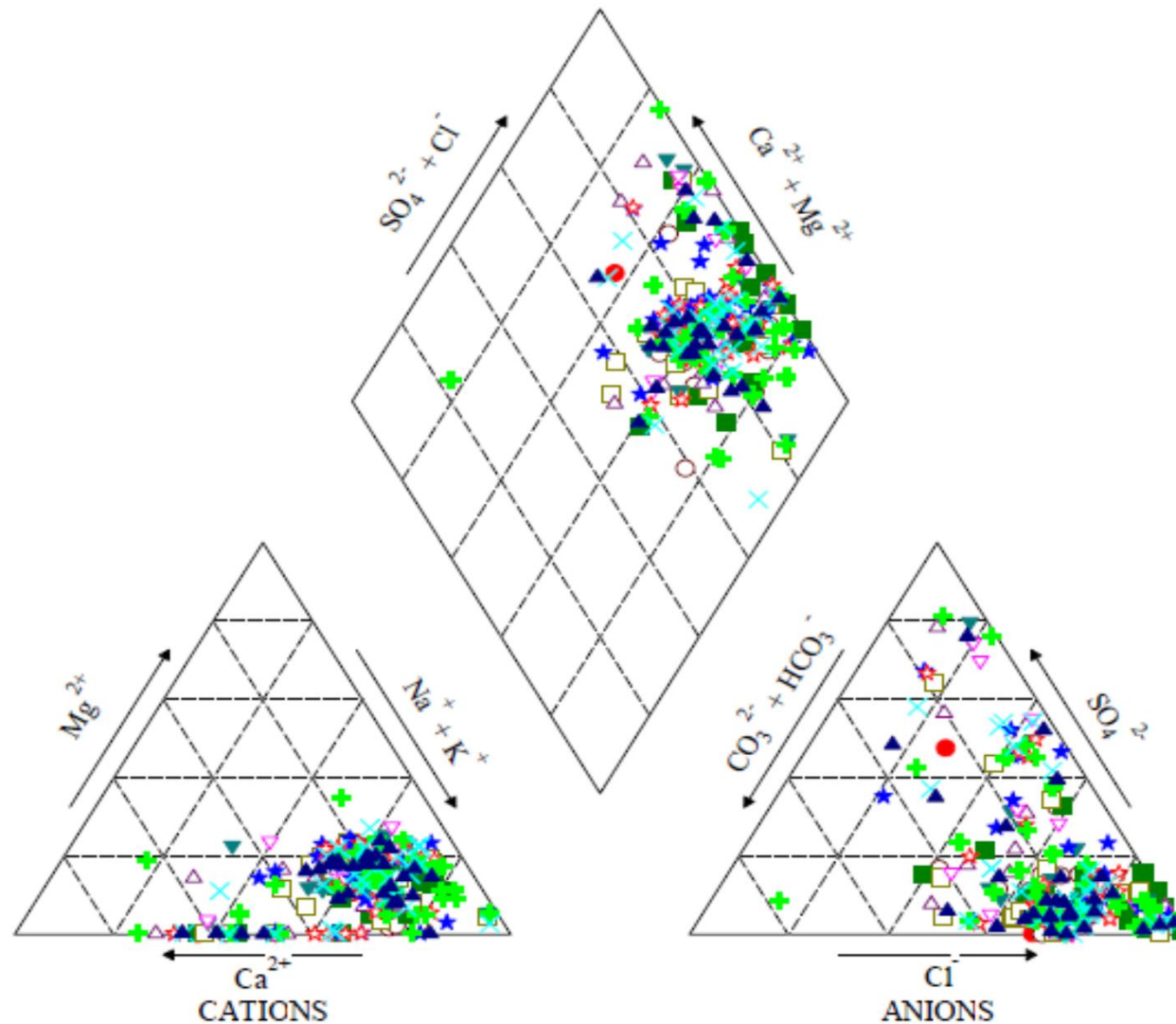
- June 2016
- + July 2016
- August 2016
- September 2016
- × October 2016
- November 2016
- △ December 2016
- ▽ January 2017
- ★ February 2017
- ☆ March 2017
- ▼ April 2017
- ▲ May 2017

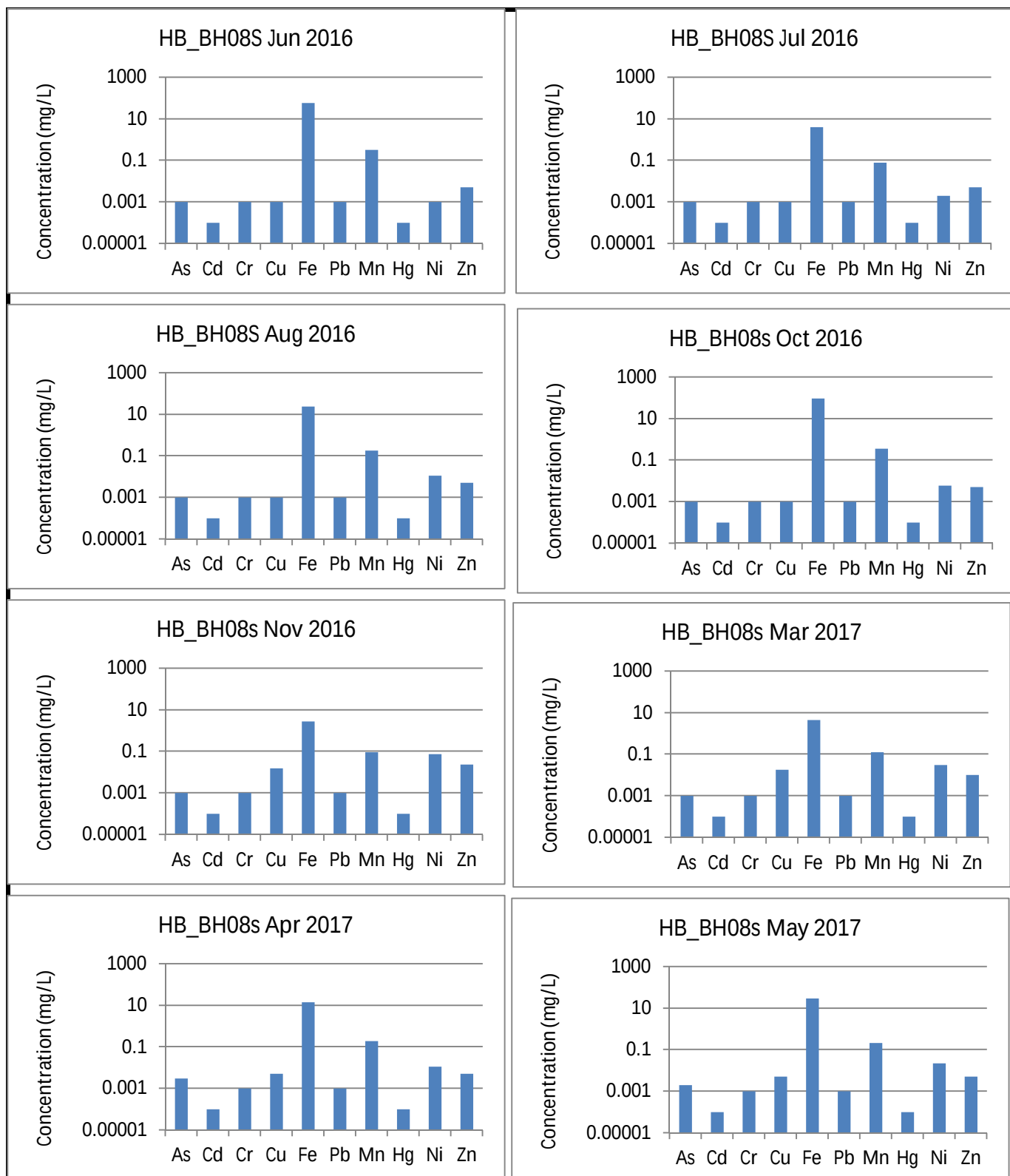


Hawkesbury Sandstone Monthly

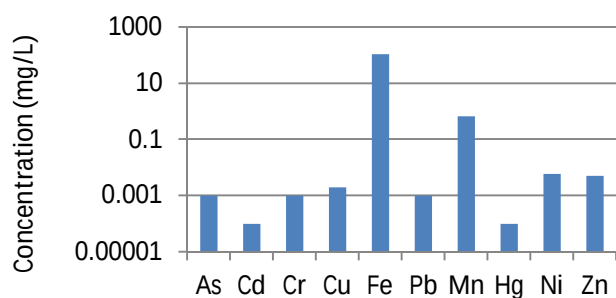
EXPLANATION

- June 2016
- July 2016
- August 2016
- September 2016
- △ October 2016
- ▼ November 2016
- ▽ December 2016
- ★ January 2017
- ☆ February 2017
- ✚ March 2017
- ✕ April 2017
- ▲ May 2017

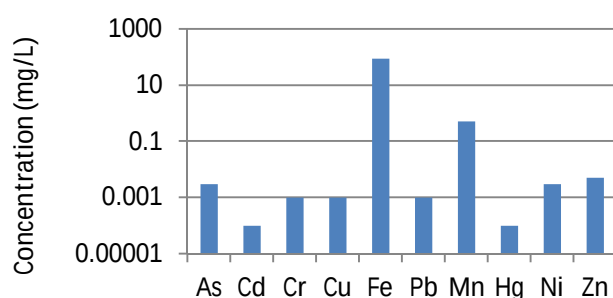




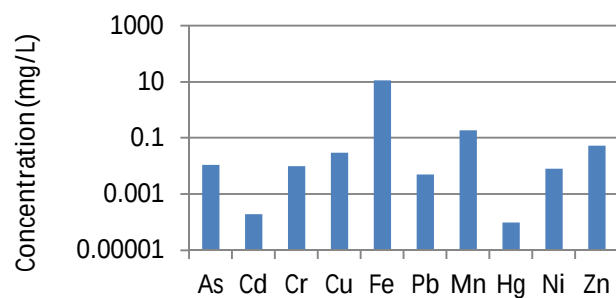
RZ_BH01s Oct 2016



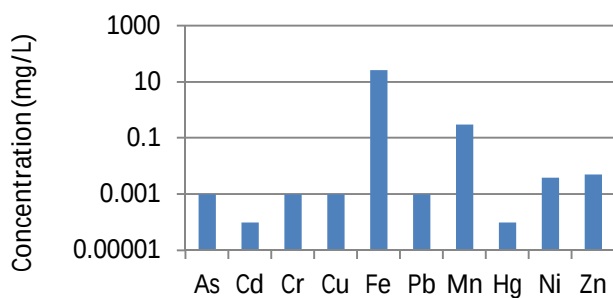
RZ_BH01s Nov 2016



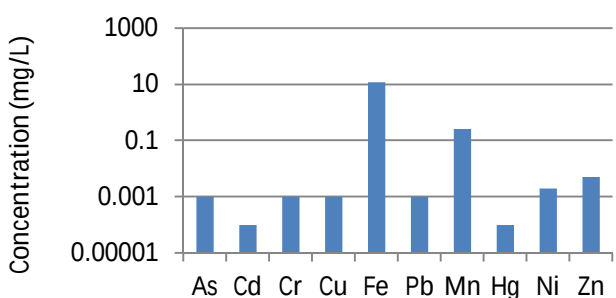
RZ_BH01s Dec 2016



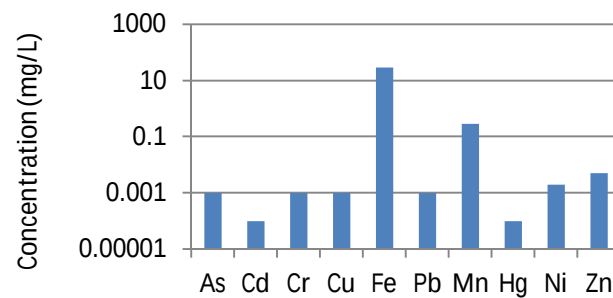
RZ_BH01s Jan 2017



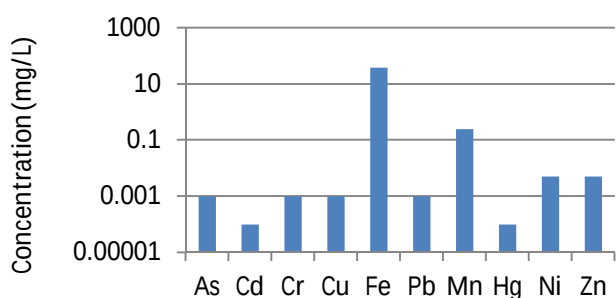
RZ_BH01s Feb 2017



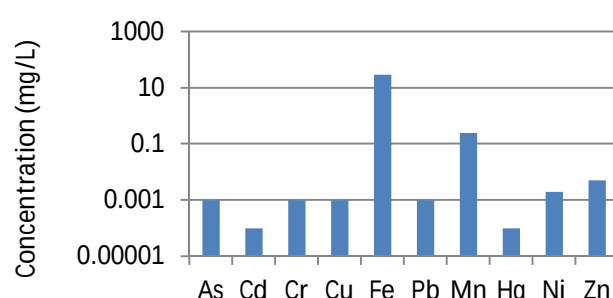
RZ_BH01s Mar 2017

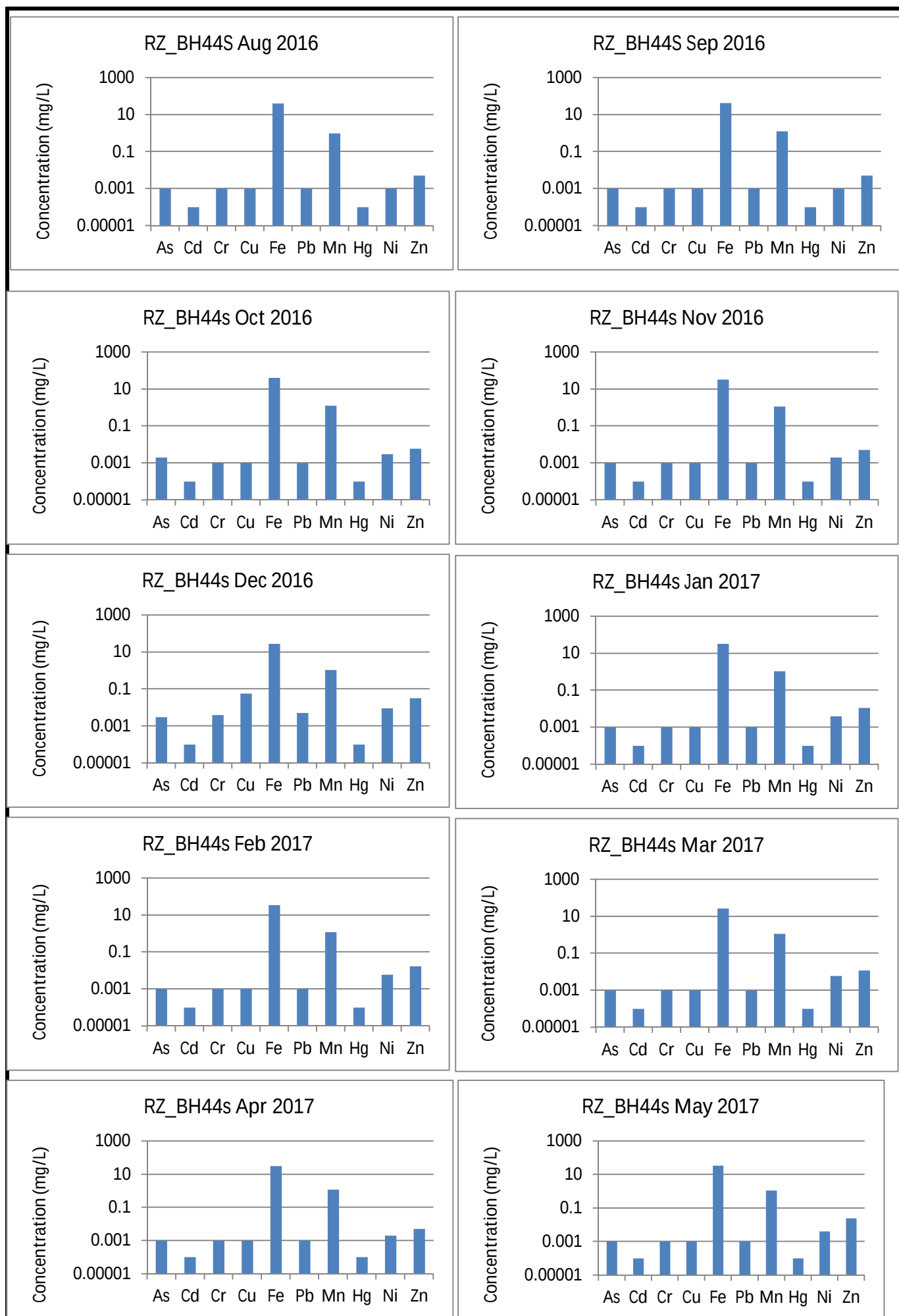


RZ_BH01s Apr 2017



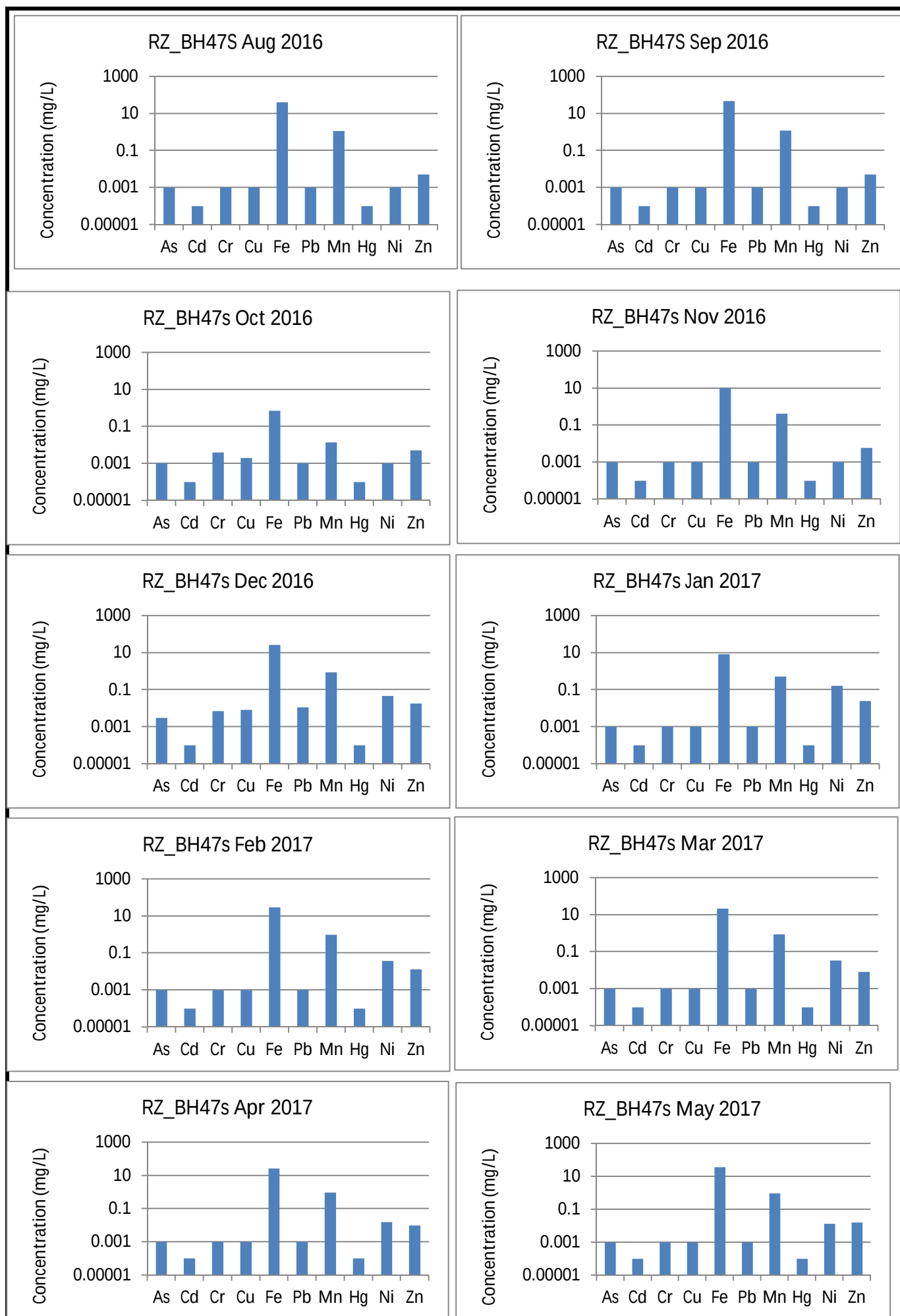
RZ_BH01s May 2017





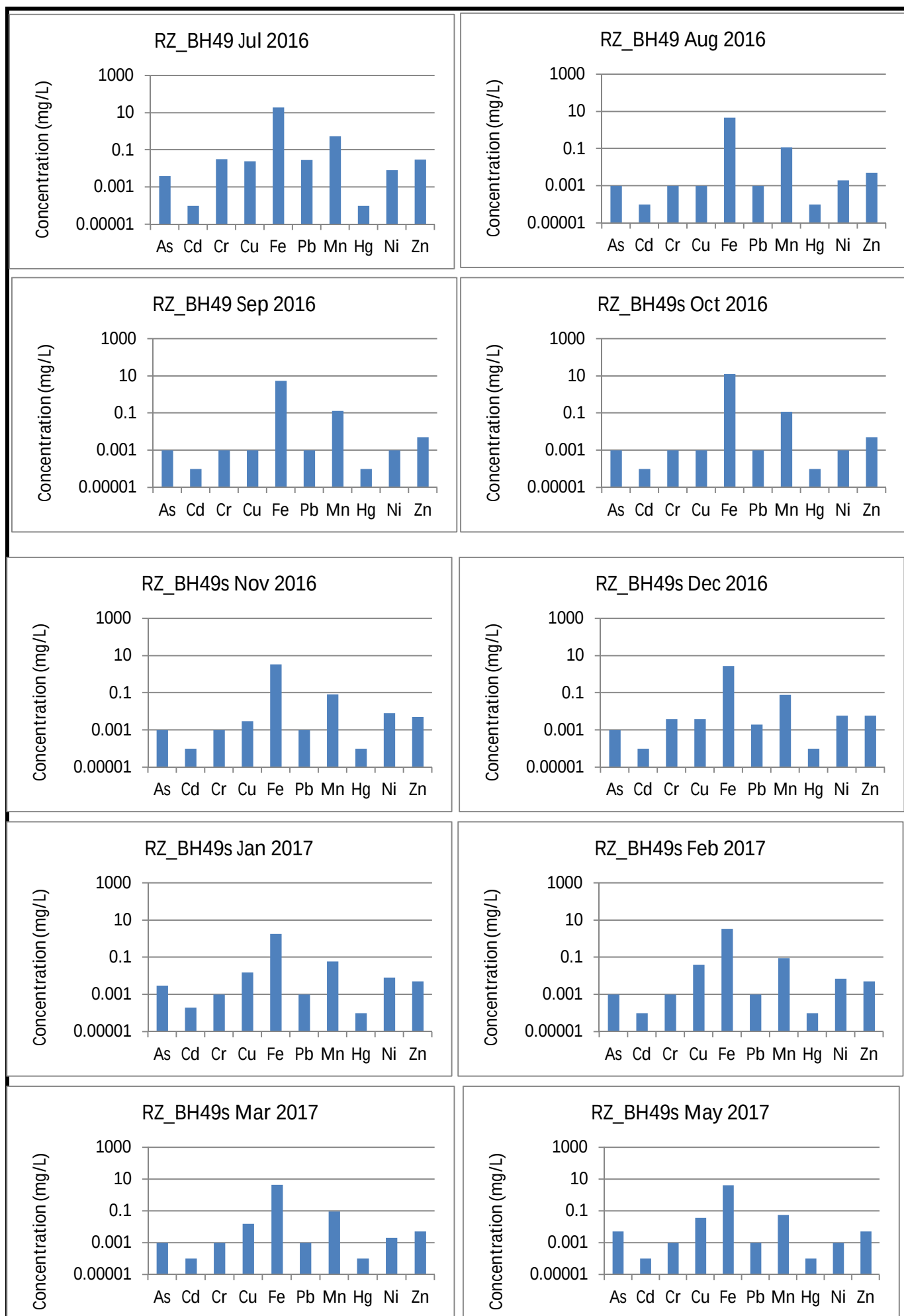
Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - RZ_BH44s
 Alluvium - Rozelle

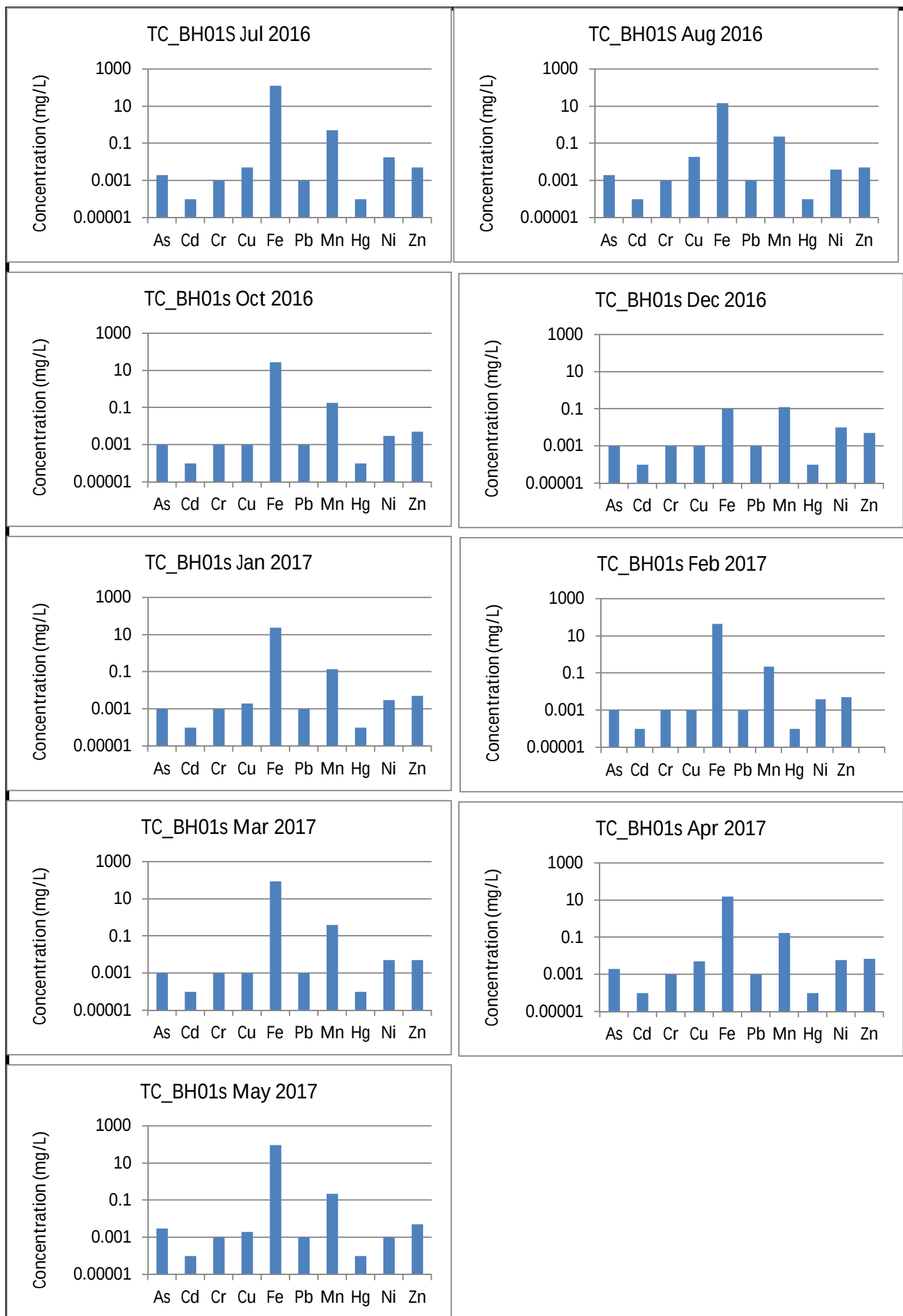
Figure E6.3



Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - RZ_BH47s
 Alluvium - Rozelle

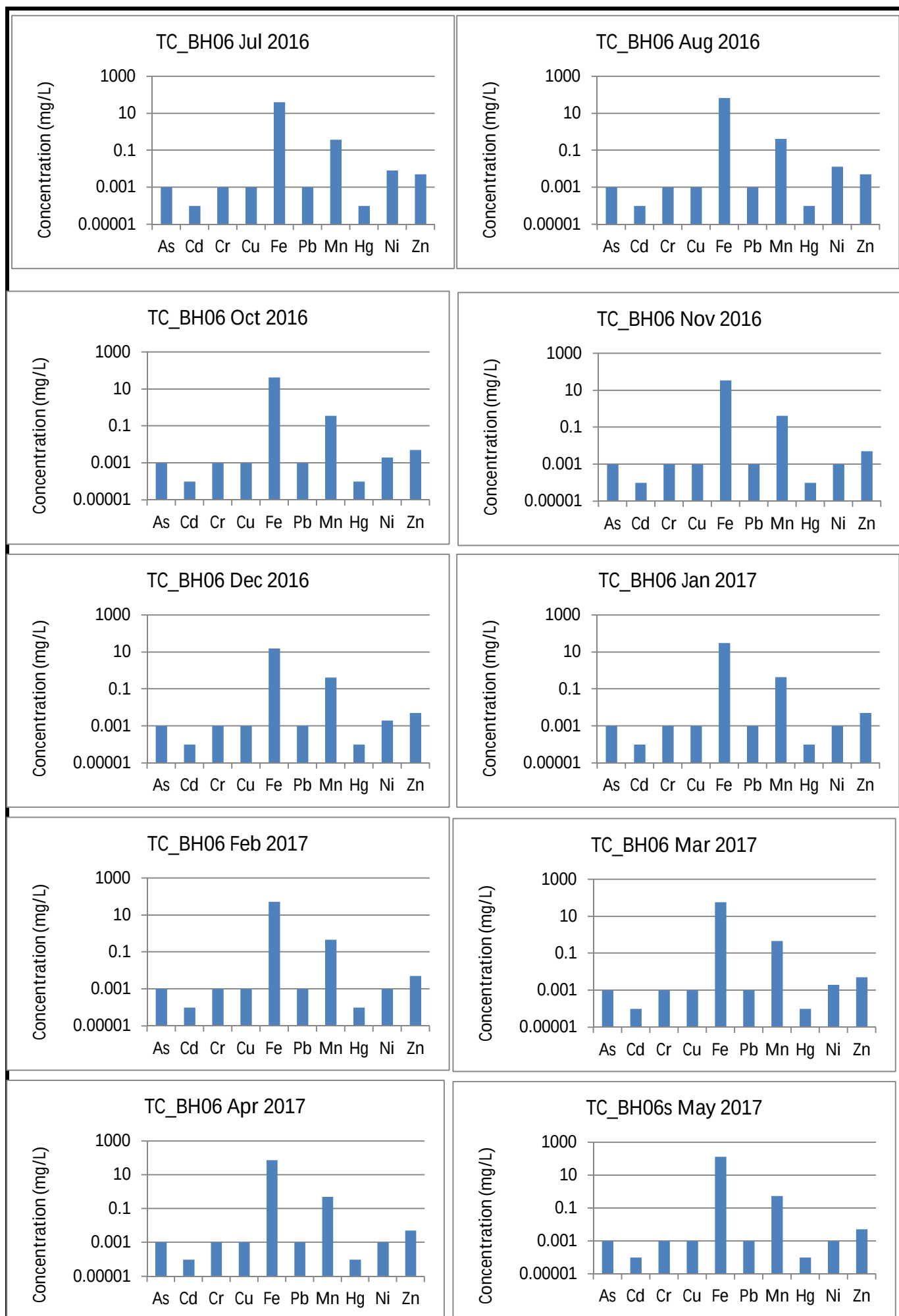
Figure E6.4





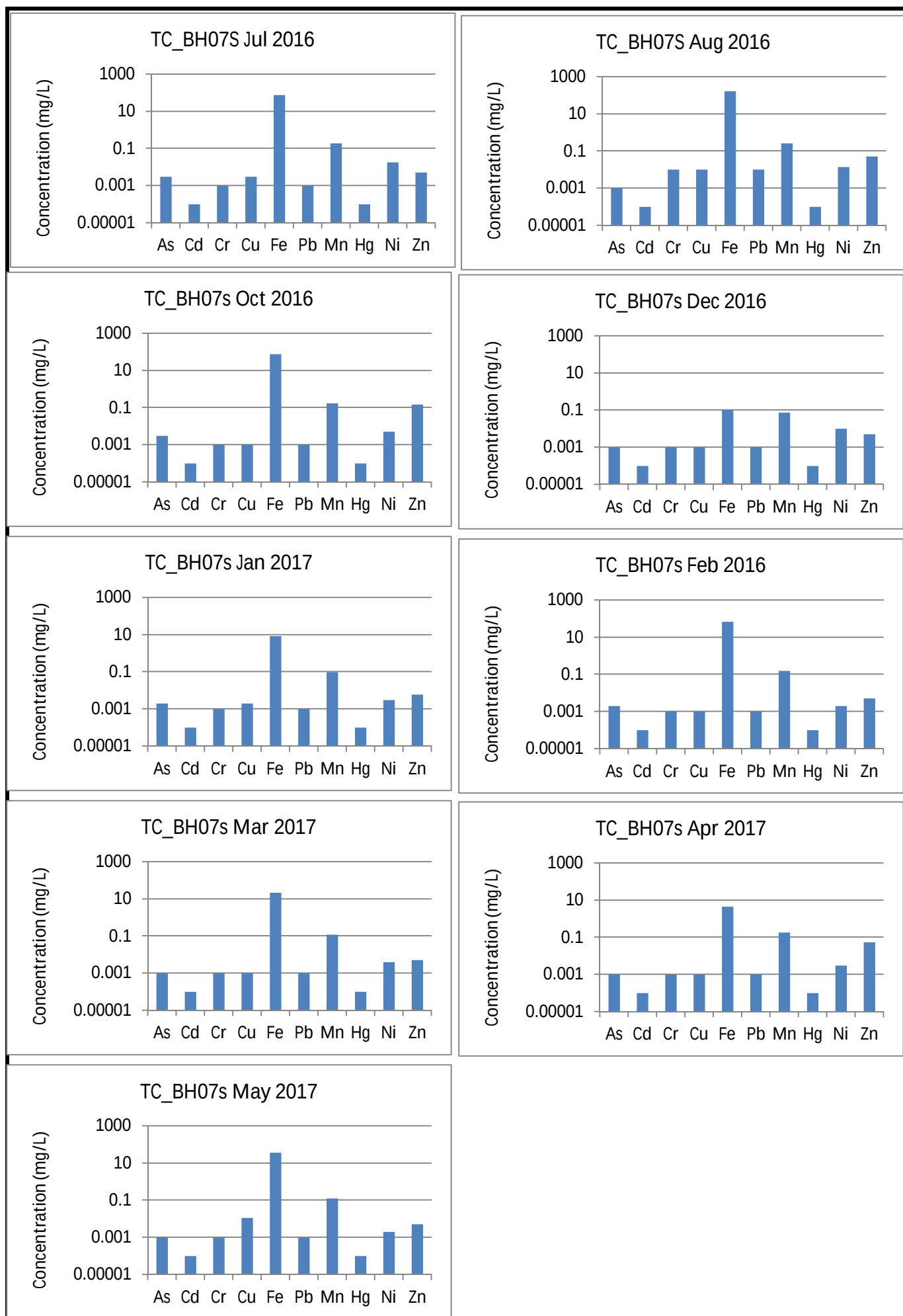
Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - TC_BH01s
 Alluvium - The Crescent

Figure E6.6



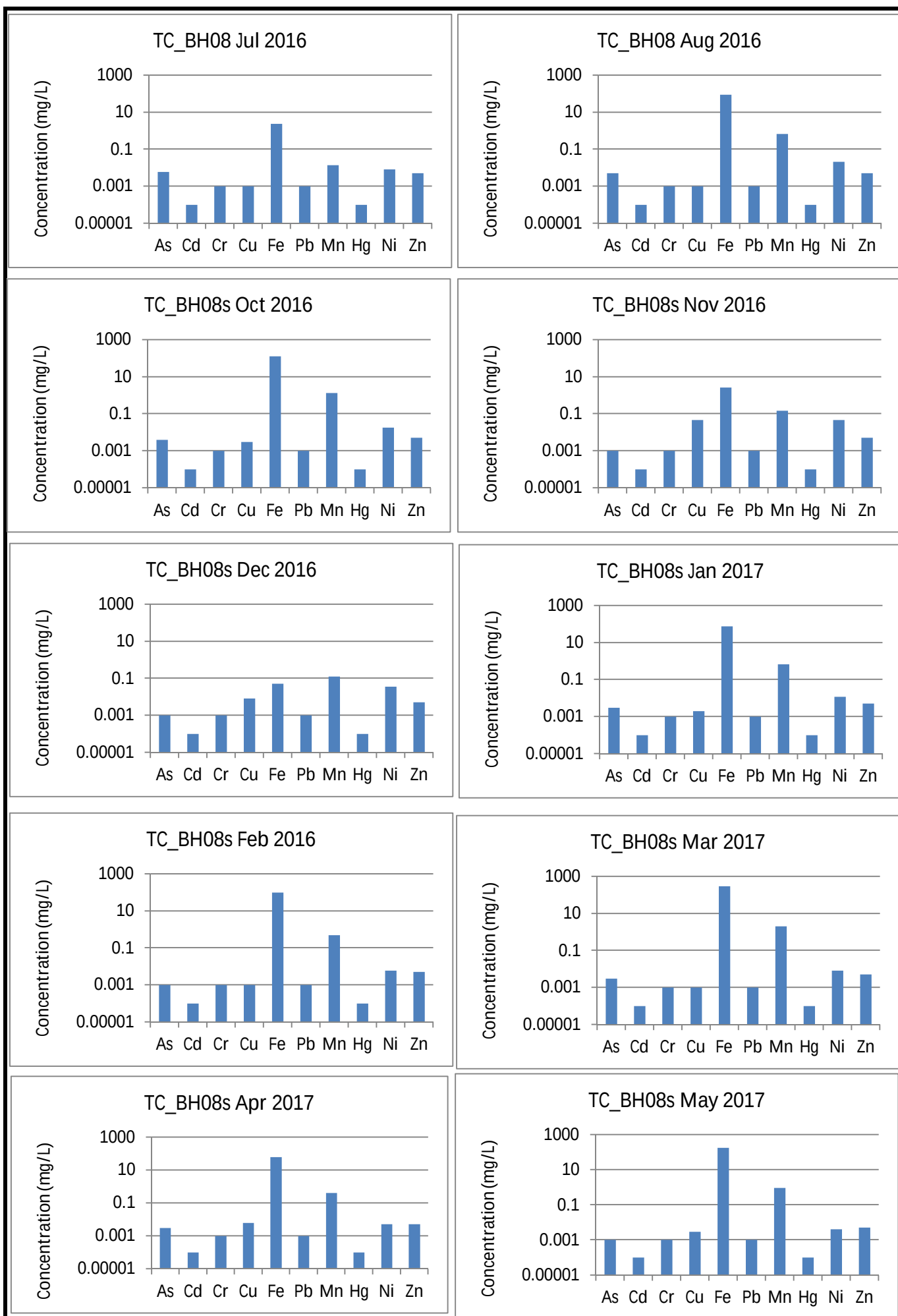
Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - TC_BH06s
 Alluvium - The Crescent

Figure E6.7



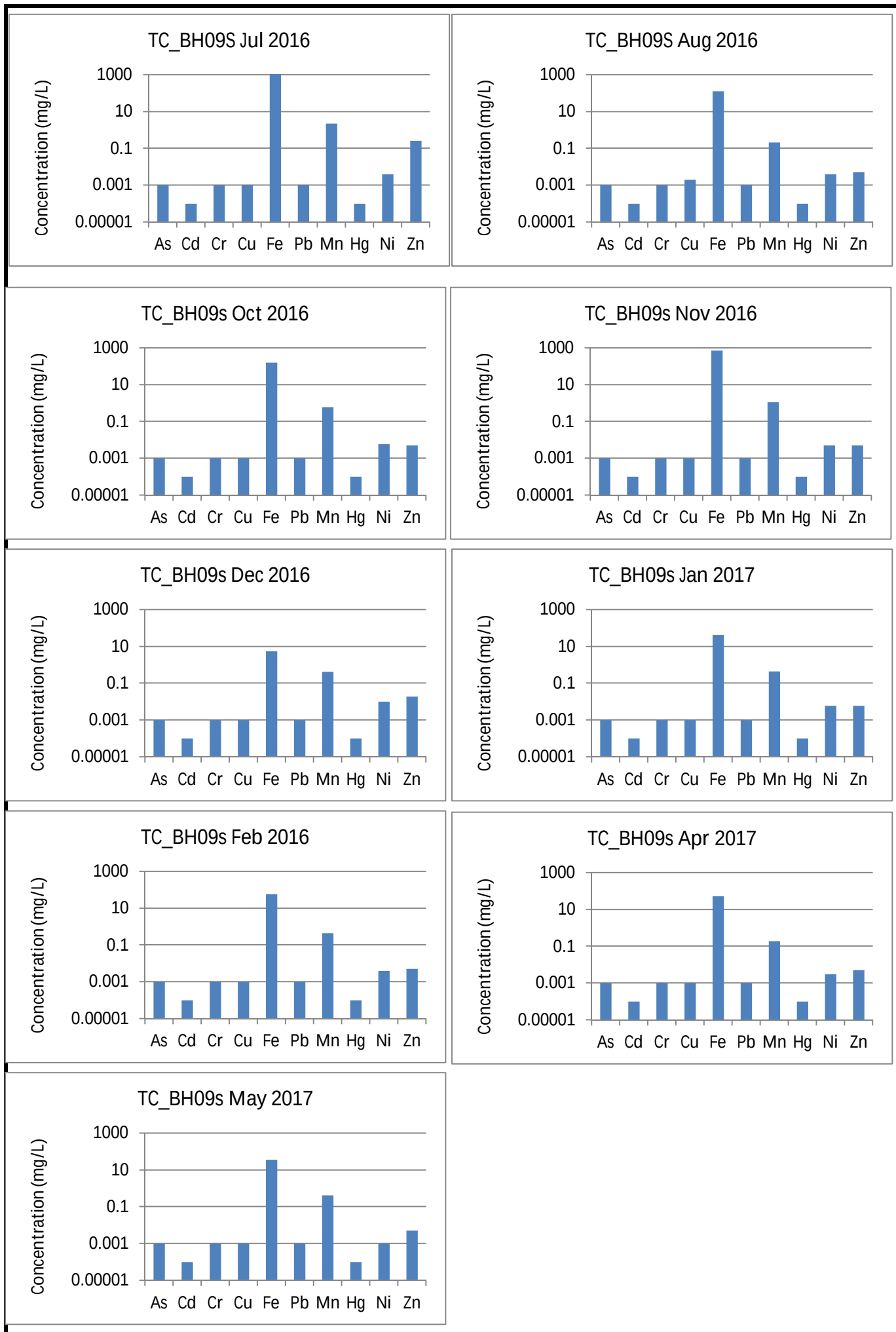
Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - TC_BH07s
 Alluvium - The Crescent

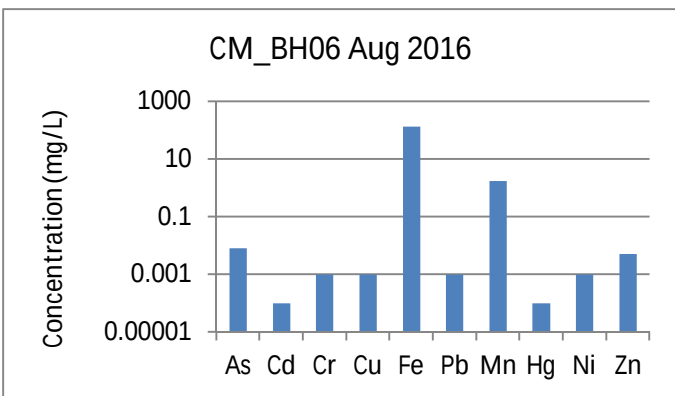
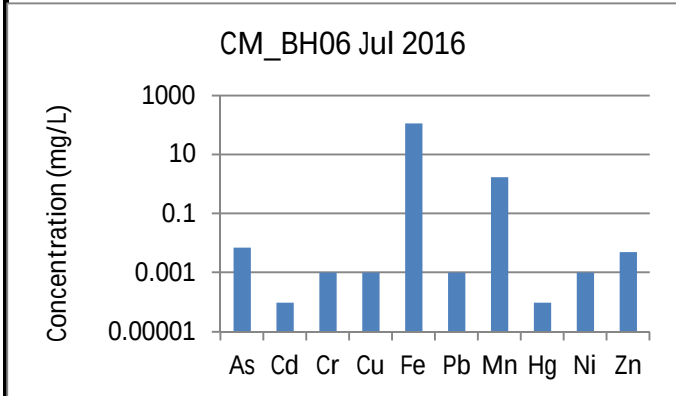
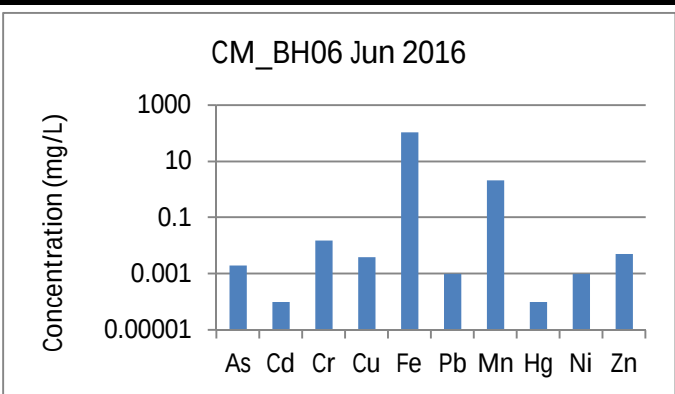
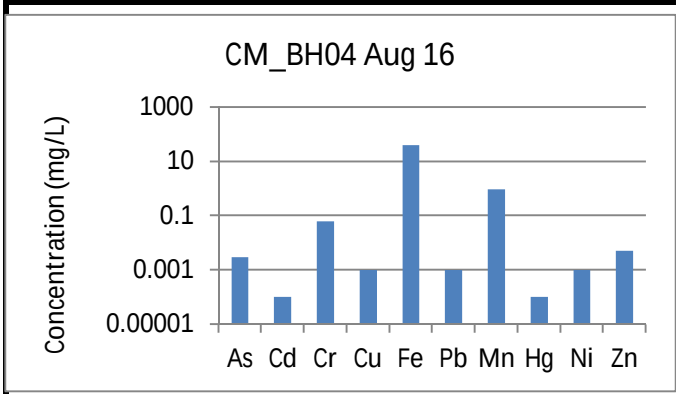
Figure E6.8

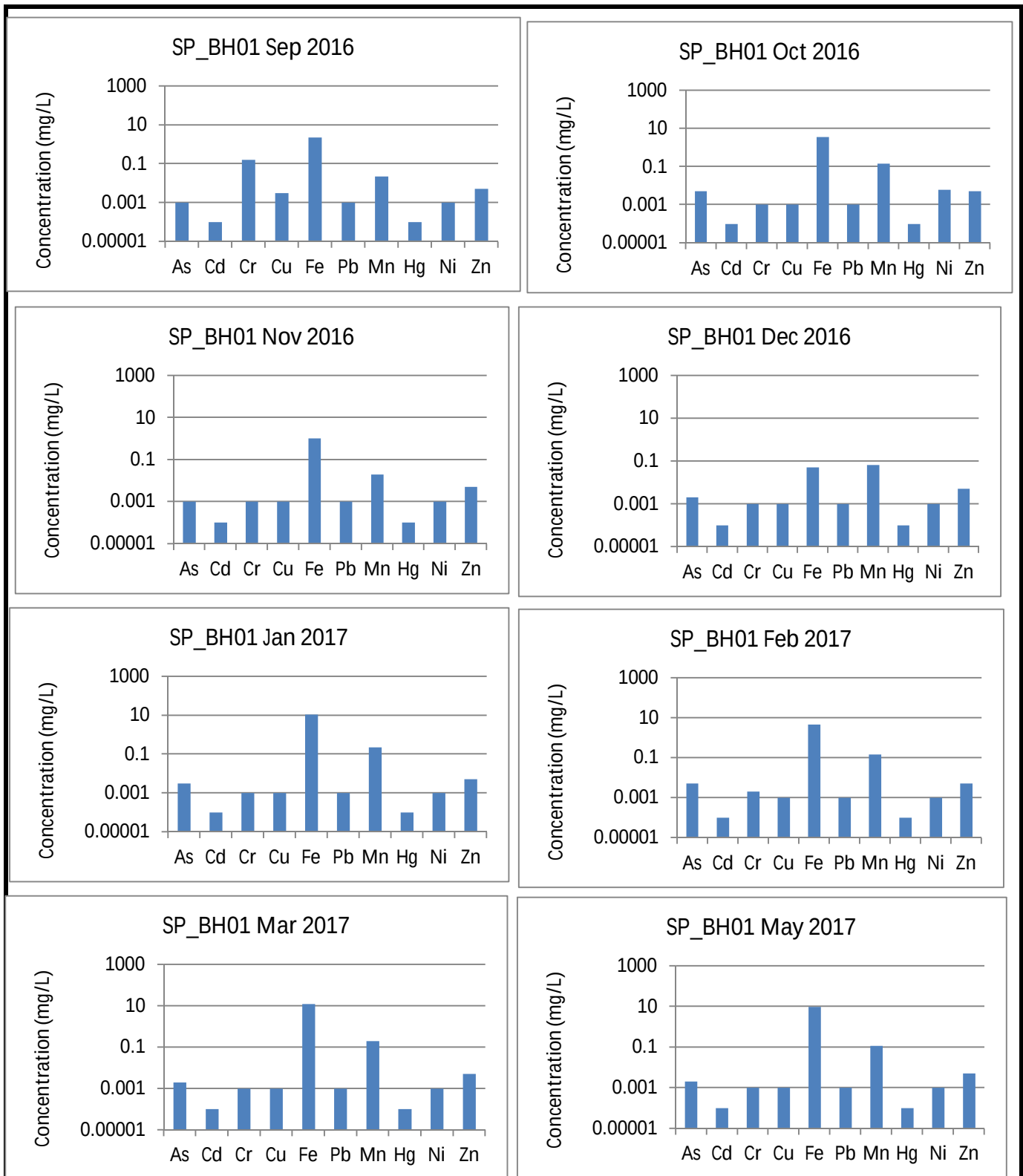


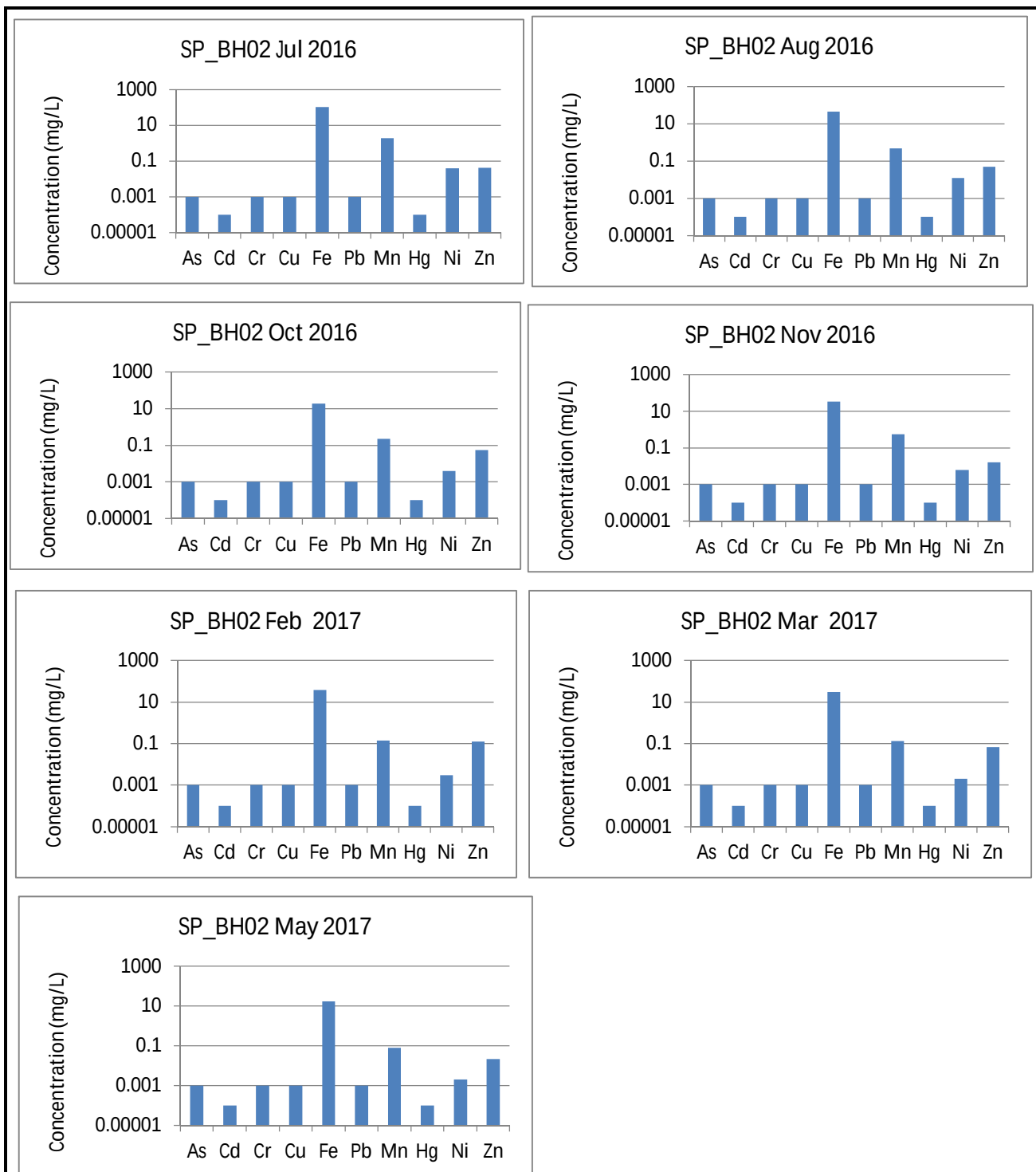
Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - TC_BH08s
 Alluvium - The Crescent

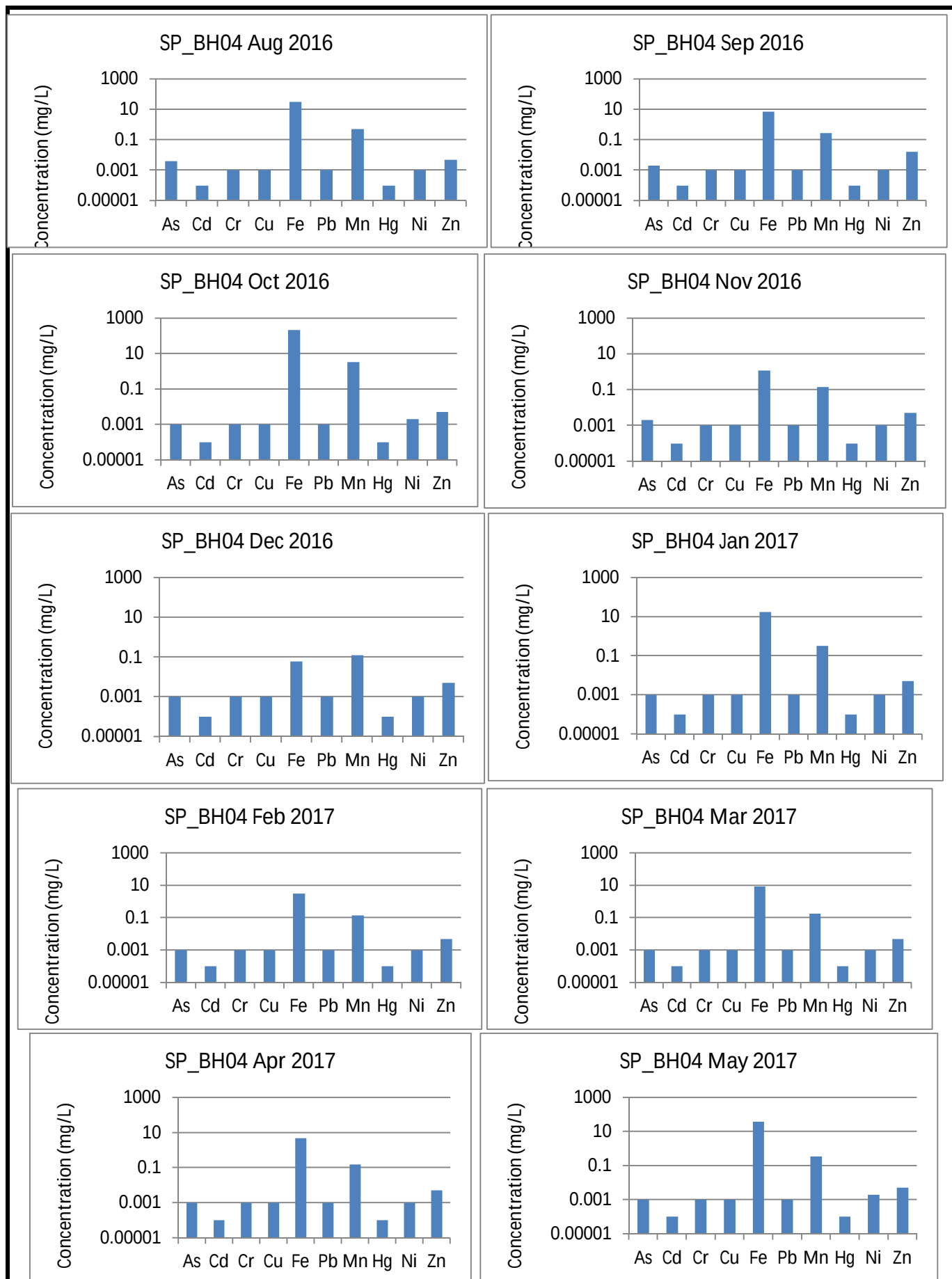
Figure E6.9







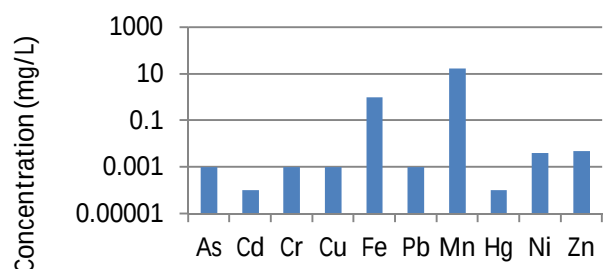




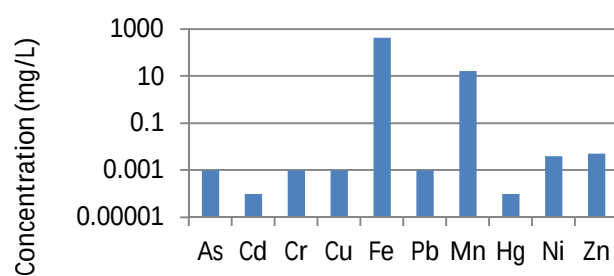
Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - SP_BH04
 Ashfield Shale - St Peters

Figure E7.4

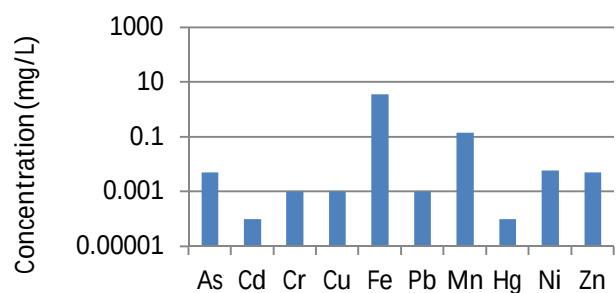
SP_BH06 Nov 2016

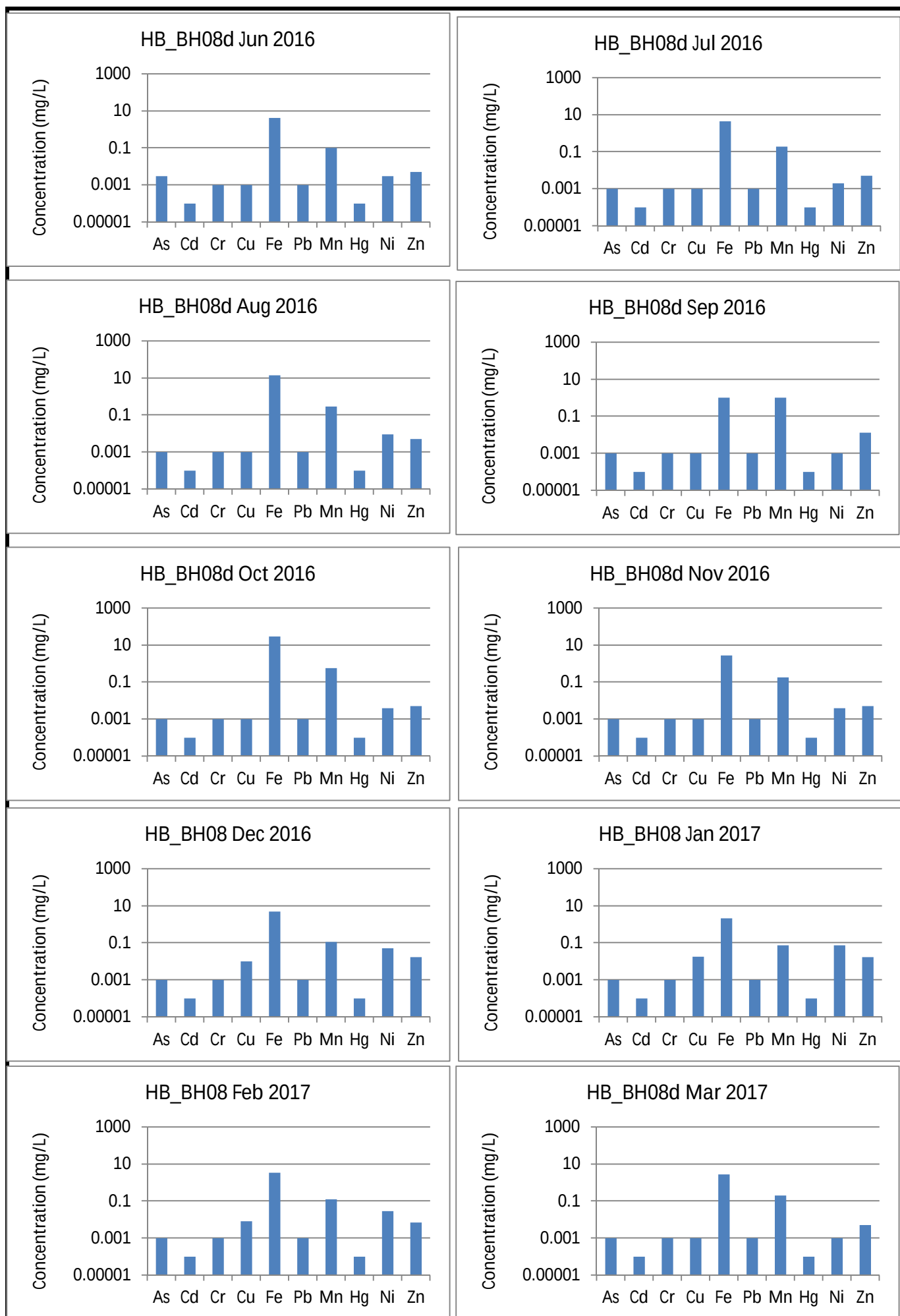


SP_BH06 Dec 2016



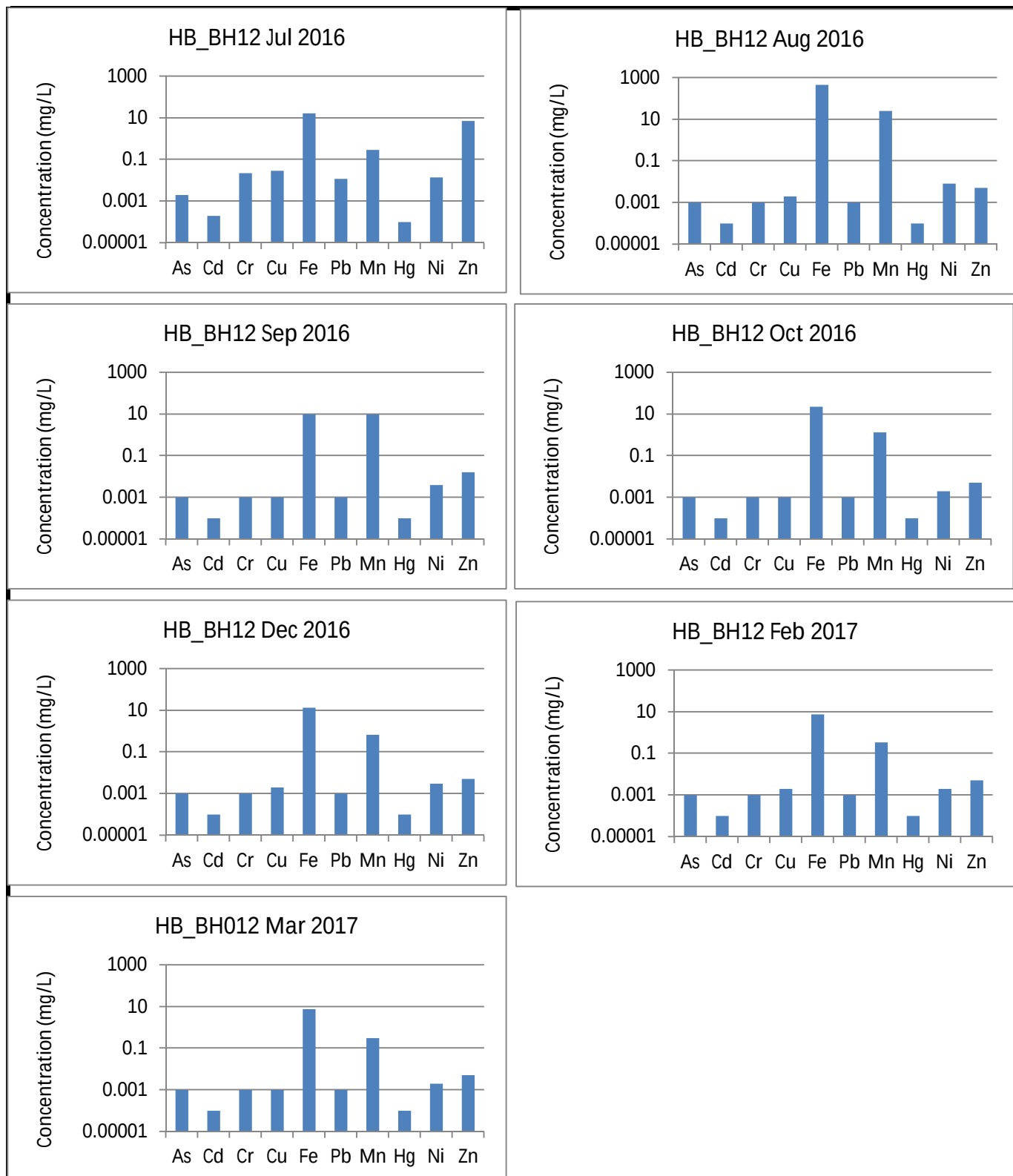
SP_BH09 Jul 2016

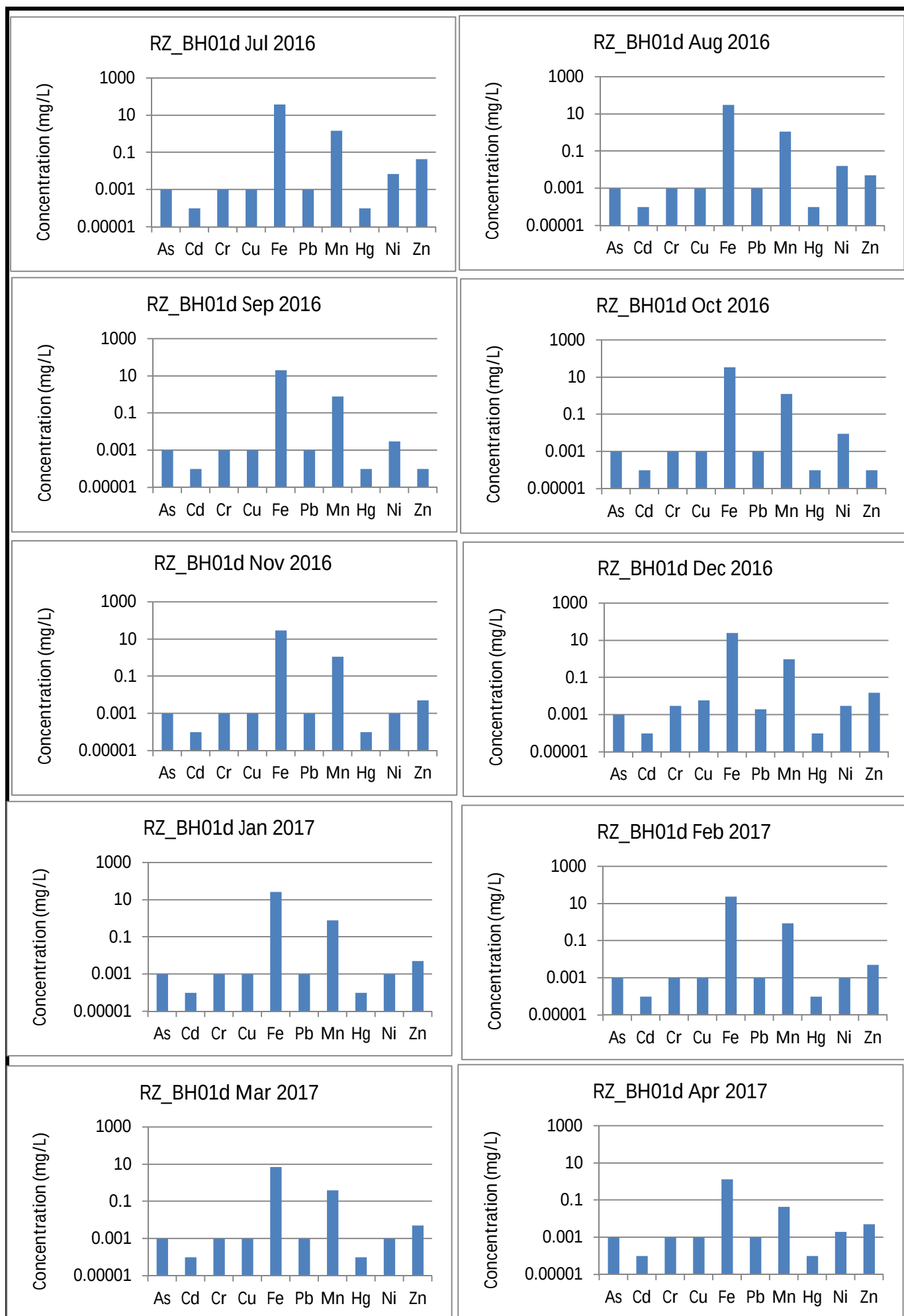




Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - HB_BH08
 Hawkesbury Sandstone - Haberfield Precinct

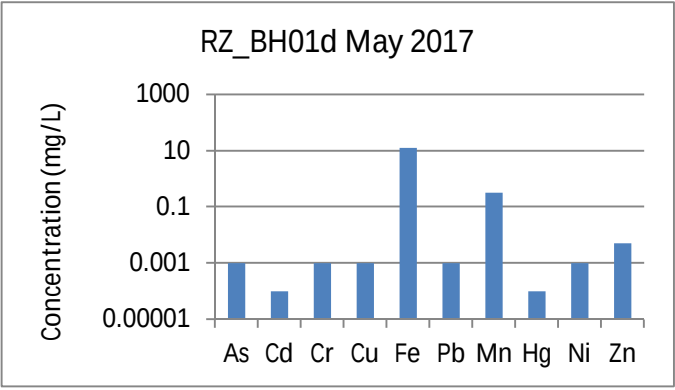
Figure E8.1

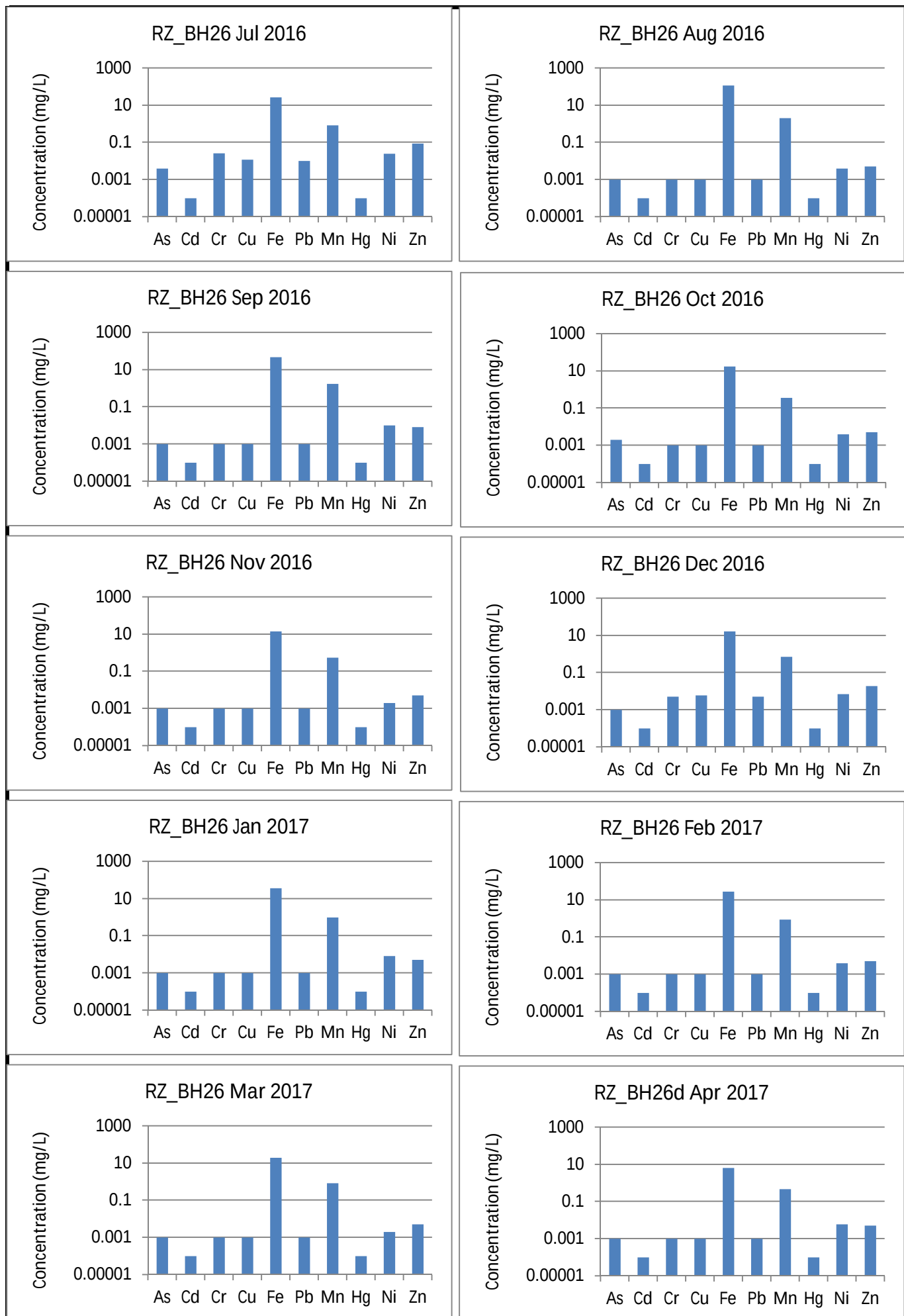




Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - RZ_BH01d
 Hawkesbury Sandstone - Rozelle Precinct

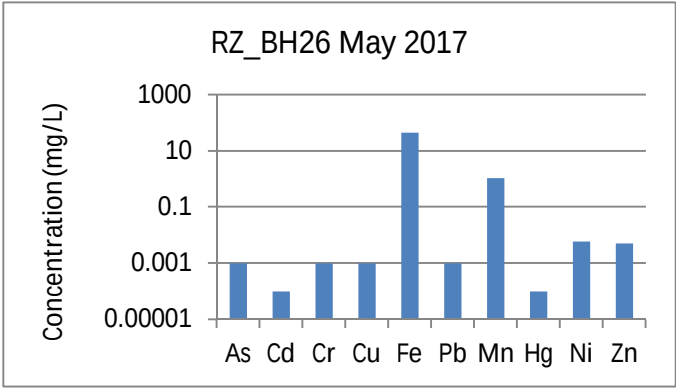
Figure E8.3

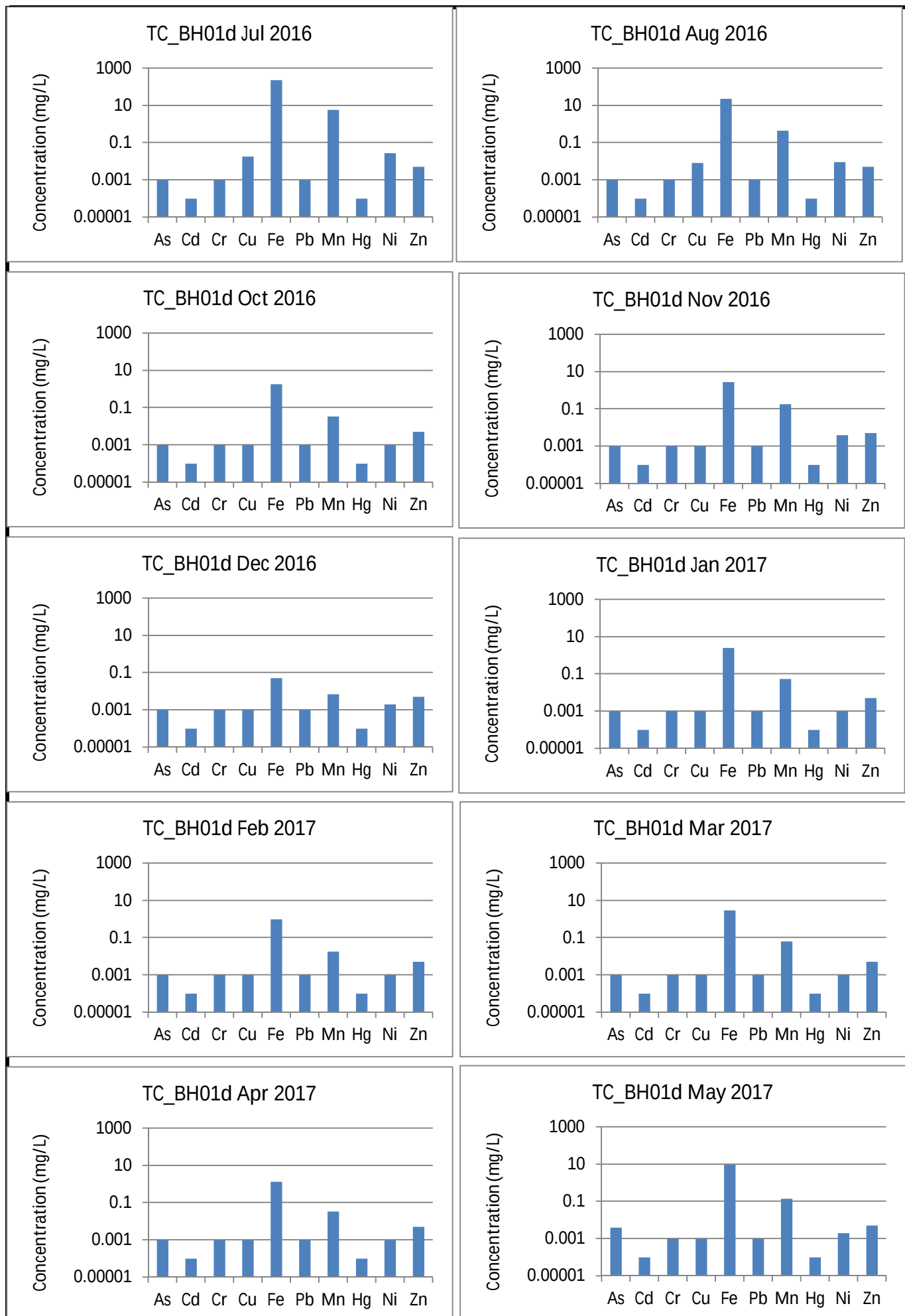




Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - RZ_BH26
 Hawkesbury Sandstone - Rozelle Precinct

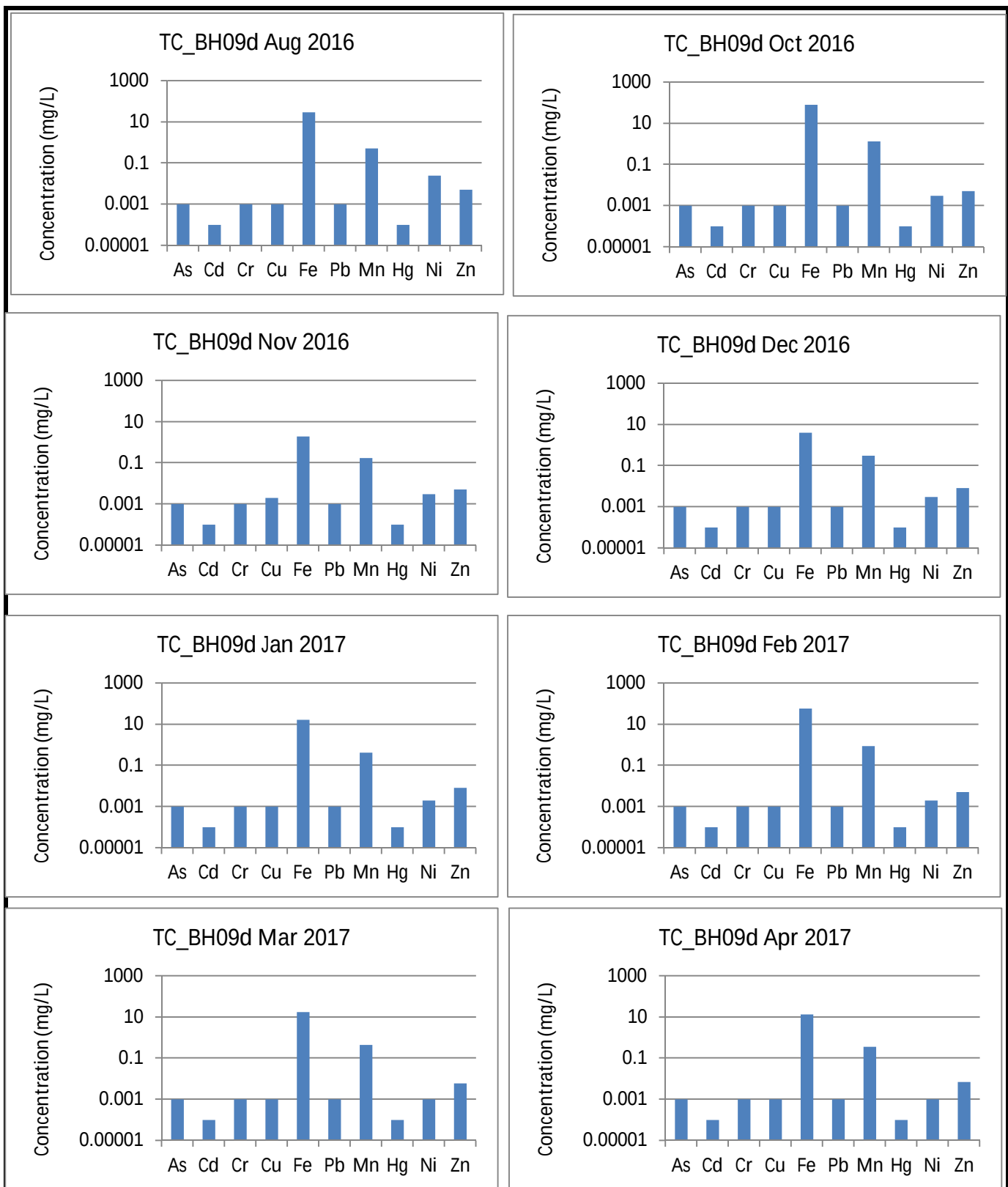
Figure E8.4





Client: Sydney Motorway Corporation
 Project: M4-M5 Link
 Title: Schoeller Diagrams - Metals - TC_BH01d
 Hawkesbury Sandstone - The Crescent Precinct

Figure E8.5



Annexure F – Project borelogs

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Barr St, Camperdown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: TC/NB

Start Date: 22/08/2016

Easting: 331645.5 m

Northing: 6249003.8 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 31/08/2016

RL: 22.64 m

Ver. Datum: AHD

Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 26.0 mBGL Screen Top: 23.0 mBGL Screen/Sensor Base: 26.0 mBGL Instrument Details: - Installation Date: 1/09/2016 Development Date: -		
HA										
	Run 1	97	0		22.0	2.0	ASPHALT	Depth 0.0 to 0.5 m — GATIC COVER		
	Run 2	100	54		20.0	4.0	SANDSTONE, medium grained, yellow-brown			
	Run 3	100	30		18.0	6.0	MUDSTONE, red-brown banded light grey and grey	Depth 0.5 to 18.5 m — GROUT		
	Run 4	100	99		16.0	8.0	SANDSTONE, fine to coarse grained, red-brown, light grey and yellow-brown			
	Run 5	100	100		14.0	10.0	MUDSTONE, dark grey	Depth 18.5 to 21.0 m — BENTONITE		
	Run 6	100	100		12.0	12.0	SANDSTONE, medium to coarse grained, light grey and red-brown			
	Run 7	100	100		10.0	14.0	SANDSTONE, fine to coarse grained, light yellow-brown	Depth 21.0 to 23.0 m — FILTER SAND		
	Run 8	100	100		8.0	16.0				
	Run 9	100	100		6.0	18.0		Depth 23.0 to 26.0 m — PVC SLOTTED SECTION WITH FILTER SAND		
	Run 10	100	100		4.0	20.0	SANDSTONE, fine to coarse grained, light grey			
	Run 11	100	100		2.0	22.0	SANDSTONE, medium to coarse grained, light grey and red-brown	Depth 26.0 to 28.0 m — FILTER SAND		
	Run 12	100	100		0.0	24.0	SANDSTONE, medium grained, grey and brown-grey			
	Run 13	100	100		2.0	26.0	SANDSTONE, medium grained, grey	Depth 28.0 to 35.0 m — BENTONITE		
	Run 14	100	97		4.0	28.0	SANDSTONE, medium grained, grey			
	Run 15	100	97		6.0	30.0	SANDSTONE, medium grained, grey			
	Run 16	100	98		8.0	32.0				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: TC/NB

Checked by: BF

Location: Barr St, Camperdown

Start Date: 22/08/2016

End Date: 31/08/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 331645.5 m

RL: 22.64 m

Drill Rig: Hydrapower Scout

Inclination: -90°

Northing: 6249003.8 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RCD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 26.0 mBGL Screen Top: 23.0 mBGL Screen/Sensor Base: 26.0 mBGL Instrument Details: - Installation Date: 1/09/2016 Development Date: -	
HQ3	Run 22	100	97		28.0			Depth 28.0 to 35.0 m BENTONITE	
	Run 23	100	98		32.0				
	Run 24	100	100		34.0			Depth 35.0 to 50.0 m BENTONITE + CEMENT	
	Run 25	100	100		36.0				
	Run 26	100	100		38.0			SANDSTONE, coarse grained, light grey	
	Run 27	100	100		40.0				
	Run 28	100	100		42.0			LAMINITE	
	Run 29	100	97		44.0				
	Run 30	100	100		46.0			SANDSTONE, medium to coarse grained, light grey	
	Run 31	100	100		48.0				
	Run 32	100	100		50.0			CM_BH01 Terminated at 50.00 m.	
	Run 33	100	100		52.0				
	Run 34	100	100		54.0				
	Run 35	100	100		56.0				
	Run 36	100	99		58.0				
	Run 37	100	100		60.0				

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Ross St, Camperdown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Checked by:BF

Start Date: 16/08/2016

End Date: 22/08/2016

Easting: 332076.5 m

RL: 24.46 m

Northing: 6249145.8 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-5

Surface: Asphalt

Field Data							Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe		
										Pipe Diameter:	50 mm	
										Pipe Top:	0.0 mBGL	
										Pipe Base:	19.0 mBGL	
										Screen Top:	16.0 mBGL	
										Screen/Sensor Base:	19.0 mBGL	
										Instrument Details:	-	
										Installation Date:	24/08/2016	
										Development Date:	-	
HA						24.0		ASPHALT	20	Depth 0.0 to 0.5 m		GATIC COVER
						2.0		Gravelly SAND	60			
AD						22.0		CONCRETE	200			
						4.0		Sandy GRAVEL, coarse grained, brown	600			
						20.0		Sandy CLAY, red-brown	2000			
	Run 1	100	0			6.0		CLAY, black		Depth 0.5 to 11.9 m		GROUT
	Run 2	100	60			18.0		CLAY, red				
						8.0		MUDSTONE, pale grey				
	Run 3	100	68			16.0		MUDSTONE, dark grey and dark brown				
						10.0						
	Run 4	100	100			12.0				Depth 11.9 to 14.0 m		BENTONITE
						14.0						
	Run 5	100	90			10.0		MUDSTONE, dark grey		Depth 14.0 to 16.0 m		FILTER SAND
						16.0						
	Run 6	100	93			18.0				Depth 16.0 to 19.0 m		PVC SLOTTED SECTION WITH FILTER SAND
						16.0						
	Run 7	100	50			20.0		INTERBEDDED MUDSTONE AND SANDSTONE		Depth 19.0 to 21.1 m		FILTER SAND
						4.0						
	Run 8	100	97			22.0		SANDSTONE, medium grained, light grey				
						22.0						
						24.0		NO CORE		Depth 21.1 to 26.5 m		BENTONITE
						24.0		SANDSTONE, medium grained, light grey				
						26.0						
	Run 9	100	47			26.0						
						28.0				Depth 26.5 to 40.0 m		BENTONITE + CEMENT
	Run 10	100	85			28.0						
						30.0						
	Run 11	100	100			30.0						

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Ross St, Camperdown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Checked by: BF

Start Date: 16/08/2016

End Date: 22/08/2016

Easting: 332076.5 m

RL: 24.46 m

Northing: 6249145.8 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 19.0 mBGL Screen Top: 16.0 mBGL Screen/Sensor Base: 19.0 mBGL Instrument Details: - Installation Date: 24/08/2016 Development Date: -	
HQ3	Run 12	100	90		16.0			Defect Spacing (mm) 20 60 200 500 1000 2000	Depth 26.5 to 40.0 m — BENTONITE + CEMENT
	Run 13	100	100		32.0				
	Run 14	100	100		34.0				
	Run 15	100	100		36.0				
	Run 16	100	100		38.0				
					40.0				
					42.0				
					44.0				
					46.0				
					48.0				
					50.0				
					52.0				
					54.0				
					56.0				
					58.0				
					60.0				

SANDSTONE, medium grained, light grey
continued

SANDSTONE, fine grained, grey

SANDSTONE, medium grained, grey

CM_BH04 Terminated at 40.00 m.

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Opp 71 Arundel St, Camperdown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Checked by:BF

Start Date: 11/05/2016

End Date: 19/05/2016

Easting: 332317.7 m

RL: 37.00 m

Northing: 6249160.5 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	HA	ADT						Construction Details:		
Core Run								Pipe Diameter:	Machine slotted PVC pipe	
TCR (%)								Pipe Top:	0.0 mBGL	
RQD (%)								Pipe Base:	28.0 mBGL	
Ground Water								Screen Top:	28.0 mBGL	
Reduced Level (m)								Screen/Sensor Base:	25.0 mBGL	
Depth (m)								Instrument Details:		
Graphic Log								Installation Date:	19/05/2016	
								Development Date:		
									Depth 0.0 to 0.5 m — GATIC COVER	
									Depth 0.5 to 21.0 m — GROUT	
									Depth 21.0 to 23.0 m — BENTONITE	
									Depth 23.0 to 25.0 m — FILTER SAND	
									Depth 25.0 to 28.0 m — PVC SLOTTED SECTION WITH FILTER SAND	
									Depth 28.0 to 30.0 m — FILTER SAND	

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Opp 71 Arundel St, Camperdown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Checked by:BF

Start Date: 11/05/2016

End Date: 19/05/2016

Easting: 332317.7 m

RL: 37.00 m

Northing: 6249160.5 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log		Defect Spacing (mm)
HQ3	Run 13	100	100		30.0	32.0	SANDSTONE, medium grained, light grey <i>continued</i>		20 80 200 600 2000
	Run 14	100	100		34.0	36.0	SANDSTONE, medium grained, light grey		
	Run 15	100	100		36.0	38.0			
	Run 16	100	100		38.0	40.0			
	Run 17	100	100		40.0	42.0			
	Run 18	100	100		44.0	46.0			
	Run 19	100	100		46.0	48.0			
	Run 20	100	100		48.0	50.0			
					50.0		<i>CM_BH06 Terminated at 50.00 m.</i>		
					52.0				
					54.0				
					56.0				
					58.0				
					60.0				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Opp 37A Arundel St, Camperdown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Checked by: BF

Start Date: 27/05/2016

End Date: 31/05/2016

Easting: 332503.6 m

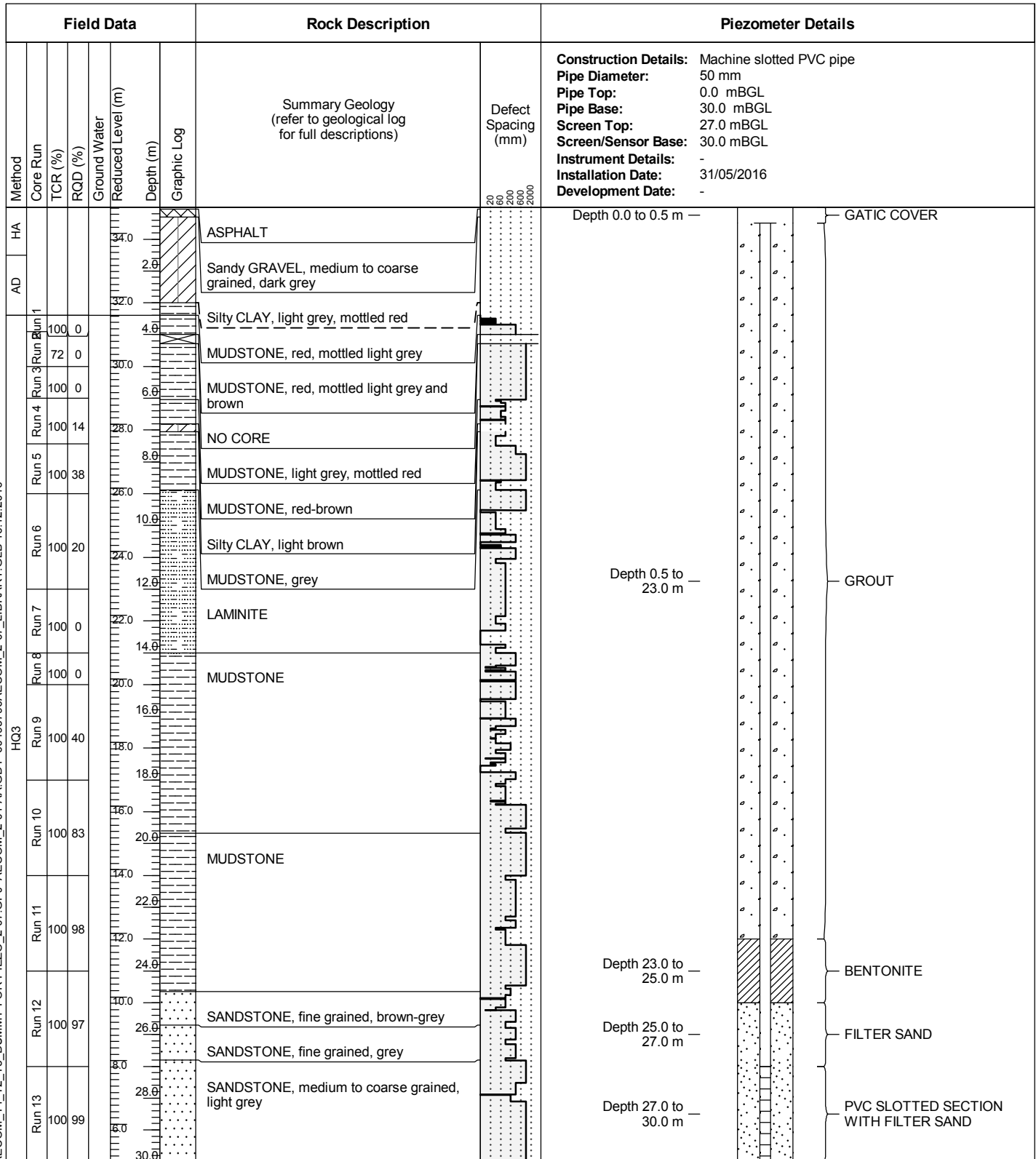
RL: 34.82 m

Northing: 6249167.8 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt



CM_BH08 Terminated at 30.00 m.

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: LH

Checked by: BF

Location: Opp 21 Arundel St, Camperdown

Start Date: 11/05/2016

End Date: 12/05/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 332612.0 m

RL: 31.36 m

Drill Rig: Hydrapower Scout

Inclination: -90°

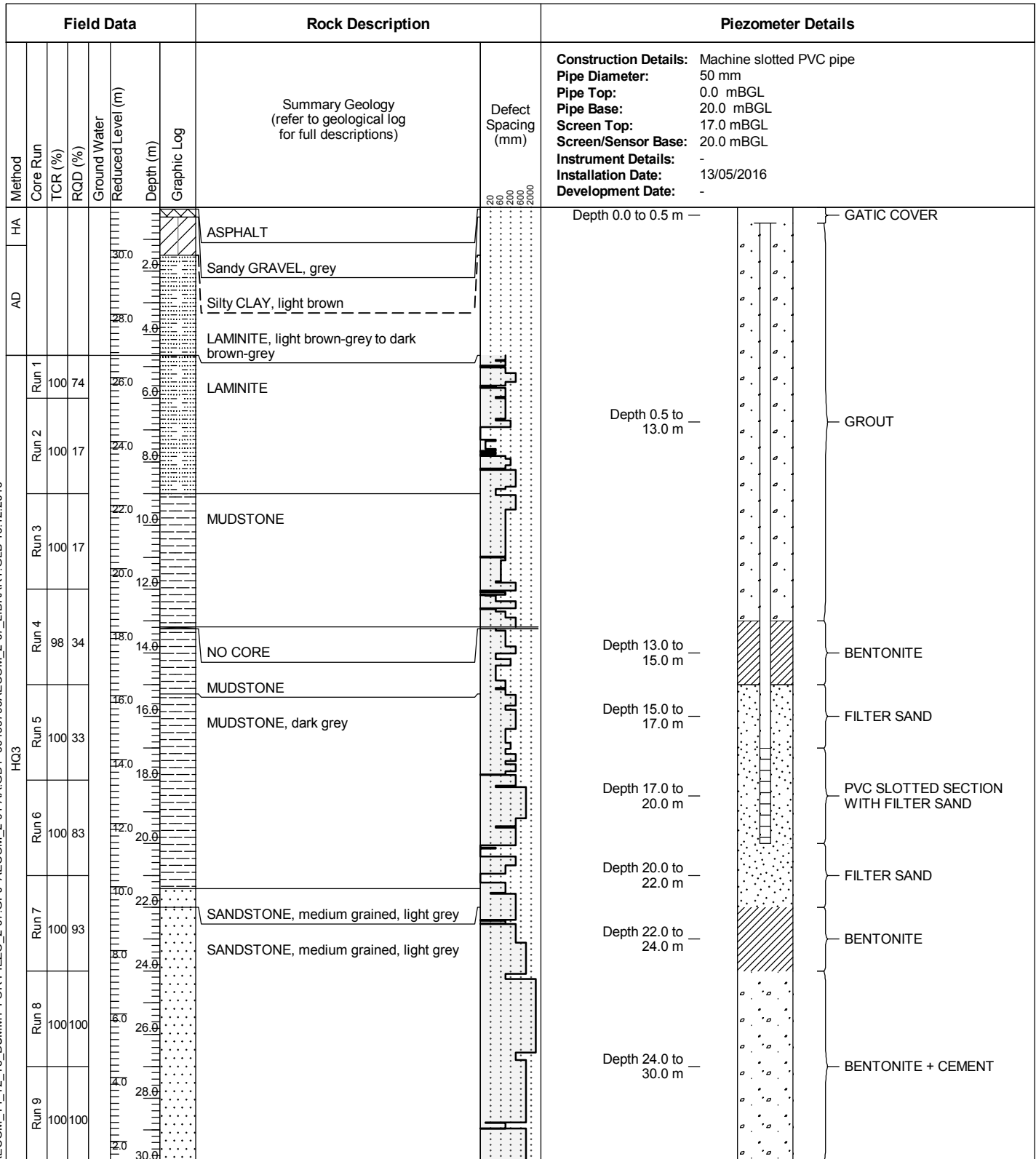
Northing: 6249165.5 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt



CM_BH10 Terminated at 30.00 m.

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Lilyfield Road, Rozelle

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hanjin D&B

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Start Date: 21/10/2016

Easting: 331025.4 m

Northing: 6250903.9 m

Hor. Proj/Dat: MGA94/GDA94-56H

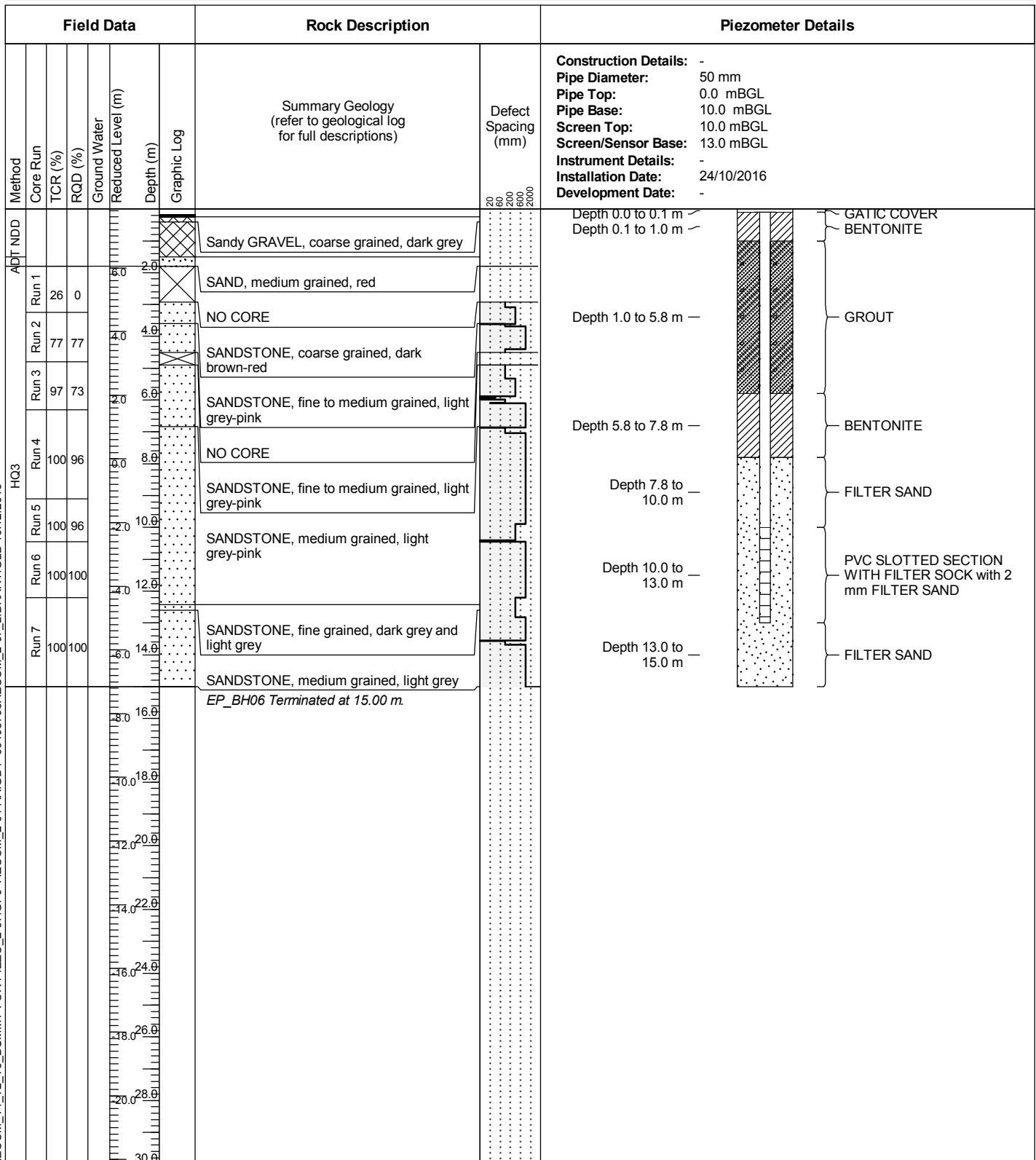
Checked by:

End Date: 25/10/2016

RL: 7.85 m

Ver. Datum: AHD

Surface: Asphalt

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Lilyfield Road, Rozelle

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hanjin D&B

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Start Date: 26/10/2016

Easting: 331082.3 m

Northing: 6250898.8 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:

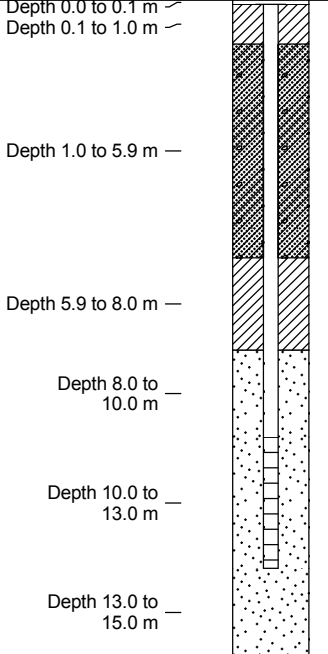
End Date: 26/10/2016

RL: 10.54 m

Ver. Datum: AHD

Surface: Road

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 10.0 mBGL Screen Top: 10.0 mBGL Screen/Sensor Base: 13.0 mBGL Instrument Details: Installation Date: 26/10/2016 Development Date: 27/10/2016
HQ3	Run 1	48	16		10.0	0.0		ASPHALT		Depth 0.0 to 0.1 m Depth 0.1 to 1.0 m
	Run 2	67	14		9.8	2.0		Sandy GRAVEL, coarse grained, dark grey		Depth 1.0 to 5.9 m
	Run 3	48	0		9.6	4.0		Sandy GRAVEL, dark grey		
	Run 4	69	40		9.4	6.0		NO CORE		
	Run 5	100	85		9.2	8.0		SANDSTONE, coarse grained, light grey and yellow-brown		Depth 5.9 to 8.0 m
	Run 6	79	19		9.0	10.0		NO CORE		
	Run 7	100	72		8.8	12.0		SANDSTONE, fine to coarse grained, red-brown		
	Run 8	89	25		8.6	14.0		NO CORE		Depth 8.0 to 10.0 m
	Run 9	53	10		8.4	16.0		SANDSTONE		
	Run 10	95	61		8.2	18.0		NO CORE		
	Run 11	97	65		8.0	20.0		SANDSTONE, coarse grained, light grey and yellow-brown		Depth 10.0 to 13.0 m
	Run 12	100	79		7.8	22.0		NO CORE		
				7.6	24.0		SANDSTONE, coarse grained, light grey and yellow-brown		Depth 13.0 to 15.0 m	
				7.4	26.0		NO CORE			
				7.2	28.0		SANDSTONE, fine to medium grained, light grey and yellow-brown			
				7.0	30.0		NO CORE		GROUT	
				6.8	32.0		SANDSTONE, medium grained, light to mid grey			
				6.6	34.0		NO CORE			
				6.4	36.0		SANDSTONE, medium grained, light grey		BENTONITE	
				6.2	38.0		NO CORE			
				6.0	40.0		SANDSTONE, medium grained, light grey			
				5.8	42.0			EP_BH07 Terminated at 15.00 m.		



REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Cnr Martin St, City West Link

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Start Date: 3/05/2016

Easting: 327574.8 m

Northing: 6250197.4 m

Hor. Proj/Dat: MGA94/GDA94-56H

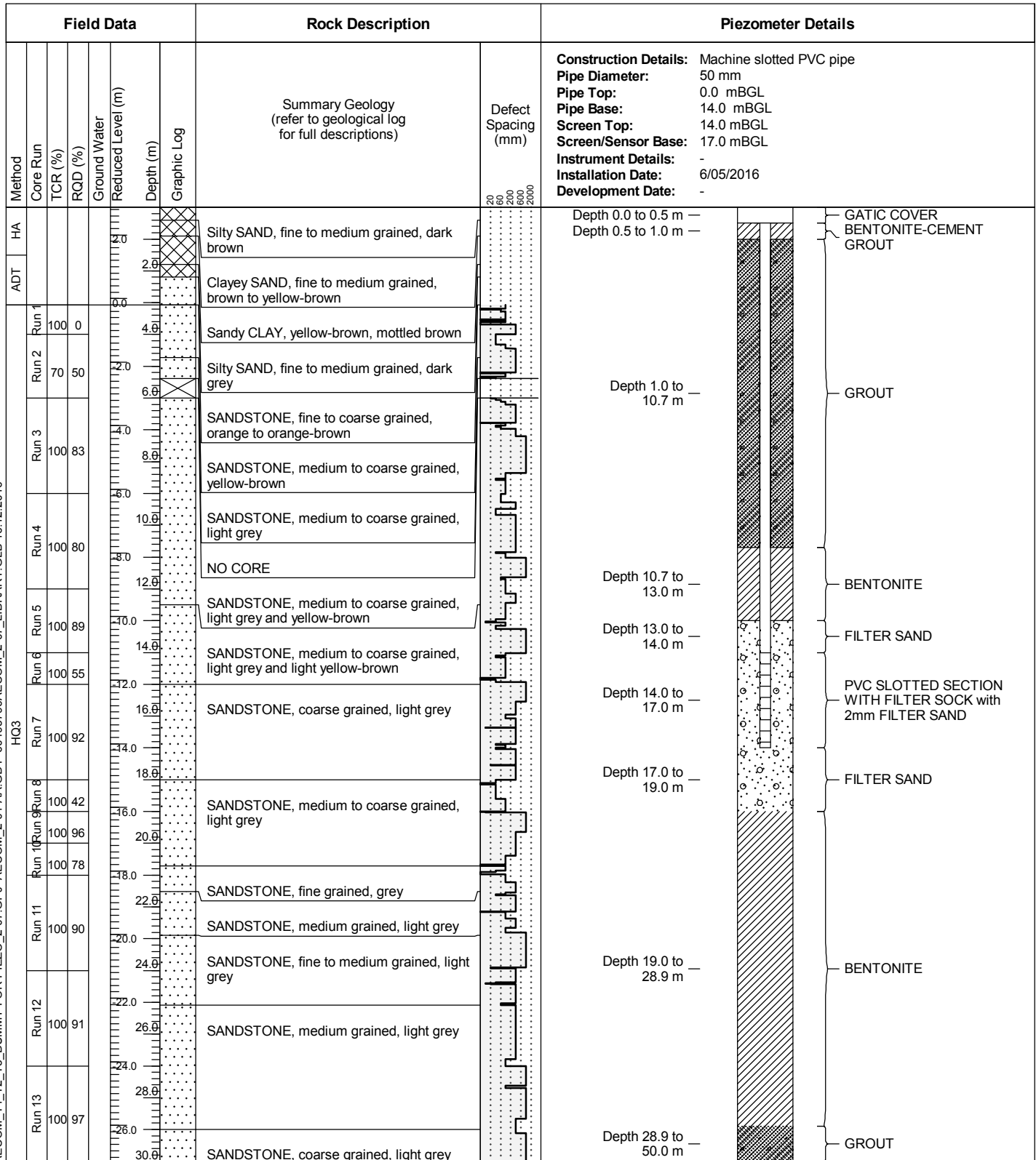
Checked by: BF

End Date: 4/05/2016

RL: 2.87 m

Ver. Datum: AHD

Surface: Grass



REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Cnr Martin St, City West Link

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Start Date: 3/05/2016

Easting: 327574.8 m

Northing: 6250197.4 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 4/05/2016

RL: 2.87 m

Ver. Datum: AHD

Surface: Grass

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 14.0 mBGL Screen Top: 14.0 mBGL Screen/Sensor Base: 17.0 mBGL Instrument Details: - Installation Date: 6/05/2016 Development Date: -	
HQ3	Run 14	100	95		28.0	32.0	SANDSTONE, coarse grained, light grey <i>continued</i>	Defect Spacing (mm) 20 60 200 500 1000 2000	Depth 28.9 to 50.0 m GROUT
	Run 15	100	99		30.0	34.0	SANDSTONE, medium to coarse grained, light grey		
	Run 16	100	100		32.0	36.0			
	Run 17	100	98		34.0	38.0	SANDSTONE, medium to coarse grained, light grey		
	Run 18	100	98		36.0	40.0	SANDSTONE, medium grained, light grey		
	Run 19	100	98		38.0	42.0	SANDSTONE, medium to coarse grained, light grey		
	Run 20	100	98		40.0	44.0	SANDSTONE, medium to coarse grained, light grey		
					42.0	46.0			
					44.0	48.0	SANDSTONE, coarse grained, light grey		
					46.0	48.0	SANDSTONE, medium to coarse grained, light grey		
					50.0	50.0	HB_BH02 Terminated at 50.00 m.		
					52.0				
					54.0				
					56.0				
					58.0				
					60.0				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: Parking Lane, Alternate St, Haberfield

Driller: Terratest Pty Ltd
Drill Rig: Ausroc 4000

Hole Diameter: 96 mm
Inclination: -90°
Bearing: N/A

Project No: 60493796
Logged by: NB
Start Date: 27/06/2016
Easting: 327764.1 m
Northing: 6250215.8 m
Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF
End Date: 30/06/2016
RL: 6.23 m
Ver. Datum: AHD
Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 19.6 mBGL Screen Top: 14.6 mBGL Screen/Sensor Base: 17.6 mBGL Instrument Details: - Installation Date: 1/07/2016 Development Date: -
					6.0	0.0		ASPHALT	20	Depth 0.0 to 0.5 m —
					2.0	2.0		Clayey SAND, fine to medium grained, yellow-brown	60	Depth 0.5 to 11.0 m —
					4.0	4.0		CLAY, yellow-brown	200	
					4.0	4.0		SANDSTONE, fine to medium grained, light grey	200	
					6.0	6.0		SANDSTONE, fine to medium grained	200	
					8.0	8.0		SANDSTONE, medium to coarse grained, light grey and red-brown	200	
					10.0	10.0		NO CORE	200	Depth 11.0 to 12.6 m —
					12.0	12.0		SANDSTONE, medium to coarse grained, light grey	200	
					12.0	12.0		SANDSTONE, fine to coarse grained, light grey, yellow-brown and red-brown	200	Depth 12.6 to 14.6 m —
					14.0	14.0		SANDSTONE, fine to medium grained, grey	200	
					16.0	16.0		SANDSTONE, medium to coarse grained, light grey	200	Depth 14.6 to 17.6 m —
					18.0	18.0		SANDSTONE, coarse grained, light grey	200	
					20.0	20.0		HB_BH03A Terminated at 20.00 m.	2000	Depth 17.6 to 19.6 m —

REMARKS: The material properties are taken from the adjacent borehole HB_BH03
 GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: Richard Murden Res, Hawthorne Pde, Haberfield
Driller: Hagstrom Drilling Pty Ltd
Drill Rig: Hydrapower Scout

Hole Diameter: 96 mm
Inclination: -90°
Bearing: N/A

Project No: 60493796
Logged by: NB
Start Date: 6/05/2016
Easting: 328752.0 m
Northing: 6250138.2 m
Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF
End Date: 10/05/2016
RL: 1.58 m
Ver. Datum: AHD
Surface: Grass

Field Data						Rock Description			Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe		
HA									20 60 200 600 2000	Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 25.0 mBGL Screen Top: 22.0 mBGL Screen/Sensor Base: 25.0 mBGL Instrument Details: - Installation Date: 11/05/2016 Development Date: -		
ADT						0.0		Sandy SILT, dark brown		Depth 0.0 to 0.5 m —		GATIC COVER BENTONITE - CEMENT GROUT (HIGHER % BENTONITE)
						2.0		Sandy SILT, dark brown to grey	Depth 0.5 to 1.0 m —			
						4.0		Sandy CLAY, dark grey			BENTONITE - CEMENT GROUT	
						6.0		Clayey SAND, fine to medium grained, dark grey-brown				
						8.0		Silty SAND, fine to medium grained, grey				
						10.0		SAND, fine to coarse grained, dark grey-brown				
						12.0		Silty CLAY, dark grey-brown				
CA						14.0		Sandy CLAY, dark grey-brown	Depth 1.0 to 17.7 m —		BENTONITE	
16.0							Silty CLAY, dark grey-brown					
18.0							Silty SAND, fine to medium grained, dark grey			FILTER SAND		
20.0							SANDSTONE, light grey, mottled yellow-brown	Depth 17.7 to 20.0 m —				
22.0							SANDSTONE, medium to coarse grained, light grey and light yellow-brown	Depth 20.0 to 22.0 m —		PVC SLOTTED SECTION WITH FILTER SAND		
24.0							SANDSTONE, medium grained, light grey	Depth 22.0 to 25.0 m —				
HQ3						Run 1	100	80		26.0		SANDSTONE, medium to coarse grained, light grey
	Run 2	100	91		28.0		SANDSTONE, medium grained, light grey	Depth 27.0 to 32.0 m —		BENTONITE		
	Run 3	100	97		30.0		MUDSTONE					
	Run 4	100	77		32.0		SANDSTONE, medium to coarse grained, light grey					
	Run 5	100	98		34.0		SANDSTONE, fine to medium grained, light brown-grey					
	Run 6	100	97		36.0		SANDSTONE, medium to coarse grained, light grey					

REMARKS:
 GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: Richard Murden Res, Hawthorne Pde, Haberfield
Driller: Hagstrom Drilling Pty Ltd
Drill Rig: Hydrapower Scout

Hole Diameter: 96 mm
Inclination: -90°
Bearing: N/A

Project No: 60493796
Logged by: NB
Start Date: 6/05/2016
Easting: 328752.0 m
Northing: 6250138.2 m
Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF
End Date: 10/05/2016
RL: 1.58 m
Ver. Datum: AHD
Surface: Grass

Field Data							Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe	
										Pipe Diameter: 50 mm	
HQ3	Run 7	100	95		30.032.0	20		SANDSTONE, medium grained, light grey	60	Pipe Top: 0.0 mBGL	
						200		SANDSTONE, medium grained, light grey <i>continued</i>	200	Pipe Base: 25.0 mBGL	
	Run 8	100	96		32.034.0	200		SANDSTONE, fine to medium grained, light grey	600	Screen Top: 22.0 mBGL	
	Run 9	100	98		34.036.0	600		SANDSTONE, medium to coarse grained, light grey	2000	Screen/Sensor Base: 25.0 mBGL	
	Run 10	100	100		36.038.0			SANDSTONE, medium grained, light grey		Instrument Details: -	
	Run 11	100	88		38.040.0			SANDSTONE, fine to medium grained, light grey		Installation Date: 11/05/2016	
								SANDSTONE, medium to coarse grained, light grey		Development Date: -	
					40.042.0			HB_BH08 Terminated at 40.00 m.		Depth 27.0 to — 32.0 m Depth 32.0 to — 40.0 m BENTONITE BENTONITE - CEMENT GROUT	
					42.044.0						
					44.046.0						
					46.048.0						
					48.050.0						
					50.052.0						
					52.054.0						
					54.056.0						
					56.058.0						
					58.060.0						

REMARKS:
 GROUNDWATER MONITORING NOTES:

Client:	Sydney Motorway Corporation		
Project:	M4-M5 Link Geotech Investigation		
Location:	Richard Murden Res, Hawthorne Pde, Haberfield		
Driller:	Hagstrom Drilling Pty Ltd	Hole Diameter:	96 mm
Drill Rig:	Hydrapower Scout	Inclination:	-90°
		Bearing:	N/A

Project No:	60493796	
Logged by:	NB	Checked by: BF
Start Date:	11/05/2016	End Date: 11/05/2016
Easting:	328750.6 m	RL: 1.51 m
Northing:	6250135.5 m	Ver. Datum: AHD
Hor. Proj/Dat:	MGA94/GDA94-56H	Surface: Grass

[illegible]

REMARKS: The material properties are taken from the adjacent borehole HB_BH08
GROUNDWATER MONITORING NOTES:

2015_ANZ_PIEZO 20161216_AECOM_T1_T2 T3 DUMMY FOR PIEZO 2-07.GPJ AECOM_2-01-AA.GDT 60493796AECOM_2-07_LIBRARY.GLB 16.12.2016

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Darley Rd, Leichhardt

Driller: Numac Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Comacchio Geo-205

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: FR/JY

Start Date: 15/06/2016

Easting: 329047.4 m

Northing: 6250099.1 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 23/06/2016

RL: 2.36 m

Ver. Datum: AHD

Surface: Asphalt

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 30.0 mBGL Screen Top: 27.0 mBGL Screen/Sensor Base: 30.0 mBGL Instrument Details: - Installation Date: 23/06/2016 Development Date: -	
HA	RT								
								Depth 0.0 to 0.5 m — GATIC COVER	
								Depth 0.5 to 23.0 m — BENTONITE + CEMENT GROUT	
								Depth 23.0 to 24.9 m — BENTONITE	
								Depth 24.9 to 27.0 m — FILTER SAND	
								Depth 27.0 to 30.0 m — PVC SLOTTED SECTION WITH FILTER SAND	

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Darley Rd, Leichhardt

Driller: Numac Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Comacchio Geo-205

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: FR/JY

Start Date: 15/06/2016

Easting: 329047.4 m

Northing: 6250099.1 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 23/06/2016

RL: 2.36 m

Ver. Datum: AHD

Surface: Asphalt

Field Data							Rock Description		Piezometer Details				
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:			
										Piezometer Details:			
HQ3	Run 19	100	100		28.0	28.0		SANDSTONE, medium to coarse grained, brown-grey	20	Machine slotted PVC pipe			
	Run 20	100	100		32.0	30.0		SANDSTONE, fine to medium grained, brown-grey	60	Pipe Diameter: 50 mm			
	Run 21	100	100		34.0	30.0		INTERBEDDED SHALE/SANDSTONE	200	Pipe Top: 0.0 mBGL			
	Run 22	100	100		36.0	32.0		SANDSTONE, fine to medium grained, light grey <i>continued</i>	500	Pipe Base: 30.0 mBGL			
	Run 23	100	92		38.0	34.0		SANDSTONE, fine to medium grained, brown-grey	2000	Screen Top: 27.0 mBGL			
	Run 24	100	99		40.0	36.0		SANDSTONE, fine to medium grained, light grey		Screen/Sensor Base: 30.0 mBGL			
	Run 25	77	77		42.0	38.0		SANDSTONE, fine to medium grained, light grey		Instrument Details: -			
	Run 26	100	100		44.0	40.0		SANDSTONE, fine to medium grained, grey		Installation Date: 23/06/2016			
	Run 27				46.0					Development Date: -			
	Run 28				48.0								
					50.0	40.0		SANDSTONE, fine to medium grained, brown-grey		Depth 30.0 to 31.8 m — Depth 31.8 to 36.0 m — Depth 36.0 to 40.0 m —	FILTER SAND BENTONITE BENTONITE + CEMENT GROUT		
					52.0								
					54.0								
					56.0								
					58.0								
					60.0								
					62.0								
					64.0								
					66.0								
					68.0								

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: JR

Checked by: BF

Location: Hubert St, Leichhardt

Start Date: 23/05/2016

End Date: 26/05/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 329206.6 m

RL: 4.27 m

Drill Rig: Hydrapower Scout

Inclination: -90°

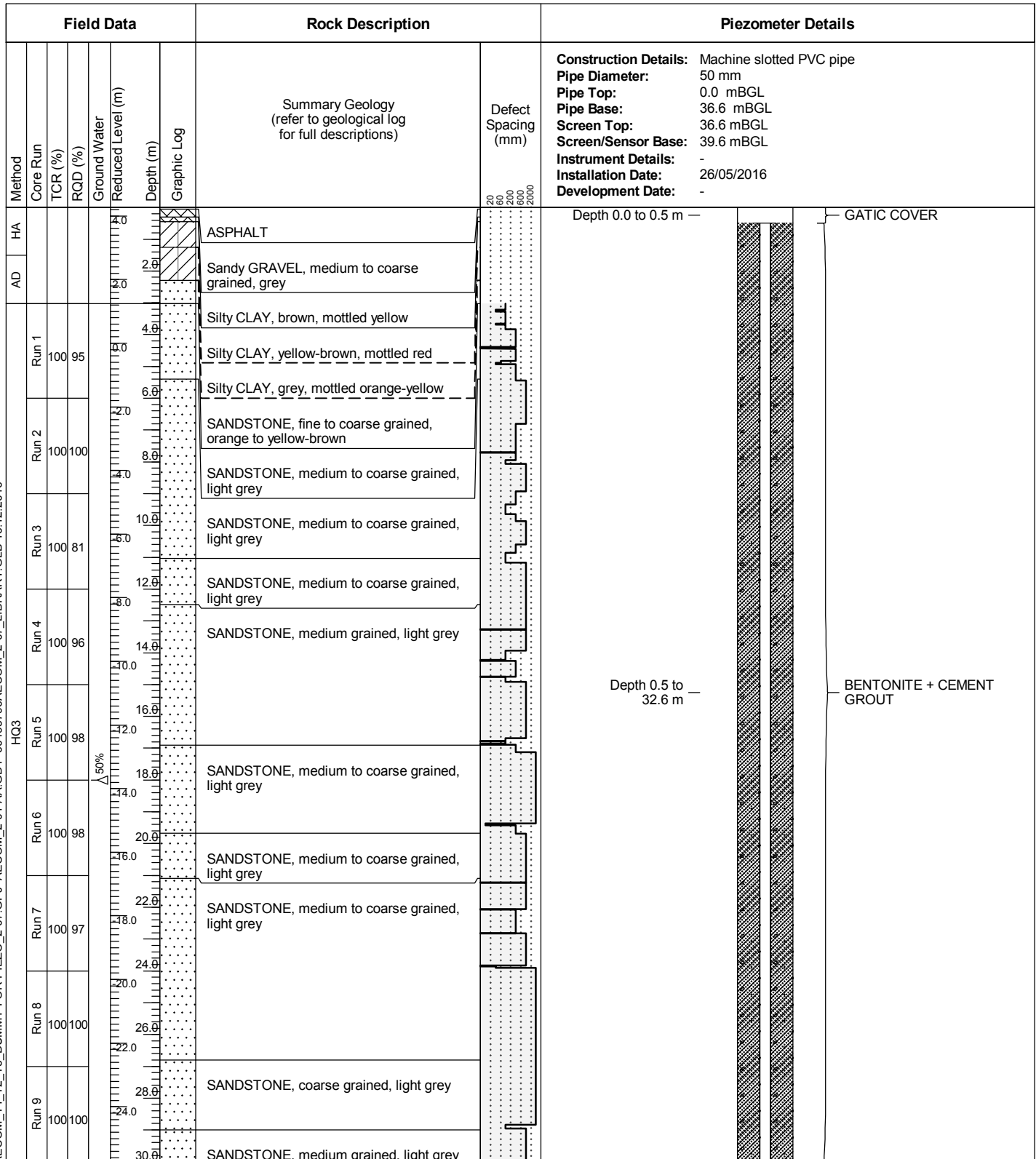
Northing: 6250086.3 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt



REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Hubert St, Leichhardt

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: JR

Start Date: 23/05/2016

Easting: 329206.6 m

Northing: 6250086.3 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 26/05/2016

RL: 4.27 m

Ver. Datum: AHD

Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 36.6 mBGL Screen Top: 36.6 mBGL Screen/Sensor Base: 39.6 mBGL Instrument Details: - Installation Date: 26/05/2016 Development Date: -
HQ3	Run 10	100	95		26.0			MUDSTONE, dark grey	20	Depth 0.5 to 32.6 m Depth 32.6 to 34.6 m Depth 34.6 to 36.6 m Depth 36.6 to 39.6 m Depth 39.6 to 40.0 m BENTONITE + CEMENT GROUT BENTONITE FILTER SAND PVC SLOTTED SECTION WITH FILTER SAND CAVE-IN BACKFILL
					32.0			SANDSTONE, medium to coarse grained, light grey	60	
	Run 11	100	98		28.0			SANDSTONE, medium grained	200	
					34.0			SANDSTONE, medium to coarse grained, light grey	600	
	Run 12	100	97		36.0			SANDSTONE, medium to coarse grained, light grey	2000	
					38.0			SANDSTONE, medium to coarse grained, light grey		
	Run 13	100	96		40.0			SANDSTONE, medium grained, light grey		
					42.0			HB_BH14 Terminated at 40.08 m.		
					44.0					
					46.0					
					48.0					
					50.0					
					52.0					
					54.0					
					56.0					
					58.0					
					60.0					

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Cnr James St, City West Link, Leichhardt

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Checked by:BF

Start Date: 12/05/2016

End Date: 16/05/2016

Easting: 329396.4 m

RL: 17.87 m

Northing: 6250142.8 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-5

Surface: Grass

Field Data							Rock Description		Piezometer Details				
Method	HA	ADT	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:	Machine slotted PVC pipe
			Run 1	100	63		16.0	2.0		Silty SAND, fine to coarse grained, brown	20	Pipe Diameter:	50 mm
			Run 2	100	93		14.0	4.0		SAND, medium to coarse grained, brown to orange-brown	60	Pipe Top:	0.0 mBGL
			Run 3	100	97		12.0	6.0		Clayey SAND, coarse grained, dark brown to orange-brown	200	Pipe Base:	22.0 mBGL
			Run 4	100	98		10.0	8.0		SANDSTONE, fine to medium grained, yellow-brown to brown	600	Screen Top:	19.0 mBGL
			Run 5	100	96		8.0	10.0		SANDSTONE, medium to coarse grained, red-brown, mottled light yellow-brown	2000	Screen/Sensor Base:	22.0 mBGL
			Run 6	100	91		6.0	12.0		SANDSTONE, medium grained, light grey		Instrument Details:	-
			Run 7	100	97		4.0	14.0		SANDSTONE, medium to coarse grained, light grey		Installation Date:	16/05/2016
			Run 8	100	99		2.0	16.0		SANDSTONE, medium to coarse grained, light grey		Development Date:	-
			Run 9	100	98		0.0	18.0		SANDSTONE, medium to coarse grained, light grey			
			Run 10	100	100		0.0	20.0		SANDSTONE, medium to coarse grained, light grey			
							0.0	22.0		SANDSTONE, medium to coarse grained, light grey			
							0.0	24.0		SANDSTONE, medium to coarse grained, light yellow-brown			
							0.0	26.0					
							0.0	28.0					
							0.0	30.0					
							0.0	32.0					
							0.0	34.0					
							0.0	36.0					
							0.0	38.0					
							0.0	40.0					
							0.0	42.0					
							0.0	44.0					
							0.0	46.0					
							0.0	48.0					
							0.0	50.0					
							0.0	52.0					
							0.0	54.0					
							0.0	56.0					
							0.0	58.0					
							0.0	60.0					
							0.0	62.0					
							0.0	64.0					
							0.0	66.0					
							0.0	68.0					
							0.0	70.0					
							0.0	72.0					
							0.0	74.0					
							0.0	76.0					
							0.0	78.0					
							0.0	80.0					
							0.0	82.0					
							0.0	84.0					
							0.0	86.0					
							0.0	88.0					
							0.0	90.0					
							0.0	92.0					
							0.0	94.0					
							0.0	96.0					
							0.0	98.0					
							0.0	100.0					
							0.0	102.0					
							0.0	104.0					
							0.0	106.0					
							0.0	108.0					
							0.0	110.0					
							0.0	112.0					
							0.0	114.0					
							0.0	116.0					
							0.0	118.0					
							0.0	120.0					
							0.0	122.0					
							0.0	124.0					
							0.0	126.0					
							0.0	128.0					
							0.0	130.0					
							0.0	132.0					
							0.0	134.0					
							0.0	136.0					
							0.0	138.0					
							0.0	140.0					
							0.0	142.0					
							0.0	144.0					
							0.0	146.0					
							0.0	148.0					
							0.0	150.0					
							0.0	152.0					
							0.0	154.0					
							0.0	156.0					
							0.0	158.0					
							0.0	160.0					
							0.0	162.0					
							0.0	164.0					
							0.0	166.0					
							0.0	168.0					
							0.0	170.0					
							0.0	172.0					
							0.0	174.0					
							0.0	176.0					
							0.0	178.0					
							0.0	180.0					
							0.0	182.0					
							0.0	184.0					
							0.0	186.0					
							0.0	188.0					
							0.0	190.0					
							0.0	192.0					
							0.0	194.0					
							0.0	196.0					
							0.0	198.0					
							0.0	200.0					
							0.0	202.0					
							0.0	204.0					
							0.0	206.0					
							0.0	208.0					
							0.0	210.0					
							0.0	212.0					
							0.0	214.0					
							0.0	216.0					
							0.0	218.0					
							0.0	220.0					
							0.0	222.0					
							0.0	224.0					
							0.0	226.0					
							0.0	228.0					
							0.0	230.0					
							0.0	232.0					
							0.0	234.0					
							0.0	236.0					
							0.0	238.0					
							0.0	240.0					
							0.0	242.0					
							0.0	244.0					
							0.0	246.0					
							0.0	248.0					
							0.0	250.0					
							0.0	252.0					
							0.0	254.0					
							0.0	256.0					
							0.0	258.0					
							0.0	260.0					
							0.0	262.0					
							0.0	264.0					
							0.0	266.0					
							0.0	268.0					
							0.0	270.0					
							0.0	272.0					
							0.0	274.0					
							0.0	276.0					
							0.0	278.0					
							0.0	280.0					
							0.0	282.0					
							0.0	284.0					
							0.0	286.0					
							0.0	288.0					
							0.0	290.0					
							0.0	292.0					
							0.0	294.0					
							0.0	296.0					
							0.0	298.0					
							0.0	300.0					
							0.0	302.0					
							0.0	304.0					
							0.0	306.0					
							0.0	308.0					
							0.0	310.0					
							0.0	312.0					
							0.0	314.0					
							0.0	316.0					
							0.0	318.0					
							0.0	320.0					
							0.0	322.0					
							0.0	324.0					
							0.0	326.0					
							0.0	328.0					
							0.0	330.0					
							0.0	332.0					
							0.0	334.0					
							0.0	336.0					
							0.0	338.0					
							0.0	340.0					

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: NB

Checked by: BF

Location: Cnr James St, City West Link, Leichhardt

Start Date: 12/05/2016

End Date: 16/05/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 329396.4 m

RL: 17.87 m

Drill Rig: Hydrapower Scout

Inclination: -90°

Northing: 6250142.8 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data					Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Defect Spacing (mm)
HQ3	Run 11	100	100		32.0			
	Run 12	100	100		34.0			
	Run 13	100	98		36.0			
	Run 14	100	98		38.0			
	Run 15	100	100		40.0			
					42.0			
					44.0			
					46.0			
					48.0			
					50.0			
					52.0			
					54.0			
					56.0			
					58.0			
					60.0			
					HB_BH15 Terminated at 40.08 m.			

Construction Details: Machine slotted PVC pipe
 Pipe Diameter: 50 mm
 Pipe Top: 0.0 mBGL
 Pipe Base: 22.0 mBGL
 Screen Top: 19.0 mBGL
 Screen/Sensor Base: 22.0 mBGL
 Instrument Details: -
 Installation Date: 16/05/2016
 Development Date: -

Depth 28.6 to
40.1 m

BENTONITE/GROUT MIX

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: 46 Waterloo Street, Rozelle

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta Base 520

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: EC

Start Date: 12/10/2016

Easting: 330514.2 m

Northing: 6251504.5 m

Hor. Proj/Dat: MGA94/GDA94-56H

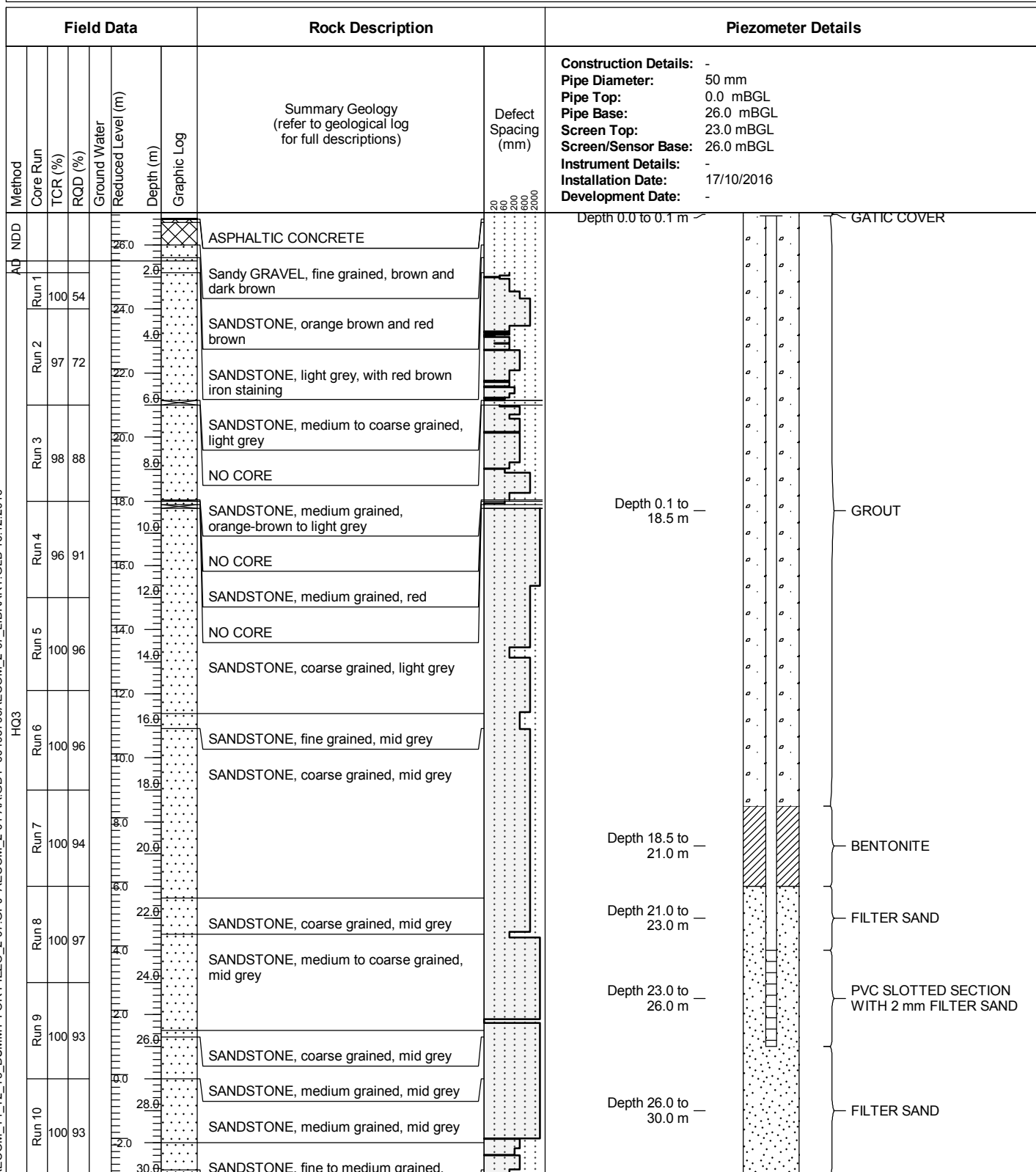
Checked by:

End Date: 18/10/2016

RL: 26.87 m

Ver. Datum: AHD

Surface: Asphalt

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation			Project No: 60493796		
Project: M4-M5 Link Geotech Investigation			Logged by: EC		Checked by:
Location: 46 Waterloo Street, Rozelle			Start Date: 12/10/2016		End Date: 18/10/2016
Driller: Hagstrom Drilling Pty Ltd		Hole Diameter: 96 mm	Easting: 330514.2 m		RL: 26.87 m
Drill Rig: Delta Base 520		Inclination: -90°	Northing: 6251504.5 m		Ver. Datum: AHD
		Bearing: N/A	Hor. Proj/Dat: MGA94/GDA94-56H		Surface: Asphalt

Field Data							Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Summary Geology (refer to geological log for full descriptions)		Construction Details: - Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 26.0 mBGL Screen Top: 23.0 mBGL Screen/Sensor Base: 26.0 mBGL Instrument Details: - Installation Date: 17/10/2016 Development Date: -	
								Defect Spacing (mm)		
							grey-brown	20		
							SANDSTONE, mid grey	60		
							IC_BH01 Terminated at 30.00 m.	200		
								400		
								600		
								800		
								1000		
								1200		
								1400		
								1600		
								1800		
								2000		
								2200		
								2400		
								2600		
								2800		
								3000		
								3200		
								3400		
								3600		
								3800		
								4000		
								4200		
								4400		
								4600		
								4800		
								5000		
								5200		
								5400		
								5600		
								5800		
								6000		

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: EC

Checked by:

Location: Toelle street, Rozelle

Start Date: 12/10/2016

End Date: 19/10/2016

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Easting: 330335.0 m

RL: 20.87 m

Drill Rig: Hanjin DB

Inclination: -90°

Northing: 6251646.4 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data					Rock Description		Piezometer Details					
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:		
										Pipe Diameter:	Pipe Top:	Pipe Base:
HQ3	Run 1							ASPHALTIC CONCRETE		Depth 0.0 to 0.1 m		GATIC COVER
	Run 2	96	88		20.0	0.1		Sandy GRAVEL, coarse grained, dark grey	20	Depth 0.1 to 1.0 m		BENTONITE
	Run 3	100	79		2.0	1.0		SAND, medium grained, red-orange	60	Depth 1.0 to 3.8 m		GROUT
	Run 4	100	100		4.0	3.8		SANDSTONE, medium grained, light grey	200	Depth 3.8 to 6.0 m		BENTONITE
	Run 5	100	100		6.0	6.0		NO CORE	200	Depth 6.0 to 8.0 m		FILTER SAND
	Run 6	100	100		8.0	8.0		SANDSTONE, medium grained, light grey and red-brown	200	Depth 8.0 to 11.0 m		PVC SLOTTED SECTION WITH FILTER SOCK with 2 mm FILTER SAND
	Run 7	100	100		10.0	11.0		DOLERITE, medium grained, mid grey to grey, brown	200	Depth 11.0 to 13.1 m		FILTER SAND
	Run 8	100	100		12.0	13.1			200	Depth 13.1 to 22.2 m		BENTONITE
	Run 9	100	100		14.0	22.2			200	Depth 22.2 to 35.0 m		GROUT
	Run 10	100	100		16.0			SANDSTONE, coarse grained, light grey	200			
	Run 11	100	97		18.0			MUDSTONE, dark grey	200			
	Run 12	100	100		20.0			SANDSTONE, medium to coarse grained, light grey	200			
	Run 13	100	97		22.0			SANDSTONE, medium grained, light grey	200			

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: EC

Checked by:

Location: Toelle street, Rozelle

Start Date: 12/10/2016

End Date: 19/10/2016

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Easting: 330335.0 m

RL: 20.87 m

Drill Rig: Hanjin DB

Inclination: -90°

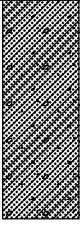
Northing: 6251646.4 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: - Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 8.0 mBGL Screen Top: 8.0 mBGL Screen/Sensor Base: 11.0 mBGL Instrument Details: - Installation Date: 20/10/2016 Development Date: -	
HQ3	Run 14	100	97		30.0			Defect Spacing (mm) 20 60 100 200 500 1000 2000	
					32.0				
					34.0				
					36.0				
	Run 15	100	99		34.0			Depth 22.2 to 35.0 m  GROUT	
					36.0				
					38.0				
					40.0				
					42.0				
					44.0				
					46.0				
					48.0				
					50.0				
					52.0				
					54.0				
					56.0				
					58.0				
					60.0				

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: AS

Checked by:

Location: Derby Shire Road, Leichhardt

Start Date: 17/01/2017

End Date: 24/01/2017

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 329694.0 m

RL:

Drill Rig: DR21 WT002

Inclination: -90°

Northing: 6249695.0 m

Ver. Datum: mAHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface: Grass

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:
NDD										-
	Run 1	66	0			2.0		Silty CLAY, yellow-brown		Pipe Diameter: 96 mm
						2.0		Silty CLAY, orange-brown		Pipe Top: 0.0 mBGL
	Run 2	41	0			4.0		SHALE, grey and orange-brown		Pipe Base: 45.0 mBGL
						4.0		NO CORE		Screen Top: 42.0 mBGL
	Run 3	63	0			6.0		SHALE, grey and dark grey		Screen/Sensor Base: 45.0 mBGL
						6.0		NO CORE		Instrument Details: -
	Run 4	100	45			8.0		SHALE, grey and dark grey		Installation Date: 24/01/2017
						8.0		NO CORE		Development Date: -
	Run 5	97	87			10.0		SHALE, dark grey		
						10.0		SHALE, dark grey		
	Run 6	100	100			12.0		SANDSTONE, fine grained, grey		
						12.0		SHALE, dark grey		
	Run 7	100	93			14.0		SANDSTONE, medium grained, light grey to grey		
						14.0		SANDSTONE, medium grained, light grey		
	Run 8	100	95			16.0		SANDSTONE, medium grained, light grey		
						16.0		SANDSTONE, medium grained, light grey		
	Run 9	100	93			18.0		SANDSTONE, medium grained, light grey		
						18.0		SANDSTONE, coarse grained, light grey		
	Run 10	100	97			20.0		SANDSTONE, coarse grained, light grey		
						20.0		SANDSTONE, medium grained, light grey		
	Run 11	100	100			22.0		SANDSTONE, fine grained, mid grey to dark grey		
						22.0		SANDSTONE, fine to medium grained, light grey		
						24.0		SANDSTONE, coarse grained, light grey		
						24.0		SANDSTONE, fine to medium grained, mid grey		
						26.0		SANDSTONE, coarse grained, mid grey		
						28.0				
						30.0				

Depth 0.0 to 0.1 m

Depth 0.1 to 37.0 m

GATIC COVER

GROUT

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: AS

Checked by:

Location: Derby Shire Road, Leichhardt

Start Date: 17/01/2017

End Date: 24/01/2017

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 329694.0 m

RL:

Drill Rig: DR21 WT002

Inclination: -90°

Northing: 6249695.0 m

Ver. Datum: mAHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface: Grass

Field Data							Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Summary Geology (refer to geological log for full descriptions)		Construction Details: - Pipe Diameter: 96 mm Pipe Top: 0.0 mBGL Pipe Base: 45.0 mBGL Screen Top: 42.0 mBGL Screen/Sensor Base: 45.0 mBGL Instrument Details: - Installation Date: 24/01/2017 Development Date: -		
								Defect Spacing (mm)			
								20 60 200 600 2000			
	Run 12	100	100			32.0	SANDSTONE, medium to coarse grained, light grey to mid grey <i>continued</i>				
						34.0	SANDSTONE, coarse grained, mid grey		Depth 0.1 to 37.0 m		GROUT
	Run 13	100	100			36.0	SANDSTONE, coarse grained, light grey				
						38.0	SANDSTONE, coarse grained, light grey to brown-grey		Depth 37.0 to 40.0 m		BENTONITE
	Run 14	100	98			40.0	SANDSTONE, medium grained, light grey		Depth 40.0 to 42.0 m		FILTER SAND
	Run 15	100	100			42.0	SANDSTONE, medium grained, light grey		Depth 42.0 to 45.0 m		PVC SLOTTED SECTION with FILTER SOCK and FILTER SAND
						44.0	SANDSTONE, medium to coarse grained, light grey		Depth 45.0 to 47.0 m		FILTER SAND
	Run 16	100	100			46.0	SANDSTONE, fine to medium grained, light grey		Depth 47.0 to 49.0 m		BENTONITE
	Run 17	100	100			48.0	SANDSTONE, coarse grained, light grey		Depth 49.0 to 70.0 m		SAND
						50.0	SANDSTONE, medium to coarse grained, light grey				
	Run 18	100	100			52.0	SANDSTONE, fine to medium grained, grey				
						54.0	SANDSTONE, fine to medium grained, mid grey				
	Run 19	100	100			56.0	SANDSTONE, fine to medium grained, light grey				
						58.0	SANDSTONE, fine grained, mid grey				
	Run 20	100	100			60.0	SANDSTONE, medium grained, light grey				
							SHALE BRECCIA				

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: AS

Checked by:

Location: Derby Shire Road, Leichhardt

Start Date: 17/01/2017

End Date: 24/01/2017

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 329694.0 m

RL:

Drill Rig: DR21 WT002

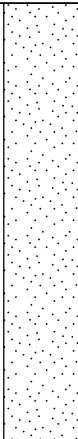
Inclination: -90°

Northing: 6249695.0 m

Ver. Datum: mAHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface: Grass

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: - Pipe Diameter: 96 mm Pipe Top: 0.0 mBGL Pipe Base: 45.0 mBGL Screen Top: 42.0 mBGL Screen/Sensor Base: 45.0 mBGL Instrument Details: - Installation Date: 24/01/2017 Development Date: -
HQ3	Run 22	100	97			62.0		SANDSTONE, medium grained, light grey	20	Depth 49.0 to 70.0 m 
	Run 23	100	100			64.0		SANDSTONE, fine grained, mid grey	60	
						66.0		SANDSTONE, medium grained, light grey and mid grey	200	
	Run 24	100	100			68.0		SANDSTONE, medium grained, light grey to mid grey	600	
	Run 25	100	100			70.0		SANDSTONE, medium grained, mid grey	2000	
						72.0		MT_BH02 Terminated at 70.00 m.		
						74.0				
						76.0				
						78.0				
						80.0				
						82.0				
						84.0				
						86.0				
						88.0				
						90.0				

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: 21 Paling Street, Lilyfield - parking lane

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hanjin DB8

Inclination: -60°

Bearing:

Project No: 60493796

Logged by: EC

Start Date: 15/11/2016

Easting: 330360.0 m

Northing: 6249919.0 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:

End Date: 22/11/2016

RL:

Ver. Datum: AHD

Surface: Asphalt

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: - Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 45.0 mBGL Screen Top: 43.0 mBGL Screen/Sensor Base: 46.0 mBGL Instrument Details: - Installation Date: 22/11/2016 Development Date: -	
NDD	CA								
						2.0	ASPHALT	Depth 0.0 to 0.1 m Depth 0.1 to 1.0 m	
						2.0	COBBLES		
						4.0	CLAY	GATIC COVER BENTONITE	
						4.0	COBBLES		
						6.0	CLAY	GROUT	
						6.0	SAND, medium grained, red		
						8.0	SANDSTONE, medium to coarse grained, dark red	Depth 1.0 to 39.0 m	
						8.0	SANDSTONE, medium grained, brown		
						10.0	SANDSTONE, medium grained, pale grey		
						10.0	SANDSTONE, medium grained, pale grey		
						12.0	SANDSTONE, medium grained, pale grey		
						12.0	SANDSTONE, medium grained, pale grey		
						14.0	SANDSTONE, medium grained, pale grey		
						14.0	SANDSTONE, medium grained, pale grey		
						16.0	SANDSTONE, fine grained, pale grey		
						16.0	SANDSTONE, medium grained, pale grey		
						18.0	SANDSTONE, medium grained, pale grey		
						18.0	SANDSTONE, medium grained, pale grey		
						20.0	SANDSTONE, medium to coarse grained, pale grey		
						20.0	SANDSTONE, medium to coarse grained, pale grey		
						22.0	INTERBEDDED SHALE/SANDSTONE		
						22.0	SANDSTONE, medium grained, pale grey		
						24.0	SANDSTONE, medium grained, pale grey		
						24.0	SANDSTONE, medium grained, pale grey		
						26.0	SANDSTONE, medium grained, pale grey		
						26.0	SANDSTONE, medium grained, pale grey		
						28.0	SANDSTONE, medium grained, pale grey		
						28.0	SANDSTONE, medium grained, pale grey		
						30.0	SANDSTONE, medium grained, pale grey		
						30.0	SANDSTONE, medium grained, pale grey		

REMARKS:
GROUNDWATER MONITORING NOTES:

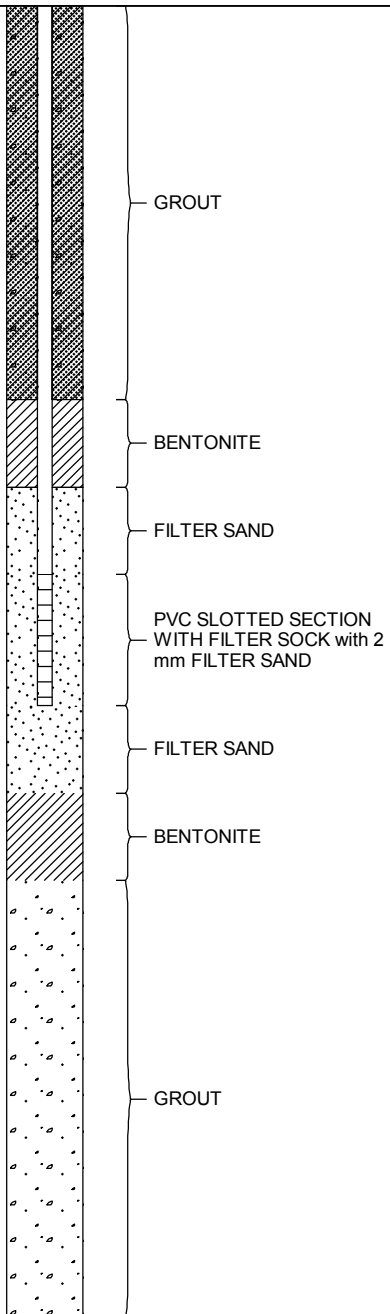
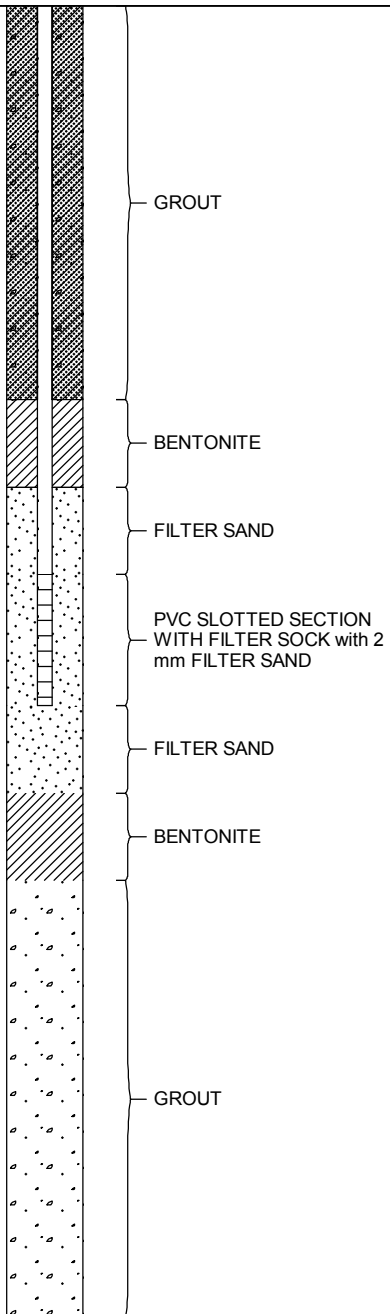
Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: 21 Paling Street, Lilyfield - parking lane

Driller: Terratest Pty Ltd
Drill Rig: Hanjin DB8

Hole Diameter: 96 mm
Inclination: -60°
Bearing:

Project No: 60493796
Logged by: EC
Start Date: 15/11/2016
Easting: 330360.0 m
Northing: 6249919.0 m
Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:
End Date: 22/11/2016
RL:
Ver. Datum: AHD
Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: - Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 45.0 mBGL Screen Top: 43.0 mBGL Screen/Sensor Base: 46.0 mBGL Instrument Details: - Installation Date: 22/11/2016 Development Date: -
HQ3	Run 10	100	100			32.0		SANDSTONE, medium to coarse grained, pale grey <i>continued</i>		
	Run 11	100	100			34.0		SANDSTONE, medium grained, pale grey		
	Run 12	100	100			36.0		SANDSTONE, medium to coarse grained, pale grey		
	Run 13	100	100			38.0		SANDSTONE, medium grained, pale grey		
	Run 14	100	100			40.0		SANDSTONE, medium grained, pale grey		
	Run 15	100	100			42.0		SANDSTONE, medium to coarse grained, pale grey		
	Run 16	100	100			44.0		SANDSTONE, fine to medium grained, pale grey to medium grey		
	Run 17	100	100			46.0		SANDSTONE, medium grained, pale grey		
	Run 18	100	100			48.0		SHALE, dark grey		
	Run 19	100	100			50.0		SANDSTONE, medium grained, pale grey		
	Run 20	100	100			52.0		SHALE, dark grey		
Run 21						54.0		SANDSTONE, medium grained, pale grey		
Run 22						56.0		SANDSTONE, fine to medium grained, medium grey		
Run 23						58.0		SANDSTONE, medium grained, pale grey		
Run 24						60.0		SANDSTONE, medium grained, pale grey		

MT_BH07 Terminated at 60.00 m.

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: 68 Johnston St, Annandale

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96.5 mm

Drill Rig: Delta

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Start Date: 23/11/2016

Easting: 330670.0 m

Northing: 6249095.0 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:

End Date: 30/11/2016

RL:

Ver. Datum: AHD

Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 58.0 mBGL Screen Top: 48.0 mBGL Screen/Sensor Base: 51.0 mBGL Instrument Details: Installation Date: 30/11/2016 Development Date: -
AD						0.0		ASPHALT	20	Depth 0.0 to 0.1 m
CA						2.0		GRAVEL, black	60	Depth 0.1 to 1.0 m
								Cobbly SANDSTONE, pale brown	200	
	Run 1	87	0			4.0		MUDSTONE	600	
	Run 2	100	100			5.0		NO CORE	2000	
	Run 3	100	15			6.0		MUDSTONE, dark brown		
	Run 4	98	90			8.0		SANDSTONE, medium grained		
						9.0		SANDSTONE, fine grained, dark grey		
	Run 5	100	93			10.0		SANDSTONE, fine grained, light grey		
						11.0		SANDSTONE, fine grained, grey		
	Run 6	100	97			14.0		SANDSTONE, medium grained, light grey		
						16.0		SANDSTONE, medium grained, light grey		Depth 1.0 to 44.0 m
	Run 7	100	100			18.0				
	Run 8	100	100			20.0				
						22.0		SANDSTONE, medium grained, light grey		
	Run 9	100	100			24.0				
						26.0		SANDSTONE, medium grained, light grey		
	Run 10	100	100			28.0				
						30.0		SANDSTONE, medium to coarse grained, light grey		
	Run 11	100	100							

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REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: 68 Johnston St, Annandale

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96.5 mm

Drill Rig: Delta

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Start Date: 23/11/2016

Easting: 330670.0 m

Northing: 6249095.0 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:

End Date: 30/11/2016

RL:

Ver. Datum: AHD

Surface: Asphalt

Field Data						Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 58.0 mBGL Screen Top: 48.0 mBGL Screen/Sensor Base: 51.0 mBGL Instrument Details: - Installation Date: 30/11/2016 Development Date: -	
HQ3	Run 12	100	100					SANDSTONE, fine grained, grey	20	Depth 1.0 to 44.0 m — GROUT Depth 44.0 to 45.8 m — BENTONITE Depth 45.8 to 48.0 m — FILTER SAND Depth 48.0 to 51.0 m — PVC SLOTTED SECTION WITH FILTER SOCK with 2 mm FILTER SAND Depth 51.0 to 53.0 m — FILTER SAND Depth 53.0 to 54.6 m — BENTONITE Depth 54.6 to 69.9 m — GROUT	
	Run 13	100	100			32.0		SANDSTONE, medium to coarse grained <i>continued</i>	60		
	Run 14	100	100			34.0		SANDSTONE, medium grained, light grey	200		
	Run 15	100	100			36.0		SANDSTONE, medium to coarse grained, light grey	500		
	Run 16	100	100			40.0		SANDSTONE, medium grained, light grey	1000		
	Run 17	100	100			42.0		SANDSTONE, medium grained, light grey	2000		
	Run 18	100	100			46.0		SANDSTONE, medium grained, light grey			
	Run 19	100	100			50.0		SANDSTONE, medium grained, light grey			
	Run 20	100	100			52.0		SANDSTONE, medium grained, light grey			
	Run 21	100	100			56.0		SANDSTONE, medium grained, light grey			
	Run 22	100	100			58.0		SANDSTONE, fine grained, grey			
	Run 23	100	100			60.0		SANDSTONE, medium grained, grey			
								SANDSTONE, medium grained, light grey			

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: LH

Checked by:

Location: 68 Johnston St, Annandale

Start Date: 23/11/2016

End Date: 30/11/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96.5 mm

Easting: 330670.0 m

RL:

Drill Rig: Delta

Inclination: -90°

Northing: 6249095.0 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: - Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 58.0 mBGL Screen Top: 48.0 mBGL Screen/Sensor Base: 51.0 mBGL Instrument Details: - Installation Date: 30/11/2016 Development Date: -	
HQ3	Run 24	100	100			62.0		SANDSTONE, medium grained, light grey <i>continued</i>	20 60 200 600 2000		
	Run 25	100	100		64.0	SANDSTONE, fine to medium grained					
	Run 26	100	100		66.0						
	Run 27	100	100		68.0						
					70.0			NO CORE <i>MT_BH11 Terminated at 70.00 m.</i>			
					72.0						
					74.0						
					76.0						
					78.0						
					80.0						
					82.0						
					84.0						
					86.0						
					88.0						
					90.0						

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rowley Street, Camperdown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: KDL

Start Date: 4/11/2016

Easting: 331168.4 m

Northing: 6248150.0 m

Hor. Proj/Dat: MGA94/GDA94-56H

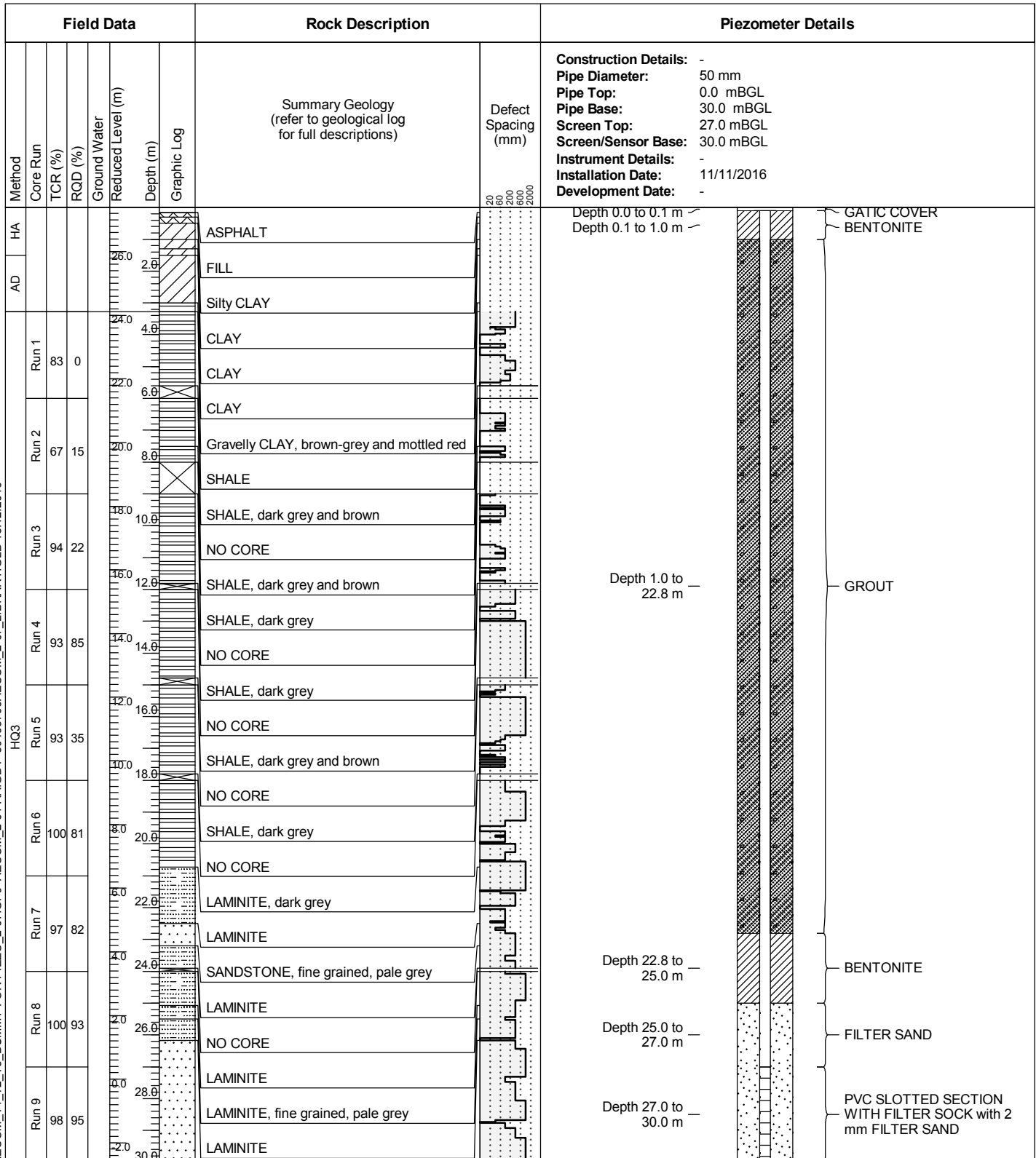
Checked by:

End Date: 9/11/2016

RL: 27.39 m

Ver. Datum: AHD

Surface: Asphalt

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: KDL

Checked by:

Location: Rowley Street, Camperdown

Start Date: 4/11/2016

End Date: 9/11/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 331168.4 m

RL: 27.39 m

Drill Rig: Hydrapower Scout

Inclination: -90°

Northing: 6248150.0 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data							Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Summary Geology (refer to geological log for full descriptions)		Construction Details: - Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 30.0 mBGL Screen Top: 27.0 mBGL Screen/Sensor Base: 30.0 mBGL Instrument Details: - Installation Date: 11/11/2016 Development Date: -		
								Defect Spacing (mm)			
								20 60 200 500 1000 2000			
	Run 10	100	100		4.0	32.0	SANDSTONE, medium to coarse grained, pale grey		Depth 30.0 to — 32.0 m		FILTER SAND
							NO CORE				
	Run 11	100	100		6.0	34.0	SANDSTONE, medium to coarse grained, pale grey				
					8.0	36.0					
	Run 12	100	100		10.0	38.0			Depth 32.0 to — 45.3 m		BENTONITE
					12.0	40.0	SANDSTONE, coarse grained, pale grey				
	Run 13	100	100		14.0	42.0	SANDSTONE, medium to coarse grained, pale grey				
					16.0	44.0	SANDSTONE, coarse grained, pale grey				
	Run 14	100	95		18.0	46.0	SANDSTONE, medium grained, mid grey				
					20.0	48.0	SANDSTONE, medium to coarse grained, pale grey				
	Run 15	100	95		22.0	50.0	SANDSTONE, coarse grained, pale grey				
					24.0	52.0	SANDSTONE, medium to coarse grained, mid grey				
	Run 16	100	100		26.0	54.0	SANDSTONE, coarse grained, light brown-grey				
					28.0	56.0	SANDSTONE, medium to coarse grained, pale grey		Depth 45.3 to — 73.0 m		GROUT
	Run 17	100	98		30.0	58.0	SANDSTONE, medium grained, pale grey				
					32.0	60.0	SANDSTONE, coarse grained, pale grey				
	Run 18	100	100				SANDSTONE, fine grained, pale grey				
							SANDSTONE, medium to coarse grained, pale grey				
	Run 19	100	98				SANDSTONE, medium to coarse grained, pale grey				
							SANDSTONE, fine grained, mid grey				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rowley Street, Camperdown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: KDL

Start Date: 4/11/2016

Easting: 331168.4 m

Northing: 6248150.0 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:

End Date: 9/11/2016

RL: 27.39 m

Ver. Datum: AHD

Surface: Asphalt

Field Data							Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Summary Geology (refer to geological log for full descriptions)		Construction Details: - Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 30.0 mBGL Screen Top: 27.0 mBGL Screen/Sensor Base: 30.0 mBGL Instrument Details: - Installation Date: 11/11/2016 Development Date: -		
								Defect Spacing (mm)			
								20 60 200 500 1000 2000			
HQ3	Run 21	100	100		34.0	62.0	SHALE BRECCIA		Depth 45.3 to 73.0 m — GROUT		
					36.0	64.0	SANDSTONE, coarse grained, pale grey				
					38.0	66.0	SANDSTONE, medium to coarse grained, pale grey <i>continued</i>				
	Run 22	100	100		40.0	68.0	SANDSTONE, coarse grained, pale grey				
					42.0	70.0	SANDSTONE, medium grained, pale grey				
					44.0	72.0	SANDSTONE, medium grained, pale grey				
	Run 23	100	99		46.0	74.0	SANDSTONE, medium to coarse grained, pale grey				
					48.0	76.0	SANDSTONE, coarse grained, pale grey				
	Run 24	100	100		50.0	78.0	SHALE BRECCIA, medium grained, pale grey to brown-grey				
					52.0	80.0	SANDSTONE, medium grained, pale grey				
	Run 25	100	100		54.0	82.0	SANDSTONE, medium grained, pale grey				
					56.0	84.0	SANDSTONE, medium grained, pale grey				
	Run 26	100	97		58.0	86.0	SANDSTONE, medium grained, pale grey				
					60.0	88.0	SANDSTONE, medium grained, pale grey				
					62.0	90.0	MT_BH14 Terminated at 75.00 m.				

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Holmwood St, Newtown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: BF

Start Date: 24/10/2016

Easting: 331711.4 m

Northing: 6247001.6 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:

End Date: 3/11/2016

RL: 24.76 m

Ver. Datum: AHD

Surface: Asphalt

Field Data					Rock Description		Piezometer Details				
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 10.0 mBGL Screen Top: 10.0 mBGL Screen/Sensor Base: 13.0 mBGL Instrument Details: Installation Date: 3/11/2016 Development Date: -	
NDD	AD	Run 1	100	0	28/10/2016	2.0		ASPHALT	20	Depth 0.0 to 0.1 m Depth 0.1 to 1.0 m	GATIC COVER BENTONITE
		Run 2	89	0	28/10/2016	4.0		COBBLES, red-brown, grey and brown	60	Depth 1.0 to 6.0 m	GROUT
		Run 3	100	96	31/10/2016	6.0		GRAVEL AND COBBLES, dark grey and red-brown	200	Depth 6.0 to 8.0 m	BENTONITE
		Run 4	100	100	2/11/2016	8.0		SHALE, light grey, mottled yellow-brown	600	Depth 8.0 to 10.0 m	FILTER SAND
		Run 5	99	94		10.0		SHALE	2000	Depth 10.0 to 13.0 m	PVC SLOTTED SECTION WITH FILTER SOCK with 2 mm FILTER SAND
		Run 6	100	100		12.0		SHALE		Depth 13.0 to 13.6 m	FILTER SAND
		Run 7	100	87		14.0		SHALE		Depth 13.6 to 85.0 m	GROUT
		Run 8	100	85		16.0		SHALE			
		Run 9	98	80		18.0		SHALE			
		Run 10	97	74		20.0		SHALE			
		Run 11	100	100		22.0		SHALE			
						24.0		SHALE			
						26.0		SHALE			
						28.0		SHALE			
						30.0		SHALE			

REMARKS:
GROUNDWATER MONITORING NOTES:

2015 ANZ_PIEZO 20161216_AECOM T1 T2 T3 DUMMY FOR PIEZO_2-07.GPJ AECOM_2-01-AA.GDT 60493796AECOM_2-07_LIBRARY.GLB 16.12.2016

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Holmwood St, Newtown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: BF

Start Date: 24/10/2016

Easting: 331711.4 m

Northing: 6247001.6 m

Hor. Proj/Dat: MGA94/GDA94-56H

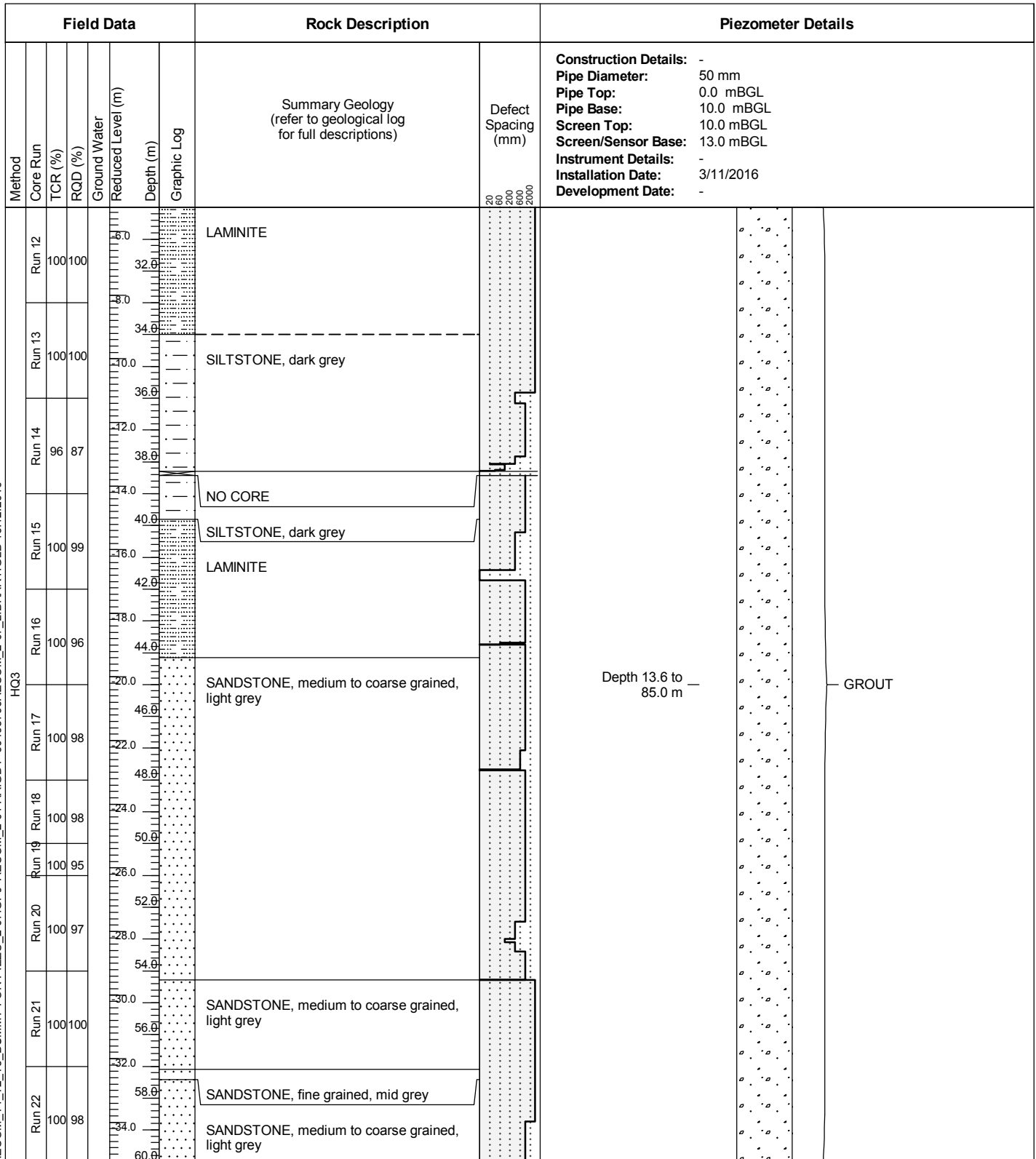
Checked by:

End Date: 3/11/2016

RL: 24.76 m

Ver. Datum: AHD

Surface: Asphalt


 REMARKS:
 GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Holmwood St, Newtown

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: BF

Start Date: 24/10/2016

Easting: 331711.4 m

Northing: 6247001.6 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:

End Date: 3/11/2016

RL: 24.76 m

Ver. Datum: AHD

Surface: Asphalt

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RCD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details:	
								- Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 10.0 mBGL Screen Top: 10.0 mBGL Screen/Sensor Base: 13.0 mBGL Instrument Details: - Installation Date: 3/11/2016 Development Date: -	
	Run 23	100	99		36.0				
	Run 24	100	100		62.0		SANDSTONE, fine to medium grained, light grey		
					38.0				
	Run 25	100	100		64.0				
					40.0				
					66.0				
	Run 26	100	92		42.0				
	Run 27	100	100		68.0		SANDSTONE, medium grained, light grey		
	Run 28	100	100		44.0		SHALE BRECCIA		
	Run 29	100	99		70.0		SANDSTONE, medium grained, light grey		
	Run 30	100	100		46.0				
					72.0		SANDSTONE, medium grained, light grey		
	Run 31	100	96		48.0		SANDSTONE, medium grained, light grey		
					74.0				
	Run 32	100	95		50.0				
					76.0				
	Run 33	100	100		52.0		SANDSTONE, coarse grained, light grey		
					78.0				
	Run 34	100	100		80.0		SANDSTONE, medium to coarse grained, pale grey		
					82.0				
	Run 35	100	90		84.0		SANDSTONE, fine to medium grained, light grey		
					86.0		SANDSTONE, medium grained, light grey		
					88.0				
					90.0				
							MT_BH18 Terminated at 85.18 m.		

Depth 13.6 to 85.0 m

GROUT

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: NB/RKG

Checked by:

Location: Darley Street, Newtown

Start Date: 2/12/2016

End Date: 15/12/2016

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Easting: 331680.3 m

RL: 16.18 m

Drill Rig: Hanjin DB8

Inclination: -90°

Northing: 6246735.9 m

Ver. Datum: mAHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface: Road Surface

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:
NDD					16.0			ASPHALT	20	Pipe Diameter: 50 mm
	Run 1	75	0		14.0	2.0		Sandy GRAVEL, fine to medium grained, dark grey	60	Pipe Top: 0.0 mBGL
	Run 2	100	0		12.0	4.0		Clayey GRAVEL, medium to coarse grained, light brown	200	Pipe Base: 53.0 mBGL
	Run 3	78	10		10.0	6.0		Silty CLAY, orange-brown	600	Screen Top: 53.0 mBGL
	Run 4	93	50		8.0	8.0		CLAY, light grey	2000	Screen/Sensor Base: 58.0 mBGL
	Run 5	75	62		6.0	10.0		NO CORE		Instrument Details:
	Run 6	100	95		4.0	12.0		CLAY, light grey		Installation Date: 14/12/2016
	Run 7	100	70		2.0	14.0		NO CORE		Development Date: -
	Run 8	100	91		0.0	16.0		CLAY, light grey		
	Run 9	100	97			18.0		MUDSTONE, light-mid grey		
	Run 10	100	100			20.0		NO CORE		
	Run 11	100	98			22.0		MUDSTONE, light-mid grey		
	Run 12	99	99			24.0		NO CORE		
	Run 13	98	77			26.0		MUDSTONE (90%), dark grey and mid grey		
	Run 14	100	98			28.0		LAMINITE		
	Run 15	99	82			30.0		NO CORE		
								LAMINITE		
								MUDSTONE (90%), dark grey		
								MUDSTONE (90%), dark grey		

Depth 0.0 to 0.1 m

Depth 0.1 to 1.0 m

Depth 1.0 to 50.8 m

GATIC COVER

BENTONITE

GROUT BENTONITE MIX

Depth 0.0 to 0.1 m
Depth 0.1 to 1.0 mGATIC COVER
BENTONITEDepth 1.0 to
50.8 m

GROUT BENTONITE MIX

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: NB/RKG

Checked by:

Location: Darley Street, Newtown

Start Date: 2/12/2016

End Date: 15/12/2016

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Easting: 331680.3 m

RL: 16.18 m

Drill Rig: Hanjin DB8

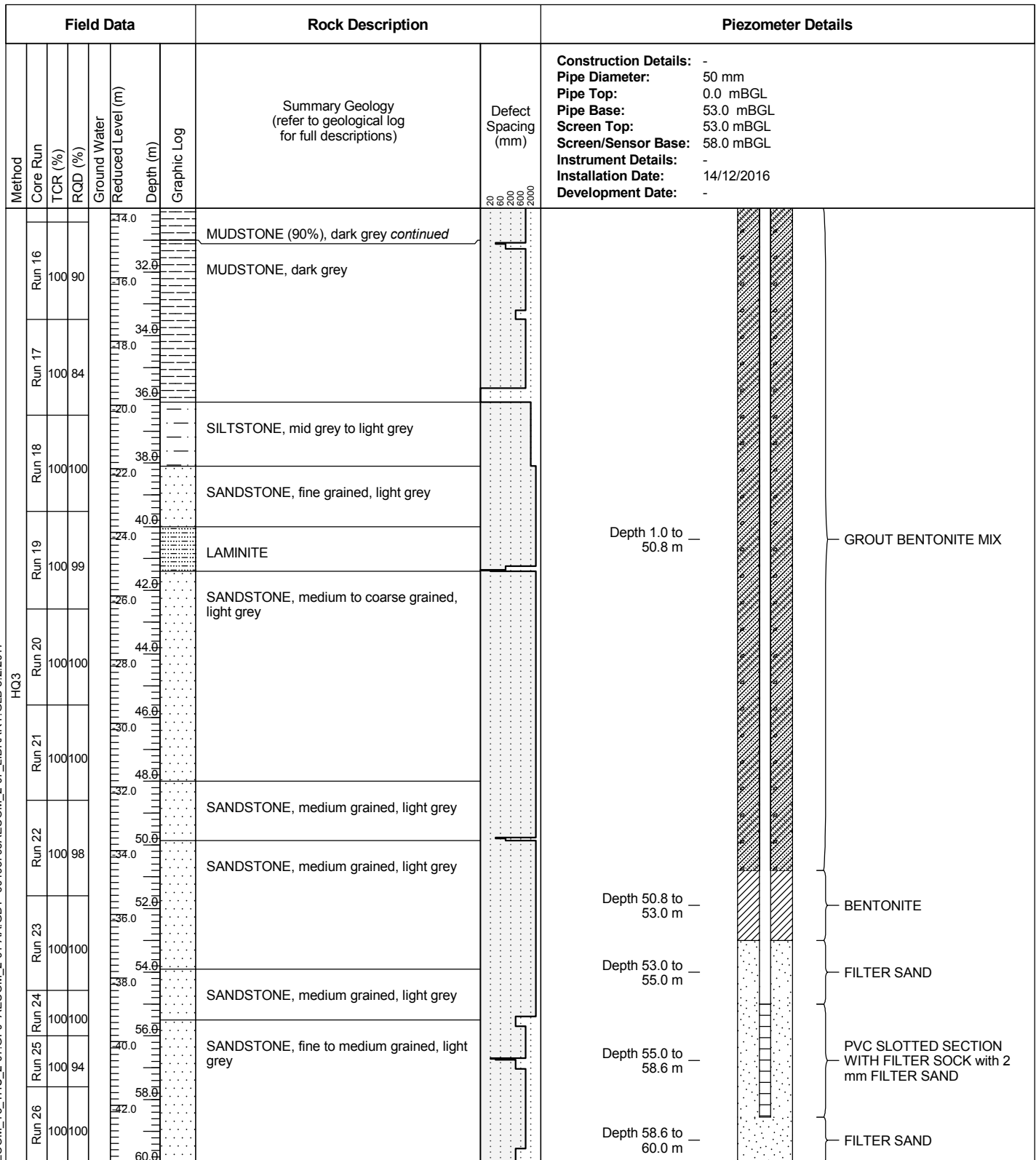
Inclination: -90°

Northing: 6246735.9 m

Ver. Datum: mAHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface: Road Surface



REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: NB/RKG

Checked by:

Location: Darley Street, Newtown

Start Date: 2/12/2016

End Date: 15/12/2016

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Easting: 331680.3 m

RL: 16.18 m

Drill Rig: Hanjin DB8

Inclination: -90°

Northing: 6246735.9 m

Ver. Datum: mAHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H **Surface:** Road Surface

Field Data							Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 53.0 mBGL Screen Top: 53.0 mBGL Screen/Sensor Base: 58.0 mBGL Instrument Details: Installation Date: 14/12/2016 Development Date: -
HQ3	Run 27	100	100		44.0				20	Depth 60.0 to 65.0 m Depth 65.0 to 69.0 m Depth 69.0 to 75.0 m BENTONITE GROUT SAND MIX GROUT
	Run 28	100	100		62.0		SANDSTONE, medium grained, light grey	60		
	Run 29	100	100		64.0		SANDSTONE, medium grained, light grey	200		
	Run 30	100	92		66.0		LAMINITE	600		
	Run 31	100	97		68.0		SANDSTONE, fine grained, mid grey	2000		
	Run 32	100	97		70.0		LAMINITE			
					72.0		SANDSTONE, fine grained, mid grey			
					74.0		MUDSTONE, dark grey			
					76.0		SANDSTONE, fine grained, mid grey			
					78.0		SANDSTONE, fine to medium grained, light grey			
					80.0		SANDSTONE, medium grained, light grey			
					82.0		SANDSTONE, medium grained, light grey			
MT_BH19 Terminated at 75.00 m.										

REMARKS:

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: Beside 19 Hill St, Parking Lane John St, Leichardt
Driller: Hagstrom Drilling Pty Ltd **Hole Diameter:** 96 mm
Drill Rig: Delta Base 525 **Inclination:** -90°
Bearing: N/A

Project No: 60493796
Logged by: NB **Checked by:**
Start Date: 15/12/2016 **End Date:** 20/12/2016
Easting: 330379.0 m **RL:**
Northing: 6249504.6 m **Ver. Datum:** AHD
Hor. Proj/Dat: MGA94/GDA94-56H **Surface:** Road Surface

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details:	
CA	NDD							Pipe Diameter: 60 mm Pipe Top: 0.0 mBGL Pipe Base: 41.0 mBGL Screen Top: 41.1 mBGL Screen/Sensor Base: 44.0 mBGL Instrument Details: - Installation Date: 21/12/2016 Development Date: -	
							Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	
								20 60 200 600 2000	
						2.0	ASPHALT		Depth 0.0 to 0.1 m
						2.0	COBBLES		Depth 0.1 to 1.0 m
	Run 1	82	50			4.0	Clayey SAND, fine to coarse grained, mid grey		
	Run 2	94	81			6.0	SANDSTONE, fine to coarse grained, yellow-brown		
						6.0	NO CORE		
	Run 3	99	90			8.0	SANDSTONE, coarse grained, yellow-brown and light-grey		
						8.0	NO CORE		
	Run 4	97	95			10.0	SANDSTONE, coarse grained, yellow-brown and light-grey		
						12.0	SANDSTONE, medium to coarse grained, light grey		
	Run 5	100	92			14.0	NO CORE		
						14.0	SANDSTONE, medium to coarse grained, light grey		
	Run 6	100	94			16.0	SANDSTONE, medium to coarse grained, light grey		
						18.0	SANDSTONE, medium to coarse grained, brown grey		
	Run 7	100	95			20.0	SANDSTONE, coarse grained, light grey		
						20.0	SHALE BRECCIA		
	Run 8	100	100			22.0	NO CORE		
						22.0	SHALE BRECCIA		
	Run 9	100	98			24.0	SANDSTONE, fine to coarse grained, light grey		
						26.0	SANDSTONE, medium to coarse grained, light grey		
	Run 10	98	98			28.0	SANDSTONE, fine to coarse grained, light brown grey		
						28.0	SANDSTONE, coarse grained, light grey		
						30.0	SANDSTONE, medium to coarse grained, light grey		

REMARKS:
 GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Beside 19 Hill St, Parking Lane John St, Leichardt

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta Base 525

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Start Date: 15/12/2016

Easting: 330379.0 m

Northing: 6249504.6 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:

End Date: 20/12/2016

RL:

Ver. Datum: AHD

Surface: Road Surface

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Pipe Diameter: 60 mm Pipe Top: 0.0 mBGL Pipe Base: 41.0 mBGL Screen Top: 41.1 mBGL Screen/Sensor Base: 44.0 mBGL Instrument Details: Installation Date: 21/12/2016 Development Date: -
HQ3	Run 11	100	98			32.0		SANDSTONE, fine to medium grained, light-mid grey		Depth 1.0 to — 37.0 m — Depth 37.0 to — 39.0 m — Depth 39.0 to — 41.1 m — Depth 41.1 to — 44.0 m — Depth 44.0 to — 46.0 m — Depth 46.0 to — 48.2 m — Depth 48.2 to — 55.0 m — GROUT BENTONITE MIX BENTONITE FILTER SAND PVC SLOTTED SECTION WITH FILTER SOCK with 2 mm FILTER SAND FILTER SAND BENTONITE GRAVEL
						34.0		NO CORE		
	Run 12	100	97			36.0		SANDSTONE, fine to medium grained, light-mid grey		
						38.0		SANDSTONE, medium grained, light grey		
	Run 13	100	97			40.0		SANDSTONE, fine to medium grained, light-mid grey		
						42.0		SANDSTONE, medium grained, light grey		
	Run 14	99	99			44.0		SANDSTONE, medium to coarse grained, light grey		
						46.0		NO CORE		
	Run 15	100	98			48.0		SANDSTONE, medium to coarse grained, light grey		
						50.0		SANDSTONE, medium to coarse grained, light-mid grey		
	Run 16	100	100			52.0		SANDSTONE, medium to coarse grained, light-mid grey		
						54.0		SANDSTONE, fine grained, mid grey to dark grey		
	Run 17	100	100			56.0		SANDSTONE, medium grained, light grey		
						58.0		SANDSTONE, medium grained, light grey		
	Run 18	100	100			60.0		SANDSTONE, fine grained, mid grey		
								SANDSTONE, medium grained, light grey		
								MT_BH20 Terminated at 55.00 m.		

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: LH/MC

Checked by:

Location: Corner Ainsworth and Moore Street, Lilyfield

Start Date: 6/12/2016

End Date: 9/12/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330066.7 m

RL: 25.14 m

Drill Rig: DR009

Inclination: -90°

Northing: 6249770.9 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface: Concrete

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:
CA	Run 1	100	0		24.0	2.0		ASPHALTIC CONCRETE	20	Pipe Diameter: 50 mm
					22.0	4.0		SANDSTONE	60	Pipe Top: 0.0 mBGL
	Run 2	92	66		20.0	6.0		CLAY, mottled orange-red	200	Pipe Base: 52.0 mBGL
					18.0	8.0		SANDSTONE, fine to medium grained, grey and red-brown	600	Screen Top: 47.0 mBGL
	Run 3	100	97		16.0	10.0		NO CORE	2000	Screen/Sensor Base: 50.0 mBGL
					14.0	12.0		SANDSTONE, fine to medium grained, dark brown		Instrument Details: -
	Run 4	100	90		12.0	14.0		SANDSTONE, medium grained, light grey		Installation Date: 9/12/2016
					10.0	16.0		SANDSTONE, medium grained, light grey		Development Date: -
	Run 5	100	98		8.0	18.0		SANDSTONE, fine to medium grained, light grey and dark grey		
					6.0	20.0		SANDSTONE, medium grained, light grey		
	Run 6	100	93		4.0	22.0		SANDSTONE, medium grained, light grey		
					2.0	24.0		SANDSTONE, medium to coarse grained, light grey		
	Run 7	100	100		0.0	26.0		SANDSTONE, medium grained, light grey		
						28.0		SANDSTONE, medium grained, light grey		
	Run 8	100	100			30.0		SANDSTONE, medium grained, light grey		
	Run 9	100	98							
	Run 10	100	100							

Depth 0.0 to 0.1 m
Depth 0.1 to 1.0 mGATIC COVER
BENTONITEDepth 1.0 to
43.0 m

GROUT

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: LH/MC

Checked by:

Location: Corner Ainsworth and Moore Street, Lilyfield

Start Date: 6/12/2016

End Date: 9/12/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330066.7 m

RL: 25.14 m

Drill Rig: DR009

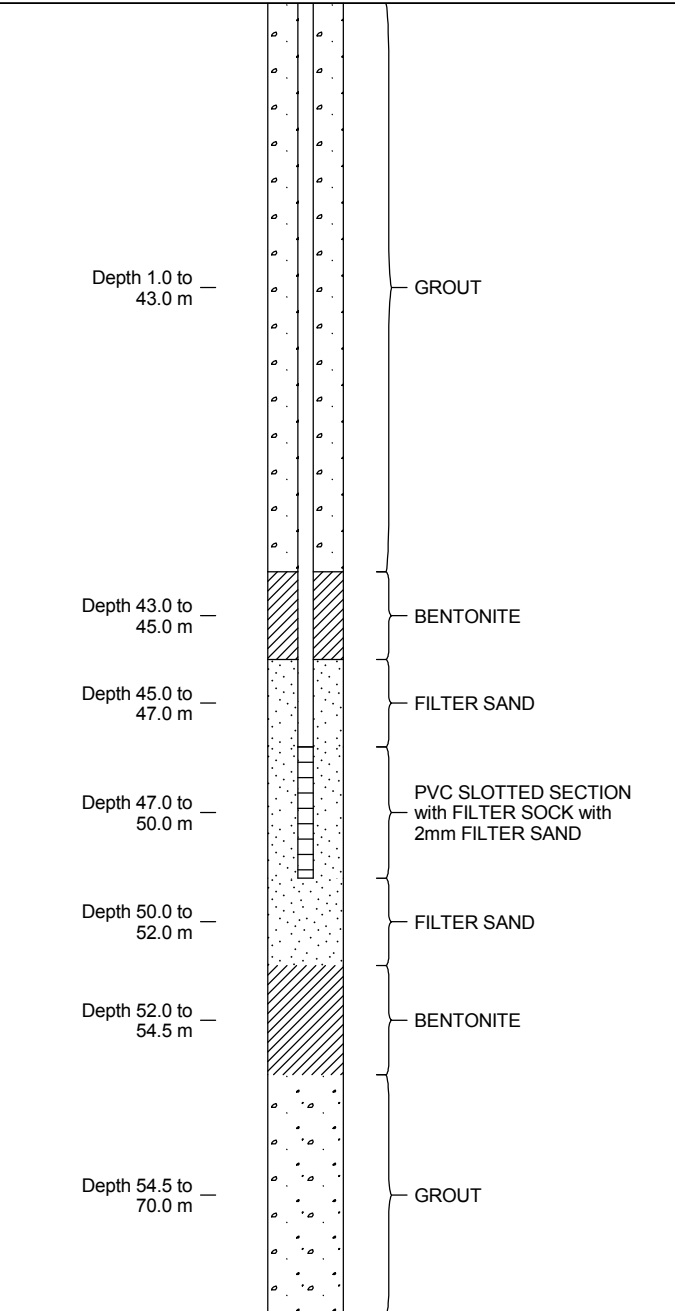
Inclination: -90°

Northing: 6249770.9 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface: Concrete

Field Data							Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 52.0 mBGL Screen Top: 47.0 mBGL Screen/Sensor Base: 50.0 mBGL Instrument Details: Installation Date: 9/12/2016 Development Date: -		
HQ3	Run 11	100	100		30.0	32.0		SANDSTONE, medium grained, light grey <i>continued</i>	20			
	Run 12	100	100		34.0	36.0		SANDSTONE, fine to medium grained, light grey	60			
	Run 13	100	100		38.0	40.0		SANDSTONE, medium grained, light grey	200			
	Run 14	100	100		42.0	44.0		SANDSTONE, medium grained, grey and light grey	600			
	Run 15	100	100		46.0	48.0		SANDSTONE, medium grained, grey and light grey	2000			
	Run 16	100	100		50.0	52.0		SANDSTONE, fine to medium grained, light grey				
	Run 17	100	100		54.0	56.0		SANDSTONE, fine to medium grained, light grey				
	Run 18	100	100		58.0	60.0		SANDSTONE, medium grained, brown-grey				
	Run 19	100	100		62.0	64.0		SANDSTONE, medium grained, brown-grey				
	Run 20	100	100		66.0	68.0		SANDSTONE, medium grained, brown-grey				
	Run 21	100	100		70.0	72.0		SANDSTONE, medium grained, brown-grey				
										Depth 1.0 to 43.0 m — GROUT		
										Depth 43.0 to 45.0 m — BENTONITE		
										Depth 45.0 to 47.0 m — FILTER SAND		
										Depth 47.0 to 50.0 m — PVC SLOTTED SECTION with FILTER SOCK with 2mm FILTER SAND		
										Depth 50.0 to 52.0 m — FILTER SAND		
										Depth 52.0 to 54.5 m — BENTONITE		
										Depth 54.5 to 70.0 m — GROUT		

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: LH/MC

Checked by:

Location: Corner Ainsworth and Moore Street, Lilyfield

Start Date: 6/12/2016

End Date: 9/12/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330066.7 m

RL: 25.14 m

Drill Rig: DR009

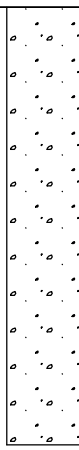
Inclination: -90°

Northing: 6249770.9 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface: Concrete

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: - Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 52.0 mBGL Screen Top: 47.0 mBGL Screen/Sensor Base: 50.0 mBGL Instrument Details: - Installation Date: 9/12/2016 Development Date: -	
HQ3	Run 22	100	100		36.0	62.0	fine to medium grained, light grey	Depth 54.5 to 70.0 m  GROUT	
	Run 23	100	100		38.0	64.0	SANDSTONE, fine to medium grained, light grey <i>continued</i>		
	Run 24	100	100		40.0	66.0	SANDSTONE, fine grained, grey to dark grey		
	Run 25	100	100		42.0	68.0	SHALE BRECCIA: SANDSTONE (75%), medium to coarse grained, light yellow-brown		
					44.0	70.0	SANDSTONE, medium grained, brown-grey		
							SANDSTONE, fine to medium grained		
							MT_BH21 Terminated at 70.00 m.		
					46.0	72.0			
					48.0	74.0			
					50.0	76.0			
					52.0	78.0			
					54.0	80.0			
					56.0	82.0			
					58.0	84.0			
					60.0	86.0			
					62.0	88.0			
					64.0	90.0			

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: JR/SJ

Checked by:BF

Start Date: 15/06/2016

End Date: 24/06/2016

Easting: 330608.9 m

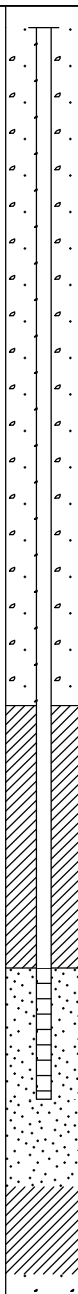
RL: 6.42 m

Northing: 6250381.3 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Gravel

Field Data							Rock Description			Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe		
										Pipe Diameter:	50 mm	
										Pipe Top:	0.0 mBGL	
										Pipe Base:	25.0 mBGL	
										Screen Top:	22.0 mBGL	
										Screen/Sensor Base:	25.0 mBGL	
										Instrument Details:	-	
										Installation Date:	23/06/2016	
										Development Date:	-	
NDD					0.0	0.0		Sandy GRAVEL	20	Depth 0.0 to 0.5 m		GATIC COVER
HA					2.0	2.0		Sandy GRAVEL, dark brown to dark grey	60	Depth 0.5 to 16.0 m		GROUT
					4.0	4.0		GRAVEL+COBBLES, light grey to dark grey	200			
					4.0	4.0		COBBLES, light grey to light yellow-brown	600			
					6.0	6.0		SAND, fine to medium grained, light yellow to light grey	2000			
HWT					6.0	6.0		SAND, medium grained				
					8.0	8.0		BOULDERS		Depth 16.0 to 22.0 m	BENTONITE	
					8.0	8.0		Clayey SAND, fine to coarse grained				
					10.0	10.0		SAND, fine to coarse grained, yellow-brown				
					12.0	12.0		SILT, dark brown and yellow-brown				
					12.0	12.0		GRAVEL, dark brown				
					14.0	14.0		Clayey SAND, fine to medium grained		Depth 22.0 to 25.0 m	PVC SLOTTED SECTION WITH FILTER SAND	
					14.0	14.0		SANDSTONE BOULDER				
					16.0	16.0		Clayey SAND, fine to medium grained				
					16.0	16.0		NO CORE				
					18.0	18.0		SANDSTONE, medium grained, light yellow-brown				
					20.0	20.0		NO CORE		Depth 25.0 to 27.0 m	FILTER SAND	
					20.0	20.0		SANDSTONE, medium grained, light yellow-brown				
					22.0	22.0		NO CORE				
					22.0	22.0		SANDSTONE, medium grained, light yellow-brown				
					24.0	24.0		CLAY				
					26.0	26.0		SANDSTONE		Depth 27.0 to 29.0 m	BENTONITE	
					26.0	26.0		SANDSTONE, medium grained, light grey				
					28.0	28.0		SANDSTONE, medium grained				
					28.0	28.0		SANDSTONE, medium grained				
					30.0	30.0		SANDSTONE, medium grained				
					30.0	30.0		SANDSTONE, medium grained		Depth 29.0 to 30.0 m	BENTONITE + CEMENT	

REMARKS:
GROUNDWATER MONITORING NOTES:

2015 ANZ PIEZO 20161216 AECOM T1 T2 T3 DUMMY FOR PIEZO 2-07.GPJ AECOM 2-01-AA.GDT 60493796AECOM 2-07_LIBRARY.GLB 16.12.2016

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: JR/SJ

Checked by: BF

Start Date: 15/06/2016

End Date: 24/06/2016

Easting: 330608.9 m

RL: 6.42 m

Northing: 6250381.3 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Gravel

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 25.0 mBGL Screen Top: 22.0 mBGL Screen/Sensor Base: 25.0 mBGL Instrument Details: - Installation Date: 23/06/2016 Development Date: -	
					24.0		CLAY, orange-brown		
					32.0		NO CORE		
					28.0		SANDSTONE, medium grained		
					34.0		SANDSTONE, medium grained		
					28.0		NO CORE		
					36.0		SANDSTONE, medium grained		
					30.0		SANDSTONE, medium to coarse grained, light grey		
					38.0		SANDSTONE, medium grained, light grey		
					32.0		SANDSTONE, medium grained, light grey		
					40.0		SANDSTONE, medium grained, light grey		
					34.0		SANDSTONE, medium grained, light grey		
					42.0		CLAY		
					36.0		SANDSTONE, medium grained, light grey		
					44.0		<i>continued</i>		
					38.0		<i>RZ_BH01 Terminated at 30.02 m.</i>		
					46.0				
					40.0				
					48.0				
					42.0				
					50.0				
					44.0				
					52.0				
					46.0				
					54.0				
					48.0				
					56.0				
					50.0				
					58.0				
					52.0				
					60.0				

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: TC

Start Date: 24/06/2016

Easting: 330611.5 m

Northing: 6250381.6 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 24/06/2016

RL: 6.46 m

Ver. Datum: AHD

Surface: Gravel

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 9.5 mBGL Screen Top: 6.5 mBGL Screen/Sensor Base: 9.5 mBGL Instrument Details: - Installation Date: 24/06/2016 Development Date: -
					6.0	0.0		Sandy GRAVEL	20	Depth 0.0 to 0.5 m —
					2.0	2.0		Sandy GRAVEL, dark brown to dark grey	60	
					4.0	4.0		GRAVEL+COBBLES, light grey to dark grey	200	Depth 0.5 to 4.0 m —
					4.0	4.0		COBBLES, light grey to light yellow-brown	200	
					6.0	6.0		SAND, fine to medium grained, light yellow to light grey	200	Depth 4.0 to 6.0 m —
					6.0	6.0		SAND, medium grained	200	Depth 6.0 to 6.5 m —
					8.0	8.0		BOULDERS	200	
					10.0	10.0		Clayey SAND, fine to coarse grained	200	Depth 6.5 to 9.5 m —
					10.0	10.0		SAND, fine to coarse grained, yellow-brown	200	Depth 9.5 to 9.7 m —
					12.0	12.0		SILT, dark brown and yellow-brown	200	
					14.0	14.0		GRAVEL, dark brown	200	
					14.0	14.0		Clayey SAND, fine to medium grained	200	
					16.0	16.0		SANDSTONE BOULDER	200	
					16.0	16.0		Clayey SAND, fine to medium grained	200	
					18.0	18.0		RZ_BH01A Terminated at 9.96 m.	200	
					20.0	20.0			200	
					22.0	22.0			200	
					24.0	24.0			200	
					26.0	26.0			200	
					28.0	28.0			200	
					30.0	30.0			200	

REMARKS: The material properties are taken from the adjacent borehole RZ_BH01A
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH/FR

Start Date: 7/06/2016

Easting: 330522.6 m

Northing: 6250349.9 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:BF

End Date: 9/06/2016

RL: 6.09 m

Ver. Datum: AHD

Surface: Grass

Field Data							Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:	
NDD	AD	CA									
						0.0		GRAVEL, medium to coarse grained, yellow-brown	20	machine slotted PVC pipe	
						2.0		Sandy COBBLES	60	Pipe Diameter: 50 mm	
						4.0		Sandy GRAVEL, fine to coarse grained, yellow-brown	200	Pipe Top: 0.0 mBGL	
						6.0		Sandy CLAY	600	Pipe Base: 21.0 mBGL	
						8.0		Gravelly Clayey SAND, fine to coarse grained	2000	Screen Top: 18.0 mBGL	
						10.0		Sandy CLAY		Screen/Sensor Base: 21.0 mBGL	
						12.0		SAND, medium grained, brown		Instrument Details: -	
						14.0		SANDSTONE, medium to coarse grained, grey, mottled light brown		Installation Date: 10/06/2016	
						16.0		NO CORE		Development Date: -	
						18.0		SANDSTONE, medium grained, light grey			
						20.0		SANDSTONE, medium to coarse grained, light grey			
						22.0		SANDSTONE, medium grained, light grey			
						24.0		NO CORE			
						26.0		SANDSTONE, fine to medium grained, light grey			
						28.0		SANDSTONE, medium grained, light grey			
						30.0		NO CORE			
						32.0		SANDSTONE, medium grained, light grey			
						34.0		SANDSTONE, medium grained, light grey			
						36.0		SANDSTONE, medium grained, light grey			
						38.0		SANDSTONE, medium grained, light grey			
						40.0		SANDSTONE, medium grained, light grey			
						42.0		SANDSTONE, medium grained, light grey			
						44.0		SANDSTONE, medium grained, light grey			
						46.0		SANDSTONE, medium grained, light grey			
						48.0		SANDSTONE, medium grained, light grey			
						50.0		SANDSTONE, medium grained, light grey			
						52.0		SANDSTONE, medium grained, light grey			
						54.0		SANDSTONE, medium grained, light grey			
						56.0		SANDSTONE, medium grained, light grey			
						58.0		SANDSTONE, medium grained, light grey			
						60.0		SANDSTONE, medium grained, light grey			
						62.0		SANDSTONE, medium grained, light grey			
						64.0		SANDSTONE, medium grained, light grey			
						66.0		SANDSTONE, medium grained, light grey			
						68.0		SANDSTONE, medium grained, light grey			
						70.0		SANDSTONE, medium grained, light grey			
						72.0		SANDSTONE, medium grained, light grey			
						74.0		SANDSTONE, medium grained, light grey			
						76.0		SANDSTONE, medium grained, light grey			
						78.0		SANDSTONE, medium grained, light grey			
						80.0		SANDSTONE, medium grained, light grey			
						82.0		SANDSTONE, medium grained, light grey			
						84.0		SANDSTONE, medium grained, light grey			
						86.0		SANDSTONE, medium grained, light grey			
						88.0		SANDSTONE, medium grained, light grey			
						90.0		SANDSTONE, medium grained, light grey			

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: LH/FR

Checked by: BF

Location: Rozelle Rail Yards, Lilyfield

Start Date: 7/06/2016

End Date: 9/06/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330522.6 m

RL: 6.09 m

Drill Rig: DR04-Hydrapower Scout

Inclination: -90°

Northing: 6250349.9 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data					Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Defect Spacing (mm)
HQ3	Run 15	100	100		24.0			
	Run 16	100	100		32.0			
	Run 17	100	100		28.0			
	Run 18	100	100		34.0			
	Run 19	100	100		28.0			
	Run 20	100	100		36.0			
	Run 21	100	100		30.0			
	Run 22	100	100		38.0			
	Run 23	100	100		32.0			
	Run 24	100	100		40.0			
	Run 25	100	100		34.0			
	Run 26	100	100		42.0			
	Run 27	100	100		36.0			
	Run 28	100	100		44.0			
	Run 29	100	100		38.0			
	Run 30	100	100		46.0			
	Run 31	100	100		40.0			
	Run 32	100	100		48.0			
	Run 33	100	100		42.0			
	Run 34	100	100		50.0			
	Run 35	100	100		44.0			
	Run 36	100	100		52.0			
	Run 37	100	100		46.0			
	Run 38	100	100		54.0			
	Run 39	100	100		48.0			
	Run 40	100	100		56.0			
	Run 41	100	100		50.0			
	Run 42	100	100		58.0			
	Run 43	100	100		52.0			
	Run 44	100	100		60.0			
	Run 45	100	100					
	Run 46	100	100					
	Run 47	100	100					
	Run 48	100	100					
	Run 49	100	100					
	Run 50	100	100					
	Run 51	100	100					
	Run 52	100	100					
	Run 53	100	100					
	Run 54	100	100					
	Run 55	100	100					
	Run 56	100	100					
	Run 57	100	100					
	Run 58	100	100					
	Run 59	100	100					
	Run 60	100	100					
	Run 61	100	100					
	Run 62	100	100					
	Run 63	100	100					
	Run 64	100	100					
	Run 65	100	100					
	Run 66	100	100					
	Run 67	100	100					
	Run 68	100	100					
	Run 69	100	100					
	Run 70	100	100					
	Run 71	100	100					
	Run 72	100	100					
	Run 73	100	100					
	Run 74	100	100					
	Run 75	100	100					
	Run 76	100	100					
	Run 77	100	100					
	Run 78	100	100					
	Run 79	100	100					
	Run 80	100	100					
	Run 81	100	100					
	Run 82	100	100					
	Run 83	100	100					
	Run 84	100	100					
	Run 85	100	100					
	Run 86	100	100					
	Run 87	100	100					
	Run 88	100	100					
	Run 89	100	100					
	Run 90	100	100					
	Run 91	100	100					
	Run 92	100	100					
	Run 93	100	100					
	Run 94	100	100					
	Run 95	100	100					
	Run 96	100	100					
	Run 97	100	100					
	Run 98	100	100					
	Run 99	100	100					
	Run 100	100	100					

SANDSTONE, medium to coarse grained, light grey

SANDSTONE, fine to medium grained, light grey

SANDSTONE, medium to coarse grained, light grey *continued*

SANDSTONE, medium to coarse grained, light grey

SANDSTONE, medium grained, light grey

RZ_BH15 Terminated at 35.00 m.

Construction Details: machine slotted PVC pipe

Pipe Diameter: 50 mm

Pipe Top: 0.0 mBGL

Pipe Base: 21.0 mBGL

Screen Top: 18.0 mBGL

Screen/Sensor Base: 21.0 mBGL

Instrument Details: -

Installation Date: 10/06/2016

Development Date: -

Depth 22.0 to 31.8 m

Depth 31.8 to 35.0 m

BENTONITE

BENTONITE - CEMENT GROUT

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta 550

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: HW/LH

Checked by:BF

Start Date: 14/06/2016

End Date: 16/06/2016

Easting: 330609.4 m

RL: 5.88 m

Northing: 6250409.4 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94

Surface: Grass

Field Data							Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:	
NDD										Pipe Diameter:	Machine slotted PVC pipe
CA										Pipe Top:	0.0 mBGL
										Pipe Base:	20.0 mBGL
										Screen Top:	17.0 mBGL
										Screen/Sensor Base:	20.0 mBGL
										Instrument Details:	-
										Installation Date:	16/06/2016
										Development Date:	-
										Depth 0.0 to 0.5 m —	GATIC COVER
								Sandy GRAVEL, fine to coarse grained			
								GRAVEL, fine to coarse grained, dark grey			
								GRAVEL, medium to coarse grained, yellow-brown			
								Gravelly SAND, medium grained			
								CLAY, dark brown-grey			
								SAND, medium grained, light grey, mottled red		Depth 0.5 to 13.0 m —	BENTONITE + CEMENT GROUT
								SANDSTONE, medium to coarse grained, light grey, mottled red			
								SANDSTONE, medium to coarse grained, light grey with orange staining			
								NO CORE			
								SANDSTONE, medium to coarse grained, light grey with orange staining			
								SANDSTONE, medium grained, light grey		Depth 13.0 to 15.1 m —	BENTONITE
								SANDSTONE, medium grained, light grey			
								SANDSTONE, coarse grained, light grey		Depth 15.1 to 17.0 m —	FILTER SAND
								SANDSTONE, medium grained, light grey			
								SANDSTONE, medium grained, light grey		Depth 17.0 to 20.0 m —	PVC SLOTTED SECTION WITH FILTER SAND
								SANDSTONE, medium to coarse grained, light grey			
								NO CORE		Depth 20.0 to 22.2 m —	FILTER SAND
								SANDSTONE, medium to coarse grained, light grey			
								SANDSTONE, medium to coarse grained, light grey			
								SANDSTONE, medium grained, light grey		Depth 22.2 to 28.9 m —	BENTONITE
								MUDSTONE, dark grey			
								SANDSTONE, medium grained, light grey			
										Depth 28.9 to 35.0 m —	BENTONITE + CEMENT GROUT

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta 550

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: HW/LH

Checked by: BF

Start Date: 14/06/2016

End Date: 16/06/2016

Easting: 330609.4 m

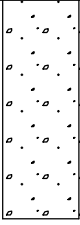
RL: 5.88 m

Northing: 6250409.4 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 20.0 mBGL Screen Top: 17.0 mBGL Screen/Sensor Base: 20.0 mBGL Instrument Details: - Installation Date: 16/06/2016 Development Date: -	
HQ3	Run 21	100	100		26.0	28.0	MUDSTONE	Depth 28.9 to 35.0 m  BENTONITE + CEMENT GROUT	
	Run 22	100	100		26.0	28.0	SANDSTONE, medium to coarse grained, light grey		
	Run 23	100	100		26.0	28.0	NO CORE		
	Run 24	100	100		28.0	34.0	MUDSTONE, dark grey <i>continued</i>		
	Run 25	100	99		28.0	34.0	INTERBEDDED MUDSTONE/SANDSTONE		
					30.0	36.0	SANDSTONE, medium grained, light grey		
					32.0	38.0	SANDSTONE, medium grained, light grey		
					34.0	40.0			
					36.0	42.0			
					38.0	44.0			
					40.0	46.0			
					42.0	48.0			
					44.0	50.0			
					46.0	52.0			
					48.0	54.0			
					50.0	56.0			
					52.0	58.0			
					54.0	60.0			

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: NB/TC

Checked by: BF

Location: Rozelle Rail Yards, Lilyfield

Start Date: 12/07/2016

End Date: 22/07/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330822.5 m

RL: 2.53 m

Drill Rig: Hydrapower Scout

Inclination: -90°

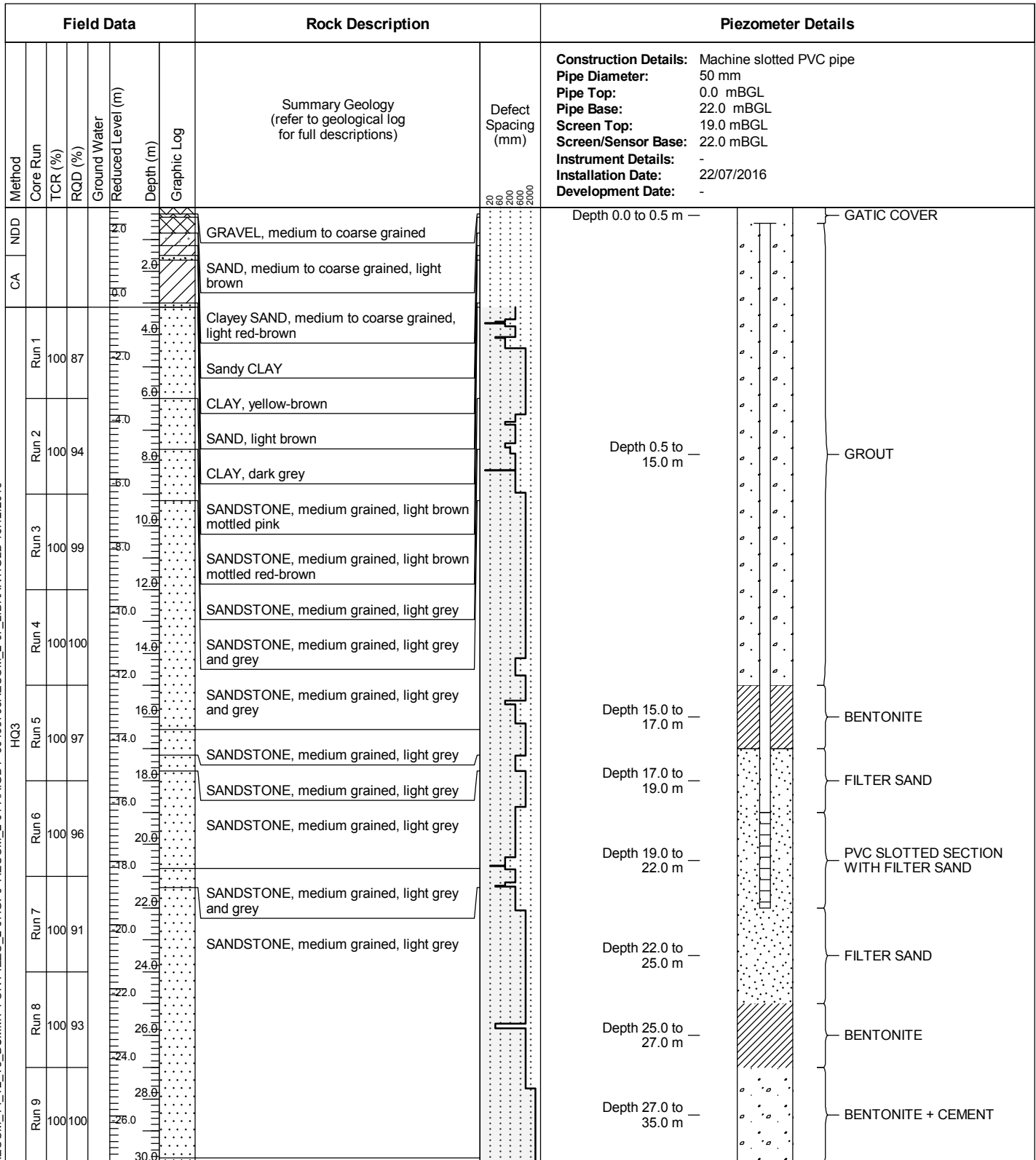
Northing: 6250627.0 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB/TC

Start Date: 12/07/2016

Easting: 330822.5 m

Northing: 6250627.0 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 22/07/2016

RL: 2.53 m

Ver. Datum: AHD

Surface: Grass

Field Data							Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe	
HQ3	Run 10	100	96		28.0						Pipe Diameter: 50 mm
	Run 11	100	90		32.0						Pipe Top: 0.0 mBGL
					34.0					Pipe Base: 22.0 mBGL	
					36.0					Screen Top: 19.0 mBGL	
					38.0					Screen/Sensor Base: 22.0 mBGL	
					40.0					Instrument Details: -	
					42.0					Installation Date: 22/07/2016	
					44.0					Development Date: -	
					46.0						
					48.0						
					50.0						
					52.0						
					54.0						
					56.0						
					58.0						
					60.0						

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Numac Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta Base 520

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: FR/NB

Start Date: 4/07/2016

Easting: 331066.3 m

Northing: 6250835.1 m

Hor. Proj/Dat: MGA94/GDA94-56H

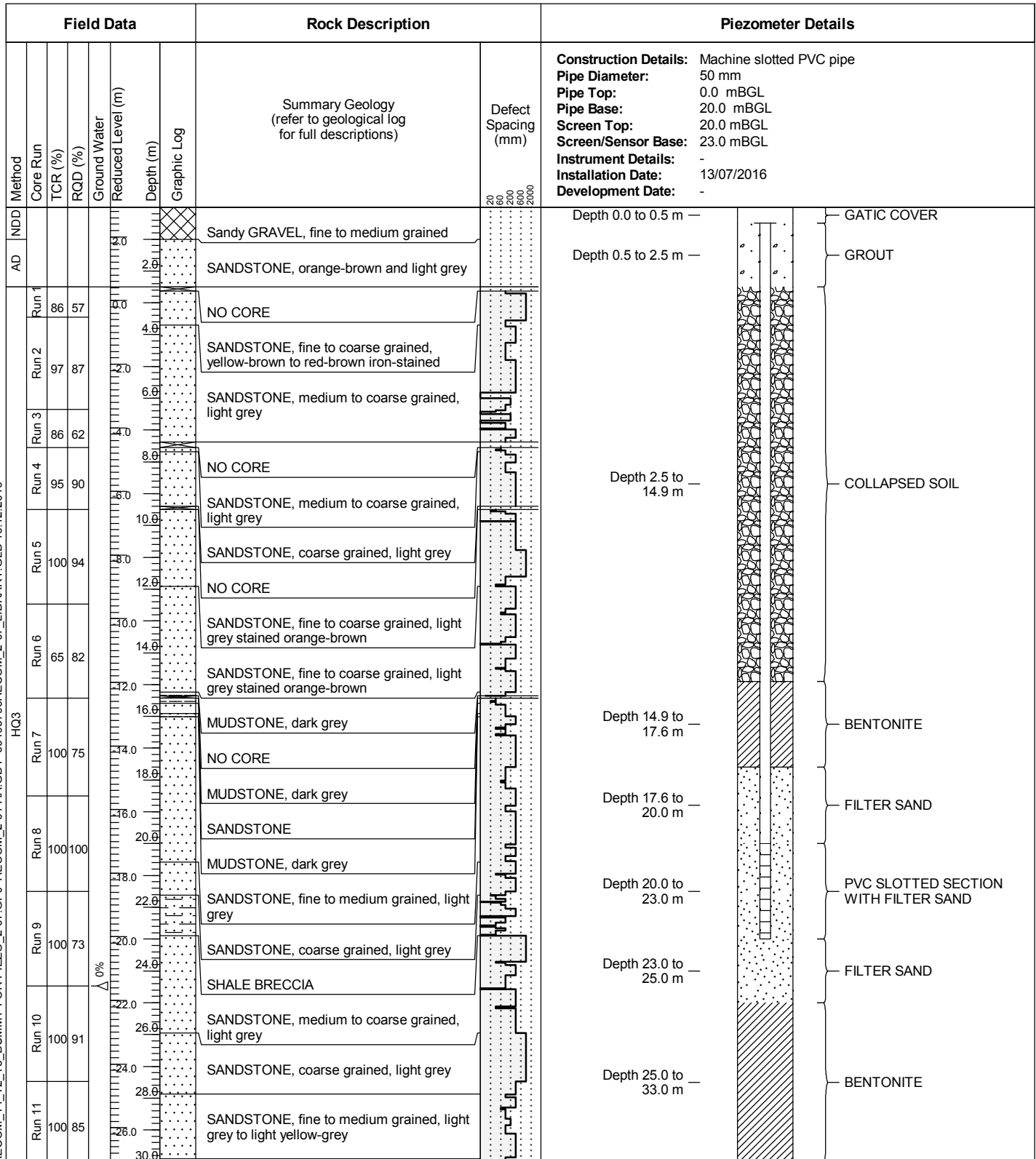
Checked by: BF

End Date: 11/07/2016

RL: 2.93 m

Ver. Datum: AHD

Surface: Railway track/Fill

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Numac Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta Base 520

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: FR/NB

Checked by: BF

Start Date: 4/07/2016

End Date: 11/07/2016

Easting: 331066.3 m

RL: 2.93 m

Northing: 6250835.1 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Railway track/Fill

Field Data					Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Defect Spacing (mm)
HQ3	Run 12	100	100		28.0			
					32.0			
					30.0			
	Run 13	100	99		34.0			
					32.0			
					36.0			
					34.0			
					38.0			
					36.0			
					40.0			
					38.0			
					42.0			
					40.0			
					44.0			
					42.0			
					46.0			
					44.0			
					48.0			
					46.0			
					50.0			
					48.0			
					52.0			
					50.0			
					54.0			
					52.0			
					56.0			
					54.0			
					58.0			
					56.0			
					60.0			

Summary Geology
(refer to geological log
for full descriptions)Defect
Spacing
(mm)

Construction Details: Machine slotted PVC pipe

Pipe Diameter: 50 mm

Pipe Top: 0.0 mBGL

Pipe Base: 20.0 mBGL

Screen Top: 20.0 mBGL

Screen/Sensor Base: 23.0 mBGL

Instrument Details: -

Installation Date: 13/07/2016

Development Date: -

Depth 25.0 to —
33.0 m

BENTONITE

Depth 33.0 to —
35.1 m

BENTONITE + CEMENT

SANDSTONE, medium to coarse grained,
light brown-grey *continued*SANDSTONE, fine to coarse grained, light
greySANDSTONE, coarse grained, light
yellow-brownSANDSTONE, medium to coarse grained,
light grey to light yellow-grey

RZ_BH26 Terminated at 35.05 m.

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Checked by:BF

Start Date: 27/07/2016

End Date: 28/07/2016

Easting: 331126.6 m

RL: 2.91 m

Northing: 6250818.8 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 30.0 mBGL Screen Top: 27.0 mBGL Screen/Sensor Base: 30.0 mBGL Instrument Details: - Installation Date: 29/07/2016 Development Date: -
NDD						0.0		Clayey SAND, fine to medium grained, dark grey	20	Depth 0.0 to 0.5 m —
ADT						2.0		SAND, fine to coarse grained, yellow-brown	60	
						4.0		Gravelly COBBLES	200	
HQ3	Run 1	100	100			6.0		GRAVEL, medium to coarse grained	600	Depth 0.5 to 23.0 m —
	Run 2	100	96			8.0		Clayey GRAVEL, fine to medium grained	2000	
	Run 3	100	77			10.0		SANDSTONE, medium to coarse grained, yellow-brown		
	Run 4	100	97			12.0		SANDSTONE, fine to coarse grained, light grey and yellow-brown		
	Run 5	98	72			14.0		SANDSTONE, fine grained, light grey		
	Run 6	100	72			16.0		SANDSTONE, yellow-brown		
	Run 7	100	100			18.0		SANDSTONE, fine to coarse grained, light grey to yellow-brown		Depth 23.0 to 25.0 m —
	Run 8	100	93			20.0		NO CORE		
	Run 9	100	85			22.0		SANDSTONE, fine to coarse grained, light grey		
	Run 10	100	92			24.0		SANDSTONE, medium to coarse grained, light grey-grey		
	Run 11	100	90			26.0		SANDSTONE, coarse grained, light grey		
	Run 12	100	96			28.0		SHALE BRECCIA, fine to coarse grained		
					30.0		SANDSTONE, medium to coarse grained, light grey and light yellow-brown		Depth 25.0 to 27.0 m —	
					32.0		SANDSTONE, medium to coarse grained, light grey		Depth 27.0 to 30.0 m —	
					34.0		SANDSTONE, fine to medium grained, light grey			
					36.0		SANDSTONE, medium to coarse grained, light grey and light yellow-brown			

Depth 0.0 to 0.5 m —

Depth 0.5 to 23.0 m —

Depth 23.0 to 25.0 m —

Depth 25.0 to 27.0 m —

Depth 27.0 to 30.0 m —

GATIC COVER

GROUT

BENTONITE

FILTER SAND

PVC SLOTTED SECTION WITH FILTER SAND

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Checked by: BF

Start Date: 27/07/2016

End Date: 28/07/2016

Easting: 331126.6 m

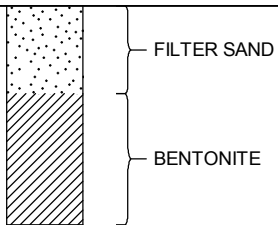
RL: 2.91 m

Northing: 6250818.8 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data							Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Summary Geology (refer to geological log for full descriptions)		Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 30.0 mBGL Screen Top: 27.0 mBGL Screen/Sensor Base: 30.0 mBGL Instrument Details: - Installation Date: 29/07/2016 Development Date: -	
HQ3	Run 13	100	94		28.0	28.0	SANDSTONE, coarse grained, light grey		Depth 30.0 to — 32.0 m —	
	Run 14	100	97		32.0	32.0				
					34.0	34.0	SANDSTONE, fine to medium grained, grey		Depth 32.0 to — 35.0 m —	
					36.0	36.0				
					38.0	38.0	RZ_BH28 Terminated at 35.00 m.			
					40.0	40.0				
					42.0	42.0				
					44.0	44.0				
					46.0	46.0				
					48.0	48.0				
					50.0	50.0				
					52.0	52.0				
					54.0	54.0				
					56.0	56.0				
					58.0	58.0				
					60.0	60.0				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: JR/BH

Checked by:BF

Start Date: 6/07/2016

End Date: 13/07/2016

Easting: 331192.9 m

RL: 2.10 m

Northing: 6250835.0 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description			Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe		
NDD										Pipe Diameter:	50 mm	
										Pipe Top:	0.0 mBGL	
										Pipe Base:	19.0 mBGL	
										Screen Top:	16.0 mBGL	
										Screen/Sensor Base:	19.0 mBGL	
										Instrument Details:	-	
										Installation Date:	14/07/2016	
										Development Date:	-	
AD						0.0		ASPHALT		Depth 0.0 to 0.5 m —		
						2.0		Sandy GRAVEL				
						4.0		Gravelly SAND, medium to coarse grained				
						6.0		Sandy GRAVEL				
						8.0		Gravelly SAND		Depth 0.5 to 12.0 m —		
	Run 2	95	70			10.0		SAND, fine to medium grained, light grey mottled light orange				
						12.0		SAND, fine to medium grained, light grey-orange				
	Run 3					14.0		NO CORE				
						16.0		SANDSTONE, fine to medium grained, light yellow-orange				
						18.0		SANDSTONE, medium grained, light grey, yellow-grey and orange/red		Depth 12.0 to 14.0 m —		
	Run 4	100	95			20.0		NO CORE				
						22.0		SANDSTONE, medium grained, light grey to orange/red		Depth 14.0 to 16.0 m —		
	Run 5	82	75			24.0		MUDSTONE, grey				
						26.0		SANDSTONE, medium grained, yellow-brown		Depth 16.0 to 19.0 m —		
	Run 6	87	55			28.0		NO CORE				
						30.0		SANDSTONE, medium grained, yellow-brown		Depth 19.0 to 21.1 m —		
	Run 7	100	96			32.0		SANDSTONE, medium grained, light grey				
						34.0		NO CORE		Depth 21.1 to 25.0 m —		
						36.0		SANDSTONE, medium grained, light grey				
	Run 8	100	91			38.0		NO CORE				
						40.0		SANDSTONE, medium grained, light grey				
	Run 9	100	85			42.0		SANDSTONE, fine to medium grained, light grey		Depth 25.0 to 35.0 m —		
						44.0		SANDSTONE, medium grained, light grey				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: JR/BH

Checked by: BF

Start Date: 6/07/2016

End Date: 13/07/2016

Easting: 331192.9 m

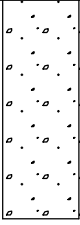
RL: 2.10 m

Northing: 6250835.0 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 19.0 mBGL Screen Top: 16.0 mBGL Screen/Sensor Base: 19.0 mBGL Instrument Details: - Installation Date: 14/07/2016 Development Date: -	
HQ3	Run 10	100	100		28.0				
					32.0			Depth 25.0 to 35.0 m 	
	Run 11	100	100		34.0				
					32.0			Defect Spacing (mm) 20 60 200 500 1000 2000	
								Summary Geology (refer to geological log for full descriptions)	
								MUDSTONE, fine grained, dark grey-grey	
								SANDSTONE, fine to medium grained, light grey	
								CLAY, grey	
								SANDSTONE, fine to medium grained, light grey <i>continued</i>	
								RZ_BH30 Terminated at 35.00 m.	

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: JR

Checked by: BF

Location: Rozelle Rail Yards, Rozelle

Start Date: 28/07/2016

End Date: 2/08/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330726.6 m

RL: 2.35 m

Drill Rig: Hydrapower Scout

Inclination: -90°

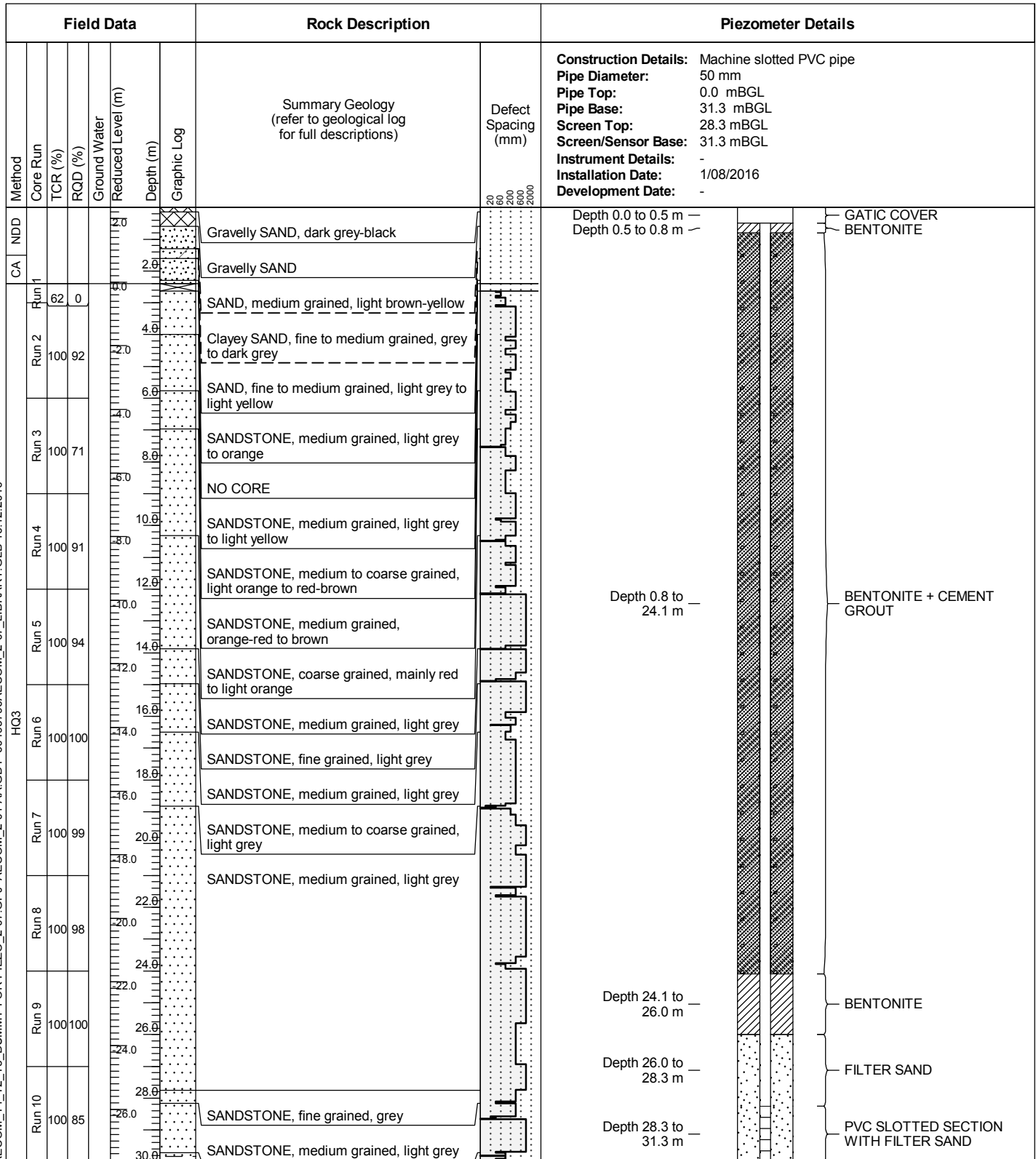
Northing: 6250512.1 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass/Gravel



REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: JR

Checked by: BF

Start Date: 28/07/2016

End Date: 2/08/2016

Easting: 330726.6 m

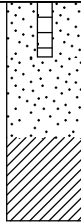
RL: 2.35 m

Northing: 6250512.1 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass/Gravel

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 31.3 mBGL Screen Top: 28.3 mBGL Screen/Sensor Base: 31.3 mBGL Instrument Details: - Installation Date: 1/08/2016 Development Date: -
HQ3	Run 11	100	90		28.0			SHALE BRECCIA <i>continued</i>	20	Depth 28.3 to 31.3 m — Depth 31.3 to 33.1 m — Depth 33.1 to 35.0 m —
	Run 12	100	100		32.0			SANDSTONE, fine to medium grained, light grey	60	
					30.0			SANDSTONE, medium grained, grey to dark brown	200	
					34.0			SANDSTONE, medium grained, light grey	600	
					32.0			RZ_BH38 Terminated at 35.08 m.	2000	PVC SLOTTED SECTION WITH FILTER SAND
					36.0					FILTER SAND
					34.0					BENTONITE
					38.0					
					36.0					
					40.0					
					38.0					
					42.0					
					40.0					
					44.0					
					42.0					
					46.0					
					44.0					
					48.0					
					46.0					
					50.0					
					48.0					
					52.0					
					50.0					
					54.0					
					52.0					
					56.0					
					54.0					
					58.0					
					56.0					
					60.0					

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta 550

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: FR/LH

Checked by:BF

Start Date: 2/08/2016

End Date: 8/08/2016

Easting: 330885.8 m

RL: 2.36 m

Northing: 6250614.0 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 28.0 mBGL Screen Top: 25.0 mBGL Screen/Sensor Base: 28.0 mBGL Instrument Details: Installation Date: 9/08/2016 Development Date: -
NDD	CA					0.0		Clayey SAND, fine to coarse grained, dark grey	20	Depth 0.0 to 0.5 m — <

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation	Project No: 60493796	Logged by: FR/LH	Checked by: BF
Project: M4-M5 Link Geotech Investigation	Start Date: 2/08/2016	End Date: 8/08/2016	
Location: Rozelle Rail Yards, Lilyfield	Easting: 330885.8 m	RL: 2.36 m	
Driller: Hagstrom Drilling Pty Ltd	Hole Diameter: 96 mm	Northing: 6250614.0 m	Ver. Datum: AHD
Drill Rig: Delta 550	Inclination: -90°	Hor. Proj/Dat: MGA94/GDA94-56H	Surface: Grass
	Bearing: N/A		

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 28.0 mBGL Screen Top: 25.0 mBGL Screen/Sensor Base: 28.0 mBGL Instrument Details: - Installation Date: 9/08/2016 Development Date: -
HQ3	Run 12	100	97		28.0				
	Run 13	100	100		32.0		SANDSTONE, medium grained, pale grey		
	Run 14	100	100		34.0		SANDSTONE, medium to coarse grained, pale grey and dark grey		
	Run 15	100	100		32.0		SANDSTONE, medium grained, pale grey		
					36.0		RZ_BH44 Terminated at 35.00 m.		
					38.0				
					40.0				
					42.0				
					44.0				
					46.0				
					48.0				
					50.0				
					52.0				
					54.0				
					56.0				
					58.0				
					60.0				

Depth 30.0 to 35.0 m

BENTONITE

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta 550

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Checked by: BF

Start Date: 10/08/2016

End Date: 10/08/2016

Easting: 330884.4 m

RL: 2.31 m

Northing: 6250613.3 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 15.0 mBGL Screen Top: 12.0 mBGL Screen/Sensor Base: 15.0 mBGL Instrument Details: - Installation Date: 10/08/2016 Development Date: -
					2.0	2.0		Clayey SAND, fine to coarse grained, dark grey	20	Depth 0.0 to 0.5 m —
					2.0	2.0		COBBLES	60	
					4.0	4.0		Clayey SAND, fine to coarse grained, dark brown to dark grey	200	
					4.0	4.0		SAND, fine to coarse grained, yellow-brown	200	Depth 0.5 to 10.0 m —
					6.0	6.0		CLAY, black	200	
					6.0	6.0		Sandy CLAY, black	200	
					8.0	8.0		CLAY, black	200	
					8.0	8.0		Sandy CLAY, black	200	
					10.0	10.0		CLAY, black	200	Depth 10.0 to 12.0 m —
					12.0	12.0		Clayey SAND, fine to medium grained, pale brown and dark brown	200	
					14.0	14.0		CLAY, black	200	Depth 12.0 to 15.0 m —
					16.0	16.0		Clayey SAND, fine to medium grained, pale brown and dark brown	200	Depth 15.0 to 15.9 m —
					16.0	16.0		RZ_BH44A Terminated at 16.55 m.	200	Depth 15.9 to 16.6 m —
					18.0	18.0				
					20.0	20.0				
					22.0	22.0				
					24.0	24.0				
					26.0	26.0				
					28.0	28.0				
					30.0	30.0				

REMARKS: The material properties are taken from the adjacent borehole RZ_BH44

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: HW/TC

Checked by: BF

Location: Rozelle Rail Yards, Lilyfield

Start Date: 2/08/2016

End Date: 8/08/2016

Driller: Numac Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 331025.2 m

RL: 2.40 m

Drill Rig: Delta Base 520

Inclination: -90°

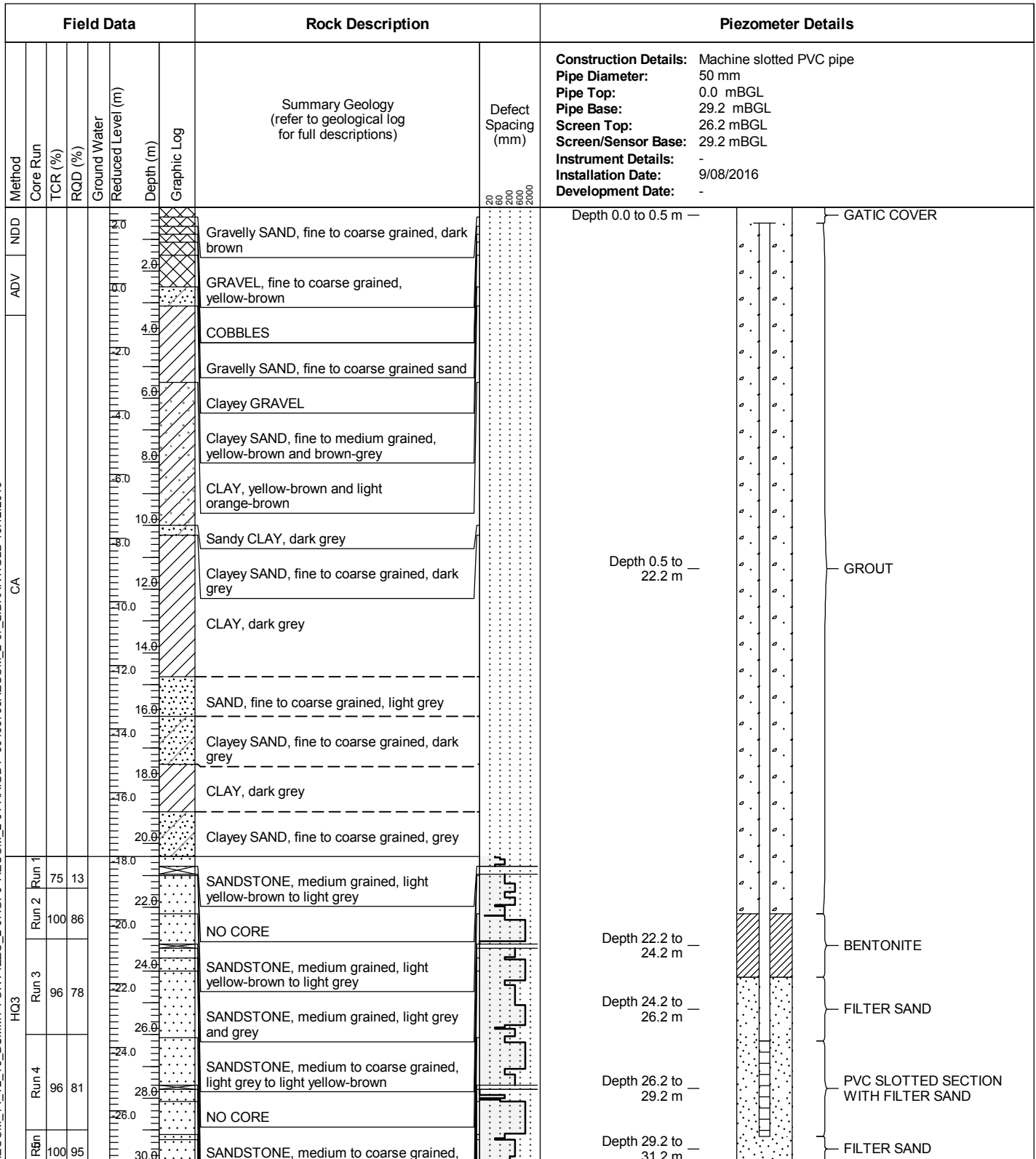
Northing: 6250701.7 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass/Ballast

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Numac Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta Base 520

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: HW/TC

Start Date: 2/08/2016

Easting: 331025.2 m

Northing: 6250701.7 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 8/08/2016

RL: 2.40 m

Ver. Datum: AHD

Surface: Grass/Ballast

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 29.2 mBGL Screen Top: 26.2 mBGL Screen/Sensor Base: 29.2 mBGL Instrument Details: - Installation Date: 9/08/2016 Development Date: -	
HQ3	Run 5	100	95		28.0		light grey to light yellow-brown	Defect Spacing (mm) 20 60 120 200 400 600 800 1000 1200 1400 1600 1800 2000	Depth 29.2 to 31.2 m FILTER SAND Depth 31.2 to 35.0 m BENTONITE
	Run 6	100	93		32.0		SANDSTONE, medium grained, light grey		
	Run 7	100	93		30.0		SANDSTONE, medium grained, light grey		
					34.0		SANDSTONE, medium grained, light grey		
					32.0		NO CORE		
					36.0		SANDSTONE, medium grained, light grey		
					34.0		SANDSTONE, medium grained, light grey		
					38.0		SANDSTONE, medium grained, light grey		
					36.0		SANDSTONE, medium grained, light grey		
					40.0		SANDSTONE, medium grained, light grey		
					38.0		SANDSTONE, medium grained, light grey		
					42.0		SANDSTONE, medium grained, light grey to light yellow-brown		
					40.0		SANDSTONE, medium grained, light grey		
					44.0		RZ_BH47 Terminated at 35.00 m.		
					42.0				
					46.0				
					44.0				
					48.0				
					46.0				
					50.0				
					48.0				
					52.0				
					50.0				
					54.0				
					52.0				
					56.0				
					54.0				
					58.0				
					56.0				
					60.0				

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Numac Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta Base 520

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: TC

Start Date: 10/08/2016

Easting: 331027.9 m

Northing: 6250704.0 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 10/08/2016

RL: 2.59 m

Ver. Datum: AHD

Surface: Grass/Ballast

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 18.0 mBGL Screen Top: 15.0 mBGL Screen/Sensor Base: 18.0 mBGL Instrument Details: - Installation Date: 10/08/2016 Development Date: -
						0.0		Gravelly SAND, fine to coarse grained, dark brown	20	Depth 0.0 to 0.5 m —
						2.0		GRAVEL, fine to coarse grained, yellow-brown	60	
						4.0		COBBLES	200	
						6.0		Gravelly SAND, fine to coarse grained sand	400	Depth 0.5 to 11.0 m —
						8.0		Clayey GRAVEL	600	
						10.0		Clayey SAND, fine to medium grained, yellow-brown and brown-grey	800	
						12.0		CLAY, yellow-brown and light orange-brown	1000	
						14.0		Sandy CLAY, dark grey	1200	
						16.0		Clayey SAND, fine to coarse grained, dark grey	1400	Depth 11.0 to 13.0 m —
						18.0		CLAY, dark grey	1600	
						20.0		SAND, fine to coarse grained, light grey	1800	Depth 13.0 to 15.0 m —
						22.0		Clayey SAND, fine to coarse grained, dark grey	2000	
						24.0		CLAY, dark grey		Depth 15.0 to 18.0 m —
						26.0		Clayey SAND, fine to coarse grained, grey		
						28.0				Depth 18.0 to 19.0 m —
						30.0				Depth 19.0 to 20.2 m —
								RZ_BH47A Terminated at 21.00 m.		

REMARKS: The material properties are taken from the adjacent borehole RZ_BH47

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Lilyfield

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: JR

Checked by: BF

Start Date: 30/06/2016

End Date: 30/06/2016

Easting: 330730.4 m

RL: 6.06 m

Northing: 6250461.6 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Basalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 16.2 mBGL Screen Top: 13.2 mBGL Screen/Sensor Base: 16.2 mBGL Instrument Details: - Installation Date: 30/06/2016 Development Date: -
					6.0	0.0		GRAVEL, fine to coarse grained	20	Depth 0.0 to 0.5 m —
					2.0	2.0		COBBLES	60	
					4.0	4.0		SAND, medium to coarse grained	200	
					4.0	4.0		Gravelly CLAY	200	
					6.0	6.0		COBBLES	200	
					8.0	8.0		SAND, fine to medium grained, orange-brown	200	Depth 0.5 to 10.7 m —
					8.0	8.0		SAND, medium grained, light grey	200	
					10.0	10.0		Sandy CLAY	200	
					12.0	12.0			200	Depth 10.7 to 12.3 m —
					14.0	14.0		SAND, medium grained	200	Depth 12.3 to 13.2 m —
					16.0	16.0		SAND, medium grained, dark grey	200	Depth 13.2 to 16.2 m —
					18.0	18.0		CLAY, dark grey	200	Depth 16.2 to 17.3 m —
					20.0	20.0		NO CORE	200	Depth 17.3 to 20.1 m —
					22.0	22.0		SANDSTONE, fine to medium grained, yellow-brown	200	
					24.0	24.0		SANDSTONE, fine to medium grained, grey	200	
					26.0	26.0		SANDSTONE, fine to medium grained, light grey	200	
					28.0	28.0		RZ_BH49A Terminated at 24.50 m.	200	
					30.0	30.0			200	

REMARKS: The material properties are taken from the adjacent borehole RZ_BH49
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Start Date: 9/08/2016

Easting: 331255.6 m

Northing: 6250841.1 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 10/08/2016

RL: 2.01 m

Ver. Datum: AHD

Surface: Gravel

Field Data				Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log
NDD							
ADV							
RT							
Run 1	30	0			2.0		
Run 2	62	0			2.0		
Run 3	100	97			4.0		
Run 4	86	48			4.0		
Run 5	92	69			6.0		
Run 6	97	69			6.0		
Run 7	100	95			8.0		
Run 8	97	90			10.0		
Run 9	100	87			12.0		
Run 10	100	94			14.0		
Run 11	100	96			16.0		
Run 12	65	28			18.0		
Run 13	100	48			20.0		
Run 14					22.0		
Run 15					24.0		
Run 16					26.0		
Run 17					28.0		
Run 18					30.0		
Summary Geology (refer to geological log for full descriptions)				Defect Spacing (mm)		Construction Details: Machine slotted PVC pipe	
						Pipe Diameter: 50 mm	
						Pipe Top: 0.0 mBGL	
						Pipe Base: 22.0 mBGL	
						Screen Top: 22.0 mBGL	
						Screen/Sensor Base: 25.0 mBGL	
						Instrument Details: -	
						Installation Date: 11/08/2016	
						Development Date: -	
						Depth 0.0 to 0.5 m —	
						Depth 0.5 to 1.0 m —	
						GATIC COVER	
						BENTONITE - CEMENT	
						GROUT (HIGHER %	
						BENTONITE)	
						Depth 1.0 to 18.0 m —	
						GROUT	
						Depth 18.0 to 20.0 m —	
						BENTONITE	
						Depth 20.0 to 22.0 m —	
						FILTER SAND	
						Depth 22.0 to 25.0 m —	
						PVC SLOTTED SECTION WITH FILTER SAND	
						Depth 25.0 to 27.0 m —	
						FILTER SAND	
						Depth 27.0 to 33.0 m —	
						BENTONITE	

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Checked by: BF

Start Date: 9/08/2016

End Date: 10/08/2016

Easting: 331255.6 m

RL: 2.01 m

Northing: 6250841.1 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Gravel

Field Data					Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Defect Spacing (mm)
HQ3	Run 14	100	52		28.0			
	Run 15	87	80		32.0			
					30.0			
					34.0			
					32.0			
					36.0			
					34.0			
					38.0			
					36.0			
					40.0			
					38.0			
					42.0			
					40.0			
					44.0			
					42.0			
					46.0			
					44.0			
					48.0			
					46.0			
					50.0			
					48.0			
					52.0			
					50.0			
					54.0			
					52.0			
					56.0			
					54.0			
					58.0			
					56.0			
					60.0			

Summary Geology
(refer to geological log
for full descriptions)

grey

NO CORE

SANDSTONE, medium to coarse grained,
grey *continued*SANDSTONE, fine to coarse grained, light
grey to grey

NO CORE

RZ_BH50 Terminated at 33.00 m.

Construction Details: Machine slotted PVC pipe

Pipe Diameter: 50 mm

Pipe Top: 0.0 mBGL

Pipe Base: 22.0 mBGL

Screen Top: 22.0 mBGL

Screen/Sensor Base: 25.0 mBGL

Instrument Details: -

Installation Date: 11/08/2016

Development Date: -

Depth 27.0 to —
33.0 m

BENTONITE

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: SM/FR/NB

Start Date: 1/08/2016

Easting: 331206.6 m

Northing: 6250813.3 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:BF

End Date: 8/08/2016

RL: 2.22 m

Ver. Datum: AHD

Surface: Gravel

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 19.0 mBGL Screen Top: 19.0 mBGL Screen/Sensor Base: 22.0 mBGL Instrument Details: Installation Date: 9/08/2016 Development Date: -
NDD	ADV									
		Run 1	100	30		0.0		GRAVEL, fine to medium grained	20	Depth 0.0 to 0.5 m —
						2.0		Sandy GRAVEL, fine to medium grained, brown-grey and dark grey	60	
						4.0		Sandy GRAVEL, fine to medium grained	200	
						6.0		Sandy CLAY	600	
		Run 2	96	83		8.0		BOULDERS	2000	
						10.0		Silty CLAY, brown		
						12.0		Sandy GRAVEL, fine grained		Depth 0.5 to 15.0 m —
						14.0		Clayey SAND, fine to medium grained sand		
		Run 3	92	53		16.0		SAND, fine to coarse grained, orange-brown mottled yellow-brown and light grey		
						18.0		SANDSTONE, fine to medium grained, light grey mottled yellow-brown		
		Run 4	100	60		20.0		SANDSTONE, medium to coarse grained, light grey		
						22.0		SANDSTONE, fine to coarse grained, orange-brown and red-brown		Depth 15.0 to 17.0 m —
		Run 5	91	83		24.0		NO CORE		
						26.0		SANDSTONE, fine to coarse grained, orange-brown and red-brown		Depth 17.0 to 19.0 m —
		Run 6	100	0		28.0		NO CORE		
			95	0		30.0		SANDSTONE, fine to coarse grained, light grey		Depth 19.0 to 22.0 m —
		Run 7	97	88		32.0		NO CORE		
						34.0		SANDSTONE, fine to coarse grained, light grey		Depth 22.0 to 24.0 m —
		Run 8	100	98		36.0		NO CORE		
						38.0		SANDSTONE, fine to coarse grained, dark red-brown, red and orange-brown		Depth 24.0 to 26.7 m —
		Run 9	100	100		40.0		SANDSTONE, medium to coarse grained, light grey		
						42.0		NO CORE		Depth 26.7 to 30.0 m —
		Run 10				44.0				
						46.0				
		Run 11				48.0				
						50.0				
		Run 12				52.0				
						54.0				
						56.0				
						58.0				
						60.0				
						62.0				
						64.0				
						66.0				
						68.0				
						70.0				
						72.0				
						74.0				
						76.0				
						78.0				
						80.0				
						82.0				
						84.0				
						86.0				
						88.0				
						90.0				
						92.0				
						94.0				
						96.0				
						98.0				
						100.0				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: SM/FR/NB

Start Date: 1/08/2016

Easting: 331206.6 m

Northing: 6250813.3 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 8/08/2016

RL: 2.22 m

Ver. Datum: AHD

Surface: Gravel

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 19.0 mBGL Screen Top: 19.0 mBGL Screen/Sensor Base: 22.0 mBGL Instrument Details: - Installation Date: 9/08/2016 Development Date: -	
					28.0				
					32.0				
					30.0				
					34.0				
					32.0				
					36.0				
					34.0				
					38.0				
					36.0				
					40.0				
					38.0				
					42.0				
					40.0				
					44.0				
					42.0				
					46.0				
					44.0				
					48.0				
					46.0				
					50.0				
					48.0				
					52.0				
					50.0				
					54.0				
					52.0				
					56.0				
					54.0				
					58.0				
					56.0				
					60.0				

SANDSTONE, medium to coarse grained, light grey

SANDSTONE, coarse grained, light grey

SANDSTONE, medium to coarse grained, brown-grey and grey

SANDSTONE, fine to coarse grained, light grey

RZ_BH51 Terminated at 30.00 m.

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Checked by:BF

Start Date: 1/08/2016

End Date: 2/08/2016

Easting: 331163.8 m

RL: 2.59 m

Northing: 6250784.6 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Gravel

Field Data						Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 32.0 mBGL Screen Top: 32.0 mBGL Screen/Sensor Base: 35.0 mBGL Instrument Details: - Installation Date: 3/08/2016 Development Date: -	
NDD						0.0		Sandy GRAVEL, fine to medium grained	20	Depth 0.0 to 0.5 m —	
CA						2.0		Gravelly SAND, fine to coarse grained, dark brown	60	GATIC COVER	
						4.0		GRAVEL, fine to medium grained, dark grey-black	200		
						6.0		Clayey SAND, fine to coarse grained, brown to brown-grey	600		
	Run 1	100	59			8.0		SAND, medium to coarse grained, brown mottled yellow-brown	2000		
	Run 2	100	78			10.0		Clayey SAND, fine to medium grained, yellow-brown mottled orange-brown			
	Run 3	100	95			12.0		SAND, fine to medium grained, brown-grey to grey			
	Run 4	98	93			14.0		CLAY, black			
							16.0		CLAY, yellow-brown mottled orange-brown		
							18.0		Sandy CLAY, light grey		
	Run 5	100	90			20.0		SANDSTONE, fine to medium grained, light grey mottled yellow-brown and red-brown			Depth 0.5 to 28.0 m —
	Run 6	100	93			22.0		SANDSTONE, medium to coarse grained, light yellow-brown streaked and mottled red-brown			
	Run 7	100	100			24.0		SANDSTONE, fine to coarse grained, yellow-brown and light grey streaked red-brown			
	Run 8	100	100			26.0		SANDSTONE, medium to coarse grained, light grey and light brown			
	Run 9	100	100			28.0		NO CORE			
						30.0		SANDSTONE, medium to coarse grained, light grey and light brown		GROUT	
						32.0		SANDSTONE, medium to coarse grained, light grey			
						34.0		SANDSTONE, coarse grained, light grey		Depth 28.0 to 30.0 m —	
						36.0		SANDSTONE, fine to medium grained, grey			
						38.0				BENTONITE	

REMARKS:
GROUNDWATER MONITORING NOTES:

2015 ANZ_PIEZO 20161216_AECOM_T1_T2_T3_DUMMY FOR PIEZO_2-07.GPJ AECOM_2-01-AA.GDT 60493796AECOM_2-07_LIBRARY.GLB 16.12.2016

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Rozelle Rail Yards, Rozelle

Driller: Terratest Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Ausroc 4000

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Start Date: 1/08/2016

Easting: 331163.8 m

Northing: 6250784.6 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 2/08/2016

RL: 2.59 m

Ver. Datum: AHD

Surface: Gravel

Field Data						Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 32.0 mBGL Screen Top: 32.0 mBGL Screen/Sensor Base: 35.0 mBGL Instrument Details: - Installation Date: 3/08/2016 Development Date: -	
HQ3	Run 10	100	100		28.0			SANDSTONE, fine to coarse grained, light grey		Depth 30.0 to 31.7 m — Depth 31.7 to 34.7 m — Depth 34.7 to 37.9 m — Depth 37.9 to 40.0 m —	FILTER SAND PVC SLOTTED SECTION WITH FILTER SAND FILTER SAND BENTONITE
	Run 11	100	99		32.0						
	Run 12	100	100		36.0			SANDSTONE, fine to medium grained, brown-grey to light grey			
	Run 13	100	100		38.0						
	Run 14	100	100		40.0						
					20 60 100 200 500 1000 2000						
					28.0 32.0 34.0 36.0 38.0 40.0 42.0 44.0 46.0 48.0 50.0 52.0 54.0 56.0 58.0 60.0			RZ_BH52 Terminated at 39.95 m.			

REMARKS:
GROUNDWATER MONITORING NOTES:

Project No: 60493796

Logged by: LH

Checked by:BF

Start Date: 2/09/2016

End Date: 7/09/2016

Hole Diameter: 96 mm

Easting: 331100.9 m

RL: 2.75 m

Inclination: -90°

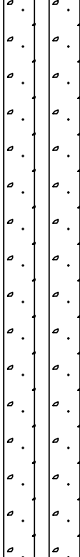
Northing: 6250738.1 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe		
								20 60 200 600 2000	Pipe Diameter: 50 mm		
									Pipe Top: 0.0 mBGL		
									Pipe Base: 21.0 mBGL		
									Screen Top: 18.0 mBGL		
									Screen/Sensor Base: 21.0 mBGL		
									Instrument Details: -		
									Installation Date: 7/09/2016		
									Development Date: -		
NDD					0.0		ASPHALT		Depth 0.0 to 0.5 m —		GATIC COVER
AD	Run 1	23	0		2.0		Gravelly SAND, medium grained, black		Depth 0.5 to 14.0 m —		GROUT
					4.0		COBBLES, pale grey				
					4.5		COBBLES				
					6.0		Clayey SAND, medium grained, yellow and dark brown				
					4.0		SAND, medium grained				
					8.0		Sandy CLAY, dark grey				
					10.0		SAND, medium grained, yellow-grey and pale grey				
					12.0						
					10.0						
					14.0						
HQ3	Run 2	100	88		12.0		NO CORE		Depth 14.0 to 16.2 m —		BENTONITE
					16.0						
					14.0		SANDSTONE, medium grained, orange-brown to light brown		Depth 16.2 to 18.0 m —		FILTER SAND
					18.0						
					16.0		SANDSTONE, fine to medium grained, light grey		Depth 18.0 to 21.0 m —		PVC SLOTTED SECTION WITH FILTER SAND
					20.0						
					18.0		SANDSTONE, medium grained, light grey		Depth 21.0 to 23.0 m —		FILTER SAND
					22.0						
					20.0		SANDSTONE, medium grained, light grey		Depth 23.0 to 25.3 m —		BENTONITE
					24.0						
	Run 5	100	100		22.0			Depth 25.3 to 40.0 m —		BENTONITE + CEMENT	
					26.0						
	Run 6	100	93		24.0						
					28.0		SANDSTONE, medium grained, light grey				
					26.0						
					30.0						

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: LH

Checked by: BF

Location: Rozelle Rail Yards, Rozelle

Start Date: 2/09/2016

End Date: 7/09/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 331100.9 m

RL: 2.75 m

Drill Rig: Hydrapower Scout

Inclination: -90°

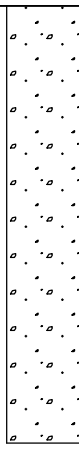
Northing: 6250738.1 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data							Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Summary Geology (refer to geological log for full descriptions)		Construction Details: Machine slotted PVC pipe		
									Pipe Diameter:	50 mm	
									Pipe Top:	0.0 mBGL	
									Pipe Base:	21.0 mBGL	
									Screen Top:	18.0 mBGL	
									Screen/Sensor Base:	21.0 mBGL	
									Instrument Details:	-	
									Installation Date:	7/09/2016	
									Development Date:	-	
HQ3	Run 7	100	87		28.0		SANDSTONE, medium to coarse grained, pale grey <i>continued</i>		Depth 25.3 to 40.0 m —  BENTONITE + CEMENT		
					32.0		SANDSTONE, medium grained, pale grey				
	Run 8	100	100		34.0		SANDSTONE, medium grained, pale grey				
					36.0		SHALE BRECCIA				
	Run 9	100	90		38.0		SANDSTONE, medium grained, pale grey				
	Run 10	100	100		40.0		RZ_BH53 Terminated at 40.00 m.				
					42.0						
					44.0						
					46.0						
					48.0						
					50.0						
					52.0						
					54.0						
					56.0						
					58.0						
					60.0						

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: Opposite 48 Justin Street, Lilyfield
Driller:
Drill Rig:

Hole Diameter: -
Inclination: -90°
Bearing: N/A

Project No: 60493796
Logged by: RKG
Start Date: 29/11/2016
Easting: 330317.8 m
Northing: 6250589.6 m
Hor. Proj/Dat: MGA94/GDA94-56H
Checked by:
End Date: 8/12/2016
RL: 25.04 m
Ver. Datum: AHD
Surface: Asphalt

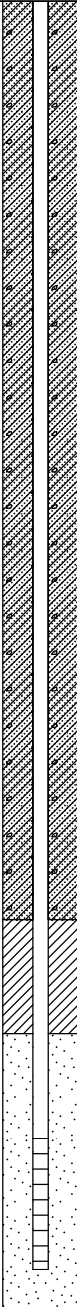
Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction details: Pipe diameter: 60 mm Pipe Top: 0.0 mBGL Pipe Base: 56.0 mBGL Screen Top: 56.0 mBGL Screen/Sensor Base: 59.0 mBGL Instrument Details: Installation Date: 7/12/2016 Development Date: -
HQ3	Run 1	100	93		24.0	0.0		ASPHALT CONCRETE		Depth 0.0 to 0.1 m
					26.0	2.0		Sandy GRAVEL, fine to medium grained, dark grey		Depth 0.1 to 3.0 m
	Run 2	100	94		27.0	4.0		SANDSTONE, medium grained, light grey		GROUT BENTONITE - HIGHER % BENTONITE
					28.0	4.0		SANDSTONE, medium grained, light grey		
					30.0	6.0		SANDSTONE, medium grained, light grey		
	Run 3	100	90		38.0	8.0		SANDSTONE, fine to medium grained, light grey		
					46.0	10.0		SANDSTONE, medium to coarse grained, pink-grey		
	Run 4	100	98		44.0	12.0		SANDSTONE, fine to medium grained, light grey		
					46.0	12.0		SANDSTONE, fine grained, pink-brown		
	Run 5	94	57		42.0	14.0		SANDSTONE, fine to medium grained, grey		
					40.0	14.0		SANDSTONE, medium grained, light grey		
	Run 6	97	97		40.0	16.0		SANDSTONE, medium to coarse grained, red brown to grey		
					38.0	18.0		SANDSTONE, fine to medium grained, light grey		
	Run 7	100	85		36.0	20.0		NO CORE		
					34.0	20.0		SANDSTONE, fine to medium grained, brown grey		
	Run 8	98	96		34.0	22.0		SANDSTONE, fine to medium grained, light grey		
					32.0	24.0		SANDSTONE, fine to medium grained, light grey		
					30.0	24.0		SANDSTONE, medium grained, light grey		
	Run 9	94	70		26.0	26.0		NO CORE		
					24.0	26.0		SANDSTONE, medium grained, light grey		
	Run 10	100	60		22.0	28.0		SANDSTONE, fine grained, grey		
					20.0	28.0		SANDSTONE, medium grained, light grey		
				18.0	30.0		NO CORE			

GROUT BENTONITE	Depth 0.0 to 0.1 m	
	Depth 0.1 to 3.0 m	
	Depth 3.0 to 51.0 m	

REMARKS:
GROUNDWATER MONITORING NOTES:

Client:	Sydney Motorway Corporation
Project:	M4-M5 Link Geotech Investigation
Location:	Opposite 48 Justin Street, Lilyfield
Driller:	Holmes & Narver
Drill Rig:	Inclinometer Drilling Rig
	Beaumont

Project No:	60493796	
Logged by:	RKG	Checked by:
Start Date:	29/11/2016	End Date: 8/12/2016
Easting:	330317.8 m	RL: 25.04 m
Northing:	6250589.6 m	Ver. Datum: AHD
Hor. Proj/Dat:	MGA94/GDA94-56H	Surface: Asphalt

Field Data							Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction details: - Pipe diameter: 60 mm Pipe Top: 0.0 mBGL Pipe Base: 56.0 mBGL Screen Top: 56.0 mBGL Screen/Sensor Base: 59.0 mBGL Instrument Details: - Installation Date: 7/12/2016 Development Date: -		
HQ3	Run 11	100	79		32.0	32.0		SANDSTONE, medium grained, light grey <i>continued</i>	20		Depth 3.0 to 51.0 m	GROUT BENTONITE
	Run 12	100	97		34.0	34.0		SANDSTONE, medium grained, light grey	60			
	Run 13	100	92		36.0	36.0		SANDSTONE, medium grained, light grey	200			
	Run 14	100	100		38.0	38.0		SANDSTONE, fine to medium grained, grey	600			
	Run 15	100	100		40.0	40.0		SANDSTONE, fine to medium grained, grey	2000			
	Run 16	100	100		42.0	42.0		MUDSTONE, dark grey				
	Run 17	100	100		44.0	44.0		SANDSTONE, fine to medium grained, light grey				
	Run 18	100	100		46.0	46.0		INTERBEDDED SILTSTONE/SANDSTONE				
	Run 19	100	100		48.0	48.0		SANDSTONE, medium to coarse grained, light grey				
	Run 20	100	100		50.0	50.0		SANDSTONE, medium to coarse grained, light grey				
	Run 21	100	100		52.0	52.0		SANDSTONE, medium to coarse grained, light grey				
	Run 22	100	100		54.0	54.0		SANDSTONE, medium grained, light grey				
	Run 23	100	100		56.0	56.0		SANDSTONE, fine grained, light grey				
	Run 24	100	100		58.0	58.0		SANDSTONE, fine to medium grained, light grey				
	Run 25	100	100		60.0	60.0		SANDSTONE, fine grained, mid grey				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: Opposite 48 Justin Street, Lilyfield

Project No: 60493796
Logged by: RKG
Start Date: 29/11/2016
End Date: 8/12/2016
Easting: 330317.8 m
RL: 25.04 m
Northing: 6250589.6 m
Ver. Datum: AHD
Hor. Proj/Dat: MGA94/GDA94-56H
Surface: Asphalt

Driller:
Drill Rig:
Hole Diameter: -
Inclination: -90°
Bearing: N/A

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction details: - Pipe diameter: 60 mm Pipe Top: 0.0 mBGL Pipe Base: 56.0 mBGL Screen Top: 56.0 mBGL Screen/Sensor Base: 59.0 mBGL Instrument Details: - Installation Date: 7/12/2016 Development Date: -
HQ3	Run 26	100	100		36.0	62.0		SANDSTONE, fine grained, mid grey <i>continued</i>		Depth 59.0 to 61.4 m — Depth 61.4 to 63.0 m — Depth 63.0 to 70.0 m — FILTER SAND BENTONITE GRAVEL
	Run 27	100	100		38.0	64.0		SANDSTONE, medium to coarse grained, light grey		
	Run 28	100	97		40.0	66.0		SANDSTONE, fine to medium grained, light grey		
	Run 29	100	91		42.0	68.0		SANDSTONE, fine to medium grained, light grey		
	Run 30	100	100		44.0	70.0		SANDSTONE, fine to medium grained, light grey		
	Run 31	100	100		46.0	72.0		SANDSTONE, fine to medium grained, light grey		
	Run 32	100	97		48.0	74.0		SANDSTONE, fine to medium grained, light grey		
					50.0	76.0				
					52.0	78.0				
					54.0	80.0				
					56.0	82.0				
					58.0	84.0				
					60.0	86.0				
					62.0	88.0				
					64.0	90.0				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation	Project No: 60493796	Checked by:
Project: M4-M5 Link Geotech Investigation	Logged by: MC	End Date: 21/12/2016
Location: Brockley Street, Rozelle	Start Date: 13/12/2016	Eastng: 330625.4 m
Driller: Hagstrom Drilling Pty Ltd	Hole Diameter: 96 mm	RL:
Drill Rig: DR009	Inclination: -90°	Northing: 6250950.8 m
	Bearing: N/A	Ver. Datum: AHD
		Hor. Proj/Dat: MGA94/GDA94-56H
		Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:
NDD										Pipe Diameter: 50 mm Pipe Top: 46.0 m above ground level Pipe Base: 49.0 mBGL Screen Top: 46.0 mBGL Screen/Sensor Base: 49.0 mBGL Instrument Details: - Installation Date: 21/12/2016 Development Date: -
AD										Depth 0.0 to 0.1 m Depth 0.1 to 1.0 m Depth 1.0 to 42.0 m
	Run 1	90	82			2.0		ASPHALT		
						2.0		GRAVEL, medium to coarse grained, dark grey		
						4.0		GRAVEL and COBBLES, grey-brown		
						4.0		SAND, medium grained, orange-brown to red-brown		
	Run 2	100	98			6.0		SANDSTONE, medium to coarse grained, red-brown		
						8.0		NO CORE		
						8.0		SANDSTONE, medium to coarse grained, red-brown		
	Run 3	100	100			10.0		SANDSTONE, medium to coarse grained, light grey		
						12.0				
	Run 4	100	100			14.0		SANDSTONE, medium to coarse grained		
						16.0		SANDSTONE, fine to medium grained, light grey		
	Run 5	100	100			18.0				
						20.0		SANDSTONE, fine to medium grained, light grey		
	Run 6	100	100			22.0				
						24.0				
	Run 7	100	100			26.0				
						28.0		SANDSTONE, fine to medium grained, light grey and mid grey		
	Run 8	100	100			30.0		SANDSTONE, fine to medium grained, light grey		
						32.0				
	Run 9	100	100			34.0				
						36.0				
						38.0				
						40.0				
						42.0				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Brockley Street, Rozelle

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: DR009

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: MC

Start Date: 13/12/2016

Easting: 330625.4 m

Northing: 6250950.8 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:

End Date: 21/12/2016

RL:

Ver. Datum: AHD

Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Pipe Diameter: 50 mm Pipe Top: 46.0 m above ground level Pipe Base: 49.0 mBGL Screen Top: 46.0 mBGL Screen/Sensor Base: 49.0 mBGL Instrument Details: Installation Date: 21/12/2016 Development Date: -
HQ3	Run 10	100	100			32.0		SANDSTONE, medium to coarse grained, light grey		Depth 1.0 to 42.0 m GROUT
	Run 11	100	100			34.0		SANDSTONE, fine to medium grained, brown-grey		
	Run 12	100	100			36.0		SANDSTONE, fine to medium grained, light grey		
	Run 13	100	98			38.0		SANDSTONE, brown-grey		Depth 42.0 to 44.0 m BENTONITE
	Run 14	100	85			40.0		SANDSTONE, fine to medium grained, light grey		
	Run 15	100	80			42.0		SANDSTONE, medium to coarse grained, pinkish brown		Depth 44.0 to 46.0 m FILTER SAND
	Run 16	100	95			44.0		SANDSTONE, fine to medium grained, dark grey		
	Run 17	95	79			46.0		NO CORE		Depth 46.0 to 49.0 m PVC SLOTTED SECTION with FILTER SOCK with 2mm FILTER SAND
	Run 18	100	90			48.0		SANDSTONE, fine to medium grained, light grey		
	Run 19	100	100			50.0		SANDSTONE, fine to medium grained, light grey		Depth 49.0 to 51.0 m BENTONITE
	Run 20	100	65			52.0		SANDSTONE, fine to medium grained, light grey		
	Run 21	100	100			54.0		SANDSTONE, fine grained, light grey		Depth 51.0 to 53.0 m GROUT (used GRAVEL)
	Run 22	100	100			56.0		MUDSTONE, dark brown		
						58.0		SANDSTONE, fine to medium grained, light grey		Depth 53.0 to 60.0 m GROUT (if reaming required)
						60.0		SANDSTONE, fine to medium grained, light grey		

RZ_BH64 Terminated at 60.00 m.

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: HW/NB

Checked by:

Location: Opposite 53 Alfred Street, Lilyfield

Start Date: 8/12/2016

End Date: 15/12/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330961.5 m

RL: 12.91 m

Drill Rig: Delta Base 525

Inclination: -90°

Northing: 6250999.7 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:
CADD										Pipe Diameter: 60 mm Pipe Top: 0.0 mBGL Pipe Base: 51.0 mBGL Screen Top: 46.0 mBGL Screen/Sensor Base: 49.0 mBGL Instrument Details: - Installation Date: 14/12/2016 Development Date: -
	Run 1	88	40		12.0	2.0		ASPHALTIC CONCRETE		Depth 0.0 to 0.1 m
								Sandy GRAVEL, fine to medium grained, light grey, brown		Depth 0.1 to 1.0 m
	Run 2	98	88		10.0	4.0		SANDSTONE, fine to coarse grained, light grey		
								SANDSTONE, medium to coarse grained, red-brown		
	Run 3	95	93		8.0	6.0		SANDSTONE, fine to coarse grained, light brown, red-brown		
								NO CORE		
	Run 4	98	98		4.0	10.0		SANDSTONE, fine to coarse grained, light brown, red-brown		
								SANDSTONE, medium to coarse grained, light grey		
								NO CORE		
	Run 5	89	62		0.0	12.0		SANDSTONE, medium to coarse grained, light grey		
								SANDSTONE, coarse grained, light grey		
	Run 6	70	56		16.0	14.0		NO CORE		
								SANDSTONE, coarse grained, light grey		
	Run 7	97	85		18.0	16.0		SANDSTONE, medium to coarse grained, light grey		
								NO CORE		
	Run 8	100	92		20.0	18.0		SANDSTONE, fine to coarse grained, light - mid grey		
								NO CORE		
	Run 9	100	96		22.0	20.0		SANDSTONE, fine to coarse grained, light - mid grey		
								SANDSTONE, coarse grained, light grey		
								NO CORE		
	Run 10	100	88		24.0	22.0		SANDSTONE, coarse grained, light grey		
								SANDSTONE, medium to coarse grained, light grey		

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Opposite 53 Alfred Street, Lilyfield

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta Base 525

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: HW/NB

Start Date: 8/12/2016

Easting: 330961.5 m

Northing: 6250999.7 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by:

End Date: 15/12/2016

RL: 12.91 m

Ver. Datum: AHD

Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:
	Run 11	100	90		18.0			NO CORE	20	Pipe Diameter: 60 mm
					32.0			SANDSTONE, medium grained	60	Pipe Top: 0.0 mBGL
					20.0			SANDSTONE, coarse grained, light grey	200	Pipe Base: 51.0 mBGL
	Run 12	100	95		34.0			SANDSTONE, fine to medium grained	600	Screen Top: 46.0 mBGL
					22.0			SANDSTONE, medium to coarse grained, light grey <i>continued</i>	2000	Screen/Sensor Base: 49.0 mBGL
	Run 13	98	98		36.0			SANDSTONE, fine to coarse grained, light grey		Instrument Details: -
	Run 14	100	98		24.0			SANDSTONE, fine to medium grained, light grey		Installation Date: 14/12/2016
	Run 15	100	99		40.0			SANDSTONE, coarse grained, brown, light brown		Development Date: -
					28.0			SANDSTONE, fine to coarse grained, light grey		
	Run 16	100	100		42.0			SANDSTONE, fine to coarse grained, light brown grey		Depth 1.0 to — 40.5 m
	Run 17	100	97		30.0			SHALE BRECCIA		Depth 40.5 to — 43.5 m
	Run 18	99	99		46.0			SANDSTONE, fine to medium grained, brown grey		Depth 43.5 to — 46.0 m
					34.0			SANDSTONE, coarse grained, light grey		Depth 46.0 to — 49.0 m
	Run 19	97	93		48.0			SANDSTONE, fine to medium grained, mid grey		Depth 49.0 to — 51.0 m
					36.0			SANDSTONE, fine to coarse grained, light-mid brown grey		Depth 51.0 to — 53.8 m
	Run 20	97	94		52.0			SANDSTONE, medium to coarse grained, light grey		Depth 53.8 to — 60.0 m
					40.0			SANDSTONE, medium to coarse grained, light grey		
	Run 21	100	88		54.0			SANDSTONE, fine to medium grained, mid-grey		
					42.0			NO CORE		
	Run 22	88	77		56.0			SANDSTONE, medium to coarse grained, light grey		
					44.0			SANDSTONE, medium to coarse grained, light grey		
					58.0					
					46.0					
					60.0					

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: HW/NB

Checked by:

Location: Opposite 53 Alfred Street, Lilyfield

Start Date: 8/12/2016

End Date: 15/12/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330961.5 m

RL: 12.91 m

Drill Rig: Delta Base 525

Inclination: -90°

Northing: 6250999.7 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface: Asphalt

Field Data							Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	ROD (%)	Ground Water	Reduced Level (m)	Depth (m)	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: - Pipe Diameter: 60 mm Pipe Top: 0.0 mBGL Pipe Base: 51.0 mBGL Screen Top: 46.0 mBGL Screen/Sensor Base: 49.0 mBGL Instrument Details: - Installation Date: 14/12/2016 Development Date: -	
					48.0		NO CORE	20		
					62.0		SANDSTONE, coarse grained, light grey	60		
					50.0		NO CORE	200		
					64.0		SANDSTONE, coarse grained, light grey	600		
					52.0		SANDSTONE, fine to medium grained, light grey	2000		
					66.0		SANDSTONE, coarse grained, light grey			
					54.0		SANDSTONE, medium to coarse grained, light grey			
					68.0					
					56.0		NO CORE			
					70.0		RZ_BH67 Terminated at 60.00 m.			
					58.0					
					72.0					
					60.0					
					74.0					
					62.0					
					76.0					
					64.0					
					78.0					
					66.0					
					80.0					
					68.0					
					82.0					
					70.0					
					84.0					
					72.0					
					86.0					
					74.0					
					88.0					
					76.0					
					90.0					

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: Albion Street, Rozelle

Project No: 60493796
Logged by: RKG
Start Date: 17/01/2017
Easting: 330556.1 m
Northing: 6251217.0 m
Hor. Proj/Dat: MGA94/GDA94-56H
Checked by:
End Date: 25/01/2017
RL:
Ver. Datum: mAHD
Surface: Road Surface

Driller:
Drill Rig:
Hole Diameter: -
Inclination: -90°
Bearing: N/A

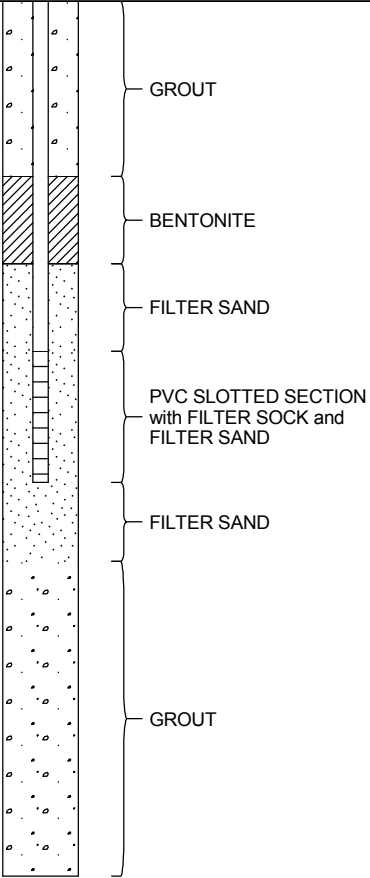
Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction details: - Pipe diameter: 96 mm Pipe Top: 0.0 mBGL Pipe Base: 41.0 mBGL Screen Top: 38.0 mBGL Screen/Sensor Base: 41.8 mBGL Instrument Details: - Installation Date: 24/01/2017 Development Date: -
	Run 1	0	0			2.0		ASPHALTIC CONCRETE		Depth 0.0 to 1.0 m —
	Run 2	81	50			4.0		SAND, fine to medium grained, orange-brown to brown		
	Run 3	91	42			6.0		SAND (60%), fine to medium grained		
	Run 4	100	82			8.0		SANDSTONE, fine to medium grained, yellow-brown to light orange-brown		
	Run 5	100	60			10.0		NO CORE		
	Run 6	100	78			12.0		SANDSTONE, fine to medium grained, orange-brown to yellow-brown		
	Run 7	130	58			14.0		NO CORE		
	Run 8	40	40			16.0		SANDSTONE, fine to medium grained, light brown to light grey, speckled yellow-brown		
	Run 9	98	93			18.0		SANDSTONE, fine to medium grained, orange-brown		
	Run 10	100	93			20.0		SANDSTONE, fine to medium grained, light grey		
	Run 11	100	100			22.0		NO CORE		
	Run 12	100	63			24.0		SANDSTONE, fine to medium grained, light grey		
	Run 13	67	100			26.0		SANDSTONE, medium grained, light grey		
						28.0		SILTSTONE, dark grey		
						30.0		BRECCIA, light grey to mid grey		
								SILTSTONE, dark grey		

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: Albion Street, Rozelle

Project No: 60493796
Logged by: RKG
Start Date: 17/01/2017
Easting: 330556.1 m
Northing: 6251217.0 m
Hor. Proj/Dat: MGA94/GDA94-56H
Checked by:
End Date: 25/01/2017
RL:
Ver. Datum: mAHD
Surface: Road Surface

Driller:
Drill Rig:
Hole Diameter: -
Inclination: -90°
Bearing: N/A

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction details: Pipe diameter: 96 mm Pipe Top: 0.0 mBGL Pipe Base: 41.0 mBGL Screen Top: 38.0 mBGL Screen/Sensor Base: 41.8 mBGL Instrument Details: - Installation Date: 24/01/2017 Development Date: -
HQ3	Run 14	100	100			32.0		SANDSTONE, fine to medium grained, light grey to mid grey		
	Run 15	100	90			34.0		SANDSTONE, medium grained, light grey continued		
	Run 16	100	68			36.0		SANDSTONE, fine grained, mid grey		
	Run 17	100	83			38.0		SANDSTONE, medium grained, light grey		
	Run 18	100	75			40.0				
	Run 19	100	82			42.0				
	Run 20	100	82			44.0		SANDSTONE, fine to medium grained, light grey		
	Run 21	100	92			46.0		BRECCIA		
						48.0				
						50.0		SANDSTONE, fine grained, light grey RZ_BH69 Terminated at 50.00 m.		
						52.0				
						54.0				
						56.0				
						58.0				
						60.0				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client:	Sydney Motorway Corporation		
Project:	M4-M5 Link Geotech Investigation		
Location:	May Street, Playground, cnr Applebee St, St Peters		
Driller:	Hagstrom Drilling Pty Ltd	Hole Diameter:	96 mm
Drill Rig:	Hydrapower Scout	Inclination:	-90°
		Bearing:	N/A

Project No:	60493796	
Logged by:	HW/NB	Checked by: BF
Start Date:	30/08/2016	End Date: 7/09/2016
Easting:	331750.6 m	RL: 17.80 m
Northing:	6246432.7 m	Ver. Datum: AHD
Hor. Proj/Dat:	MGA94/GDA94-56H	Surface: Concrete

[illegible]

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation
Project: M4-M5 Link Geotech Investigation
Location: May Street, Playground, cnr Applebee St, St Peters
Driller: Hagstrom Drilling Pty Ltd
Drill Rig: Hydrapower Scout

Hole Diameter: 96 mm
Inclination: -90°
Bearing: N/A

Project No: 60493796
Logged by: HW/NB
Start Date: 30/08/2016
Easting: 331750.6 m
Northing: 6246432.7 m
Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF
End Date: 7/09/2016
RL: 17.80 m
Ver. Datum: AHD
Surface: Concrete

Field Data							Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe	
HQ3	Run 21	100	85		32.0			MUDSTONE, dark grey <i>continued</i>		Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 39.0 mBGL Screen Top: 39.0 mBGL Screen/Sensor Base: 36.0 mBGL Instrument Details: - Installation Date: 8/09/2016 Development Date: - Depth 0.5 to 31.9 m — Depth 31.9 to 34.0 m — Depth 34.0 to 36.0 m — Depth 36.0 to 39.0 m — Depth 39.0 to 40.7 m — GROUT BENTONITE FILTER SAND PVC SLOTTED SECTION WITH FILTER SAND FILTER SAND	
	Run 22	100	100		34.0						
	Run 23	100	79		36.0						
	Run 24	100	90		38.0						
	Run 25	100	73		40.0		LAMINITE				
	Run 26	100	58		42.0		MUDSTONE, dark grey				
	Run 27	100	51		44.0						
	Run 28	100	95		46.0		SP_BH01 Terminated at 40.66 m.				
					48.0						
					50.0						
				52.0							
				54.0							
				56.0							
				58.0							
				60.0							

REMARKS:
 GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Barwon Park Road, St Peters

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB

Checked by:BF

Start Date: 25/05/2016

End Date: 30/05/2016

Easting: 331844.8 m

RL: 19.49 m

Northing: 6246375.9 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Concrete

Field Data					Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:
NDD										Machine slotted PVC pipe
										Pipe Diameter: 50 mm
										Pipe Top: 0.0 mBGL
										Pipe Base: 9.8 mBGL
										Screen Top: 3.8 mBGL
										Screen/Sensor Base: 9.8 mBGL
										Instrument Details: -
										Installation Date: 30/05/2016
										Development Date: -
ADT										
	Run 1	100	0					CONCRETE		Depth 0.0 to 0.5 m —
		79	52					CLAY, yellow-brown to red-brown		Depth 0.5 to 2.0 m —
								Silty CLAY, light grey		Depth 2.0 to 3.3 m —
								Silty CLAY, red-brown and light yellow-brown		Depth 3.3 to 3.8 m —
								CLAY, light grey with yellow-brown laminations		Depth 3.8 to 9.8 m —
								LAMINITE		Depth 9.8 to 10.5 m —
								LAMINITE		
	Run 3	100	88					NO CORE		Depth 10.5 to 17.0 m —
								LAMINITE		
	Run 4	100	70							Depth 17.0 to 46.0 m —
	Run 5	100	68							
	Run 6	100	83					MUDSTONE		
	Run 7	33	24					NO CORE		
	Run 8	100	100					MUDSTONE		
		100	62							
		100	32							
		100	100							

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: NB

Checked by: BF

Location: Barwon Park Road, St Peters

Start Date: 25/05/2016

End Date: 30/05/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 331844.8 m

RL: 19.49 m

Drill Rig: Hydrapower Scout

Inclination: -90°

Northing: 6246375.9 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Concrete

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 9.8 mBGL Screen Top: 3.8 mBGL Screen/Sensor Base: 9.8 mBGL Instrument Details: - Installation Date: 30/05/2016 Development Date: -	
HQ3	Run 13	100	85		32.0	32.0		Depth 17.0 to 46.0 m BENTONITE + CEMENT	
	Run 14	100	97		34.0	34.0			
	Run 15	100	80		36.0	36.0			
	Run 16	100	74		38.0	38.0			
	Run 17	100	88		40.0	40.0			
	Run 18	100	73		42.0	42.0		Depth 17.0 to 46.0 m BENTONITE + CEMENT	
	Run 19	100	38		44.0	44.0			
					46.0	46.0			
					48.0	48.0			
					50.0	50.0			
					52.0	52.0		Depth 17.0 to 46.0 m BENTONITE + CEMENT	
					54.0	54.0			
					56.0	56.0			
					58.0	58.0			
					60.0	60.0			

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: LH

Checked by: BF

Location: Applebee St, St Peters

Start Date: 17/07/2016

End Date: 26/07/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 331658.0 m

RL: 12.31 m

Drill Rig: Delta 550

Inclination: -90°

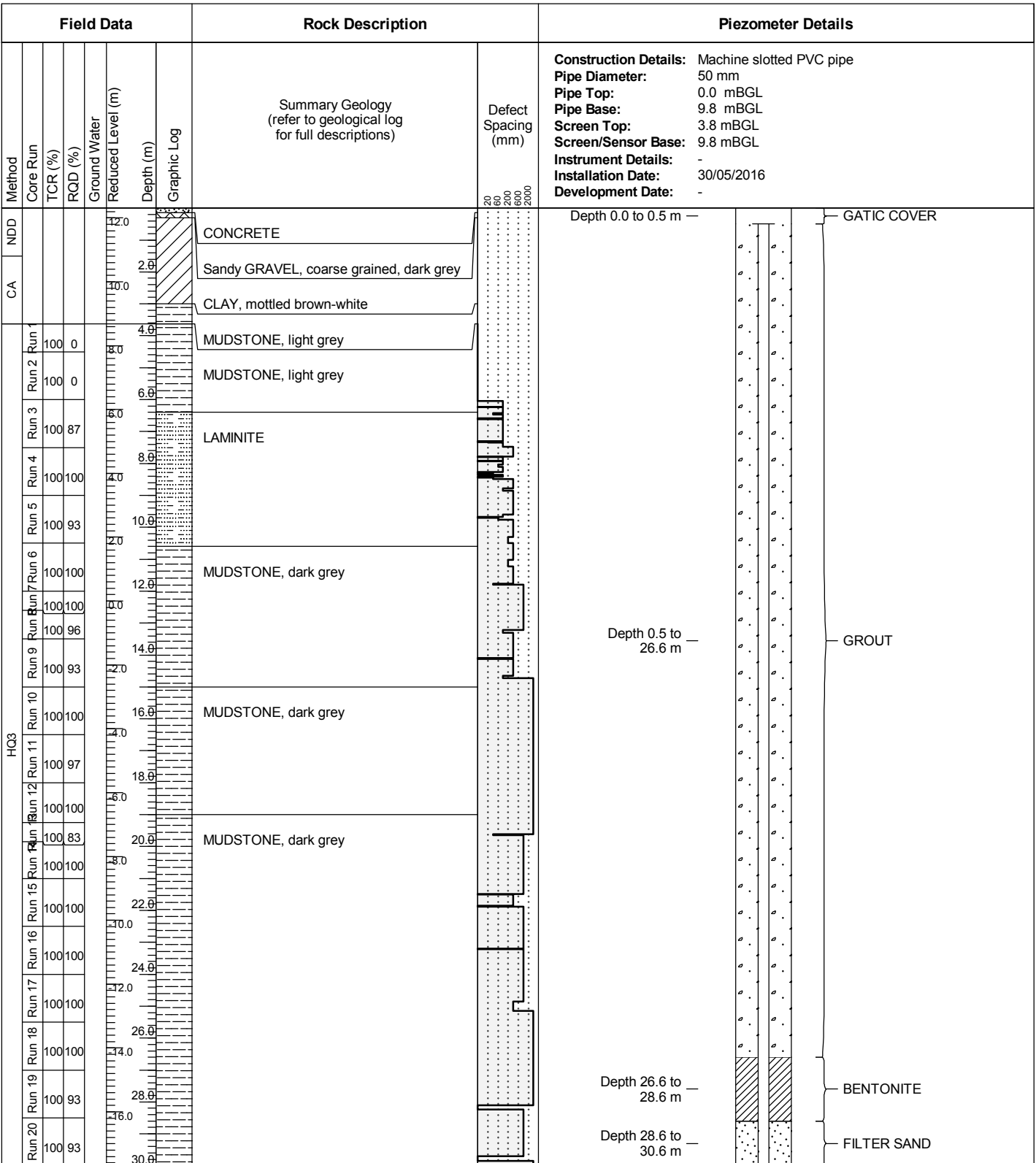
Northing: 6246185.6 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Concrete


 REMARKS:
 GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Applebee St, St Peters

Driller: Hagstrom Drilling Pty Ltd

Drill Rig: Delta 550

Hole Diameter: 96 mm

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Start Date: 17/07/2016

Easting: 331658.0 m

Northing: 6246185.6 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

End Date: 26/07/2016

RL: 12.31 m

Ver. Datum: AHD

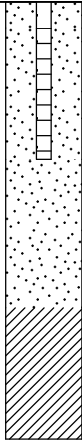
Surface: Concrete

Field Data							Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe		
HQ3	Run 21	100	100		18.0			MUDSTONE, dark grey <i>continued</i>	20	Pipe Diameter:	50 mm	
	Run 22	100	90		32.0			LAMINITE	60	Pipe Top:	0.0 mBGL	
	Run 23	100	30		20.0				120	Pipe Base:	9.8 mBGL	
	Run 24	100	93		34.0				200	Screen Top:	3.8 mBGL	
	Run 25	100	100		22.0				400	Screen/Sensor Base:	9.8 mBGL	
	Run 26	100	100		36.0				600	Instrument Details:	-	
	Run 27	100	100		24.0			MUDSTONE, dark grey	800	Installation Date:	30/05/2016	
	Run 28	100	100		38.0				1000	Development Date:	-	
	Run 29	100	100		26.0							
	Run 30	100	100		40.0							
							SP_BH04 Terminated at 40.00 m.					
						28.0						
						42.0						
						30.0						
						44.0						
						32.0						
						46.0						
						34.0						
						48.0						
						36.0						
						50.0						
						38.0						
						52.0						
						40.0						
						54.0						
						42.0						
						56.0						
						44.0						
						58.0						
						46.0						
						60.0						

Depth 30.6 to 33.6 m

Depth 33.6 to 37.0 m

Depth 37.0 to 40.0 m



FILTER SAND

PVC SLOTTED SECTION WITH FILTER SAND

FILTER SAND

BENTONITE

REMARKS:

GROUNDWATER MONITORING NOTES:

Project No: 60493796

Logged by: BH/DC

Checked by:BF

Start Date: 26/05/2016

End Date: 6/06/2016

Hole Diameter: 96 mm

Easting: 331800.1 m

RL: 13.28 m

Inclination: -90°

Northing: 6246136.1 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

[illegible]REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Crown Street, St Peters

Driller: Numac Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Geoprobe 205

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: BH/DC

Checked by: BF

Start Date: 26/05/2016

End Date: 6/06/2016

Easting: 331800.1 m

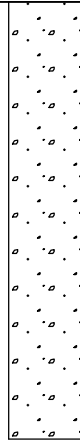
RL: 13.28 m

Northing: 6246136.1 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data							Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC Pipe Diameter: 50 mm Pipe Top: 20.0 mBGL Pipe Base: 23.0 mBGL Screen Top: 18.0 mBGL Screen/Sensor Base: 25.0 mBGL Instrument Details: - Installation Date: 6/06/2016 Development Date: -		
HQ3	Run 19	100	75		18.0	32.0		MUDSTONE <i>continued</i>		Depth 27.0 to 40.0 m — BENTONITE + CEMENT GROUT		
	Run 20	100	96		20.0	34.0		LAMINITE				
	Run 21	100	100		22.0	36.0	MUDSTONE					
	Run 22	100	100		24.0	38.0	LAMINITE					
	Run 23	100	100		26.0	40.0						
	Run 24	100	100		28.0	42.0						
	Run 25	100	100		30.0	44.0						
								SP_BH06 Terminated at 40.00 m.				
					28.0	42.0						
					30.0	44.0						
					32.0	46.0						
					34.0	48.0						
					36.0	50.0						
					38.0	52.0						
					40.0	54.0						
					42.0	56.0						
					44.0	58.0						
					46.0	60.0						

REMARKS:
GROUNDWATER MONITORING NOTES:

Project No:	60493796	
Logged by:	NB	Checked by: BF
Start Date:	20/05/2016	End Date: 25/05/2016
Easting:	331800.9 m	RL: 12.90 m
Northing:	6245948.3 m	Ver. Datum: AHD
Hor. Proj/Dat: MGA94/GDA94-56H		Surface: Concrete

Field Data						Rock Description		Piezometer Details		
Method	HA	Core Run	TCR (%)	RQD (%)	Ground Water Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:
ADV										Machine slotted PVC pipe
										Pipe Diameter: 50 mm
										Pipe Top: 0.0 mBGL
										Pipe Base: 26.0 mBGL
										Screen Top: 23.0 mBGL
										Screen/Sensor Base: 26.0 mBGL
										Instrument Details: -
										Installation Date: 23/05/2016
										Development Date: -
		Run 1	100	0		12.0		SAND, fine to coarse grained, dark brown to brown	20	Depth 0.0 to 0.5 m —
						26.0		SAND, fine grained, dark brown	60	Depth 0.5 to 1.0 m —
						40.0		Silty CLAY, light yellow-brown	200	
						46.0		Silty CLAY, light grey to grey-brown	600	
		Run 2	100	11		6.0		LAMINITE	2000	
						8.0		INTERBEDDED MUDSTONE/SANDSTONE		Depth 1.0 to 18.5 m —
		Run 3	97	89		10.0		LAMINITE		
						12.0				
		Run 4	100	90		14.0				
						16.0				
		Run 5	100	98		18.0				
						20.0		MUDSTONE		Depth 18.5 to 21.0 m —
		Run 6	100	93		22.0		LAMINITE		Depth 21.0 to 23.0 m —
						24.0				Depth 23.0 to 26.0 m —
		Run 7	100	88		26.0				Depth 26.0 to 28.0 m —
						28.0				Depth 28.0 to 30.2 m —
		Run 8	100	89		30.0				
		Run 9	100	99						
		Run 10	100	100						
		Run 11	100	77						

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation			Project No: 60493796		
Project: M4-M5 Link Geotech Investigation			Logged by: NB	Checked by: BF	
Location: WCX2 Yard, SW Corner, 4-16 Campbell St, St Peters			Start Date: 20/05/2016	End Date: 25/05/2016	
Driller: Hagstrom Drilling Pty Ltd	Hole Diameter: 96 mm		Easting: 331800.9 m	RL: 12.90 m	
Drill Rig: Hydrapower Scout	Inclination: -90°		Northing: 6245948.3 m	Ver. Datum: AHD	
	Bearing: N/A		Hor. Proj/Dat: MGA94/GDA94-56H	Surface: Concrete	

Field Data							Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 26.0 mBGL Screen Top: 23.0 mBGL Screen/Sensor Base: 26.0 mBGL Instrument Details: - Installation Date: 23/05/2016 Development Date: -
					18.0 32.0 20.0 34.0 22.0 36.0 24.0 38.0 26.0 40.0 28.0 42.0 30.0 44.0 32.0 46.0 34.0 48.0 36.0 50.0 38.0 52.0 40.0 54.0 42.0 56.0 44.0 58.0 46.0 60.0			SP_BH09 Terminated at 30.20 m.	20 60 200 500 1000 2000	

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: NB/TC

Checked by: BF

Location: Brenan Street, Lilyfield

Start Date: 24/06/2016

End Date: 28/06/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330662.0 m

RL: 2.66 m

Drill Rig: Hydrapower Scout

Inclination: -90°

Northing: 6250305.3 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe
HAADP										Pipe Diameter: 50 mm
ADT										Pipe Top: 0.0 mBGL
CA	Run 1	100	92		2.0	2.0	ASPHALT			Pipe Base: 28.0 mBGL
					2.0	2.0	CONCRETE			Screen Top: 25.0 mBGL
					4.0	4.0	SAND, fine to coarse grained, dark brown-grey			Screen/Sensor Base: 28.0 mBGL
					6.0	6.0	SAND, medium to coarse grained, dark brown			Instrument Details: -
					8.0	8.0	CLAY, brown to grey-brown			Installation Date: 28/06/2016
					10.0	10.0	SAND, medium to coarse grained, yellow-brown			Development Date: -
					12.0	12.0	CLAY, dark grey			
					14.0	14.0	Clayey SAND, fine to medium grained, dark grey to dark brown-grey			
					16.0	16.0	SAND, coarse grained, dark grey			
					18.0	18.0	Clayey SAND, fine to medium grained, dark grey			
					20.0	20.0	CLAY, dark grey			
					22.0	22.0	CLAY, grey to light grey			
					24.0	24.0	Sandy CLAY, grey			
					26.0	26.0	CLAY, dark grey-black			
HQ3	Run 2	98	79		28.0	28.0	SAND, coarse grained, brown-grey			
					30.0	30.0	SANDSTONE, medium to coarse grained, light grey			
					32.0	32.0	SANDSTONE, medium grained, light brown			
					34.0	34.0	SANDSTONE, medium to coarse grained, light grey to light yellow			
					36.0	36.0	NO CORE			
					38.0	38.0	SANDSTONE, medium grained, light grey			
					40.0	40.0	SANDSTONE, medium grained, light grey			
Run 3	Run 3	100	96		42.0	42.0	SANDSTONE, medium grained, light grey			
					44.0	44.0				
					46.0	46.0				
Run 4	Run 4	100	97		48.0	48.0				
					50.0	50.0				
					52.0	52.0				
Run 5	Run 5	100	93		54.0	54.0				
					56.0	56.0				
					58.0	58.0				
Run 6	Run 6	100	96		60.0	60.0				
					62.0	62.0				
					64.0	64.0				
Run 7	Run 7	98	84		66.0	66.0				
					68.0	68.0				
					70.0	70.0				

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Brenan Street, Lilyfield

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: NB/TC

Checked by:BF

Start Date: 24/06/2016

End Date: 28/06/2016

Easting: 330662.0 m

RL: 2.66 m

Northing: 6250305.3 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 28.0 mBGL Screen Top: 25.0 mBGL Screen/Sensor Base: 28.0 mBGL Instrument Details: Installation Date: 28/06/2016 Development Date: -
HQ3	Run 8	98	80		28.0			SANDSTONE, medium grained, light grey <i>continued</i>	20	Depth 30.0 to 32.0 m — <

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Brenan Street, Lilyfield

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: TC

Start Date: 29/06/2016

Easting: 330660.6 m

Northing: 6250304.9 m

Hor. Proj/Dat: MGA94/GDA94-56H

Checked by: BF

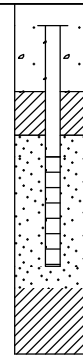
End Date: 29/06/2016

RL: 2.63 m

Ver. Datum: AHD

Surface: Asphalt

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 6.0 mBGL Screen Top: 3.5 mBGL Screen/Sensor Base: 6.0 mBGL Instrument Details: - Installation Date: 29/06/2016 Development Date: -
					2.0	0.0		ASPHALT	20	Depth 0.0 to 0.5 m —
					2.0	0.5		CONCRETE	60	Depth 0.5 to 2.0 m —
					4.0	2.0		SAND, fine to coarse grained, dark brown-grey	200	Depth 2.0 to 3.0 m —
					4.0	3.0		SAND, medium to coarse grained, dark brown	200	Depth 3.0 to 3.5 m —
					6.0	3.5		CLAY, brown to grey-brown	200	Depth 3.5 to 6.0 m —
					4.0	6.0		SAND, medium to coarse grained, yellow-brown	200	Depth 6.0 to 6.5 m —
					8.0	6.5		CLAY, dark grey	200	Depth 6.5 to 8.0 m —
					10.0	8.0		Clayey SAND, fine to medium grained, dark grey to dark brown-grey	200	
					12.0	8.5		SAND, coarse grained, dark grey	200	
					14.0	9.0		Clayey SAND, fine to medium grained, dark grey	200	
					16.0	10.0		CLAY, dark grey	200	
					18.0	11.0		CLAY, grey to light grey	200	
					20.0	12.0		Sandy CLAY, grey	200	
					22.0	13.0		TC_BH01A Terminated at 8.50 m.	200	
					24.0	14.0			200	
					26.0	15.0			200	
					28.0	16.0			200	
					30.0	17.0			200	



Depth 0.0 to 0.5 m — GATIC COVER

Depth 0.5 to 2.0 m — GROUT

Depth 2.0 to 3.0 m — BENTONITE

Depth 3.0 to 3.5 m — FILTER SAND

Depth 3.5 to 6.0 m — PVC SLOTTED SECTION WITH FILTER SAND

Depth 6.0 to 6.5 m — FILTER SAND

Depth 6.5 to 8.0 m — BENTONITE

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: The Crescent

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: JR

Checked by: BF

Start Date: 29/06/2016

End Date: 5/07/2016

Easting: 330611.4 m

RL: 2.72 m

Northing: 6250298.3 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data						Rock Description		Piezometer Details			
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 8.5 mBGL Screen Top: 5.2 mBGL Screen/Sensor Base: 8.2 mBGL Instrument Details: - Installation Date: 6/07/2016 Development Date: -	
									20 60 200 600 2000		
					14.0	0.0		Sandy SILT, dark brown		Depth 0.0 to 0.5 m —	GATIC COVER BENTONITE FILTER SAND PVC SLOTTED SECTION WITH FILTER SAND FILTER SAND
					2.0	0.5		Sandy GRAVEL, fine to coarse grained, dark brown		Depth 0.5 to 4.2 m —	
					4.0	4.0		Clayey SAND, fine to medium grained, light brown/orange to dark grey		Depth 4.2 to 5.2 m —	
					6.0	5.2		CLAY, grey		Depth 5.2 to 8.2 m —	
					8.0	8.2		Clayey SAND, fine grained, grey-dark grey		Depth 8.2 to 8.5 m —	
					16.0	8.5		SAND, fine to medium grained, light grey			
					18.0			TC_BH06A Terminated at 8.50 m.			
					20.0						
					22.0						
					24.0						
					26.0						
					28.0						
					30.0						
					30.9						

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: TC

Checked by: BF

Location: Grass Verge, Railway Parade, Annandale

Start Date: 1/07/2016

End Date: 4/07/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330746.0 m

RL: 2.12 m

Drill Rig: Hydrapower Scout

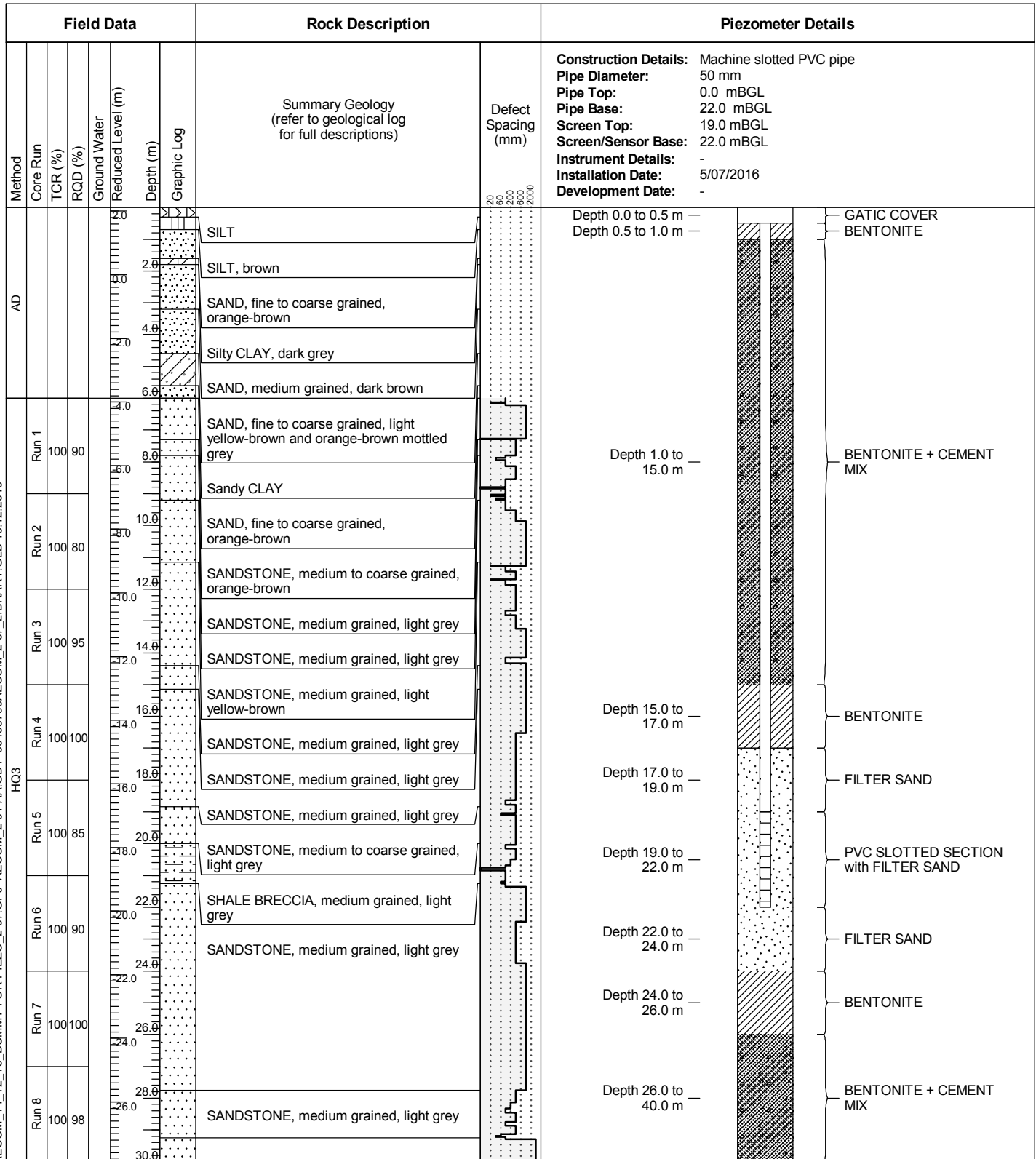
Inclination: -90°

Northing: 6250373.6 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H Surface:

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Grass Verge, Railway Parade, Annandale

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Hydrapower Scout

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: TC

Checked by: BF

Start Date: 1/07/2016

End Date: 4/07/2016

Easting: 330746.0 m

RL: 2.12 m

Northing: 6250373.6 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface:

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 22.0 mBGL Screen Top: 19.0 mBGL Screen/Sensor Base: 22.0 mBGL Instrument Details: - Installation Date: 5/07/2016 Development Date: -	
HQ3	Run 9	100	100		28.0			Defect Spacing (mm) 20 60 200 500 1000 2000	Depth 26.0 to 40.0 m — BENTONITE + CEMENT MIX
					32.0		SANDSTONE, medium grained, light grey <i>continued</i>		
					30.0		SANDSTONE, medium grained, light grey		
	Run 10	100	98		34.0		SANDSTONE, medium grained, light grey		
					32.0				
					36.0				
	Run 11	100	98		34.0				
					36.0				
	Run 12	100	100		38.0				
					36.0				
					40.0				
					38.0		TC_BH07 Terminated at 40.00 m.		
					42.0				
					40.0				
					44.0				
					42.0				
					46.0				
					44.0				
					48.0				
					46.0				
					50.0				
					48.0				
					52.0				
					50.0				
					54.0				
					52.0				
					56.0				
					54.0				
					58.0				
					56.0				
					60.0				

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation		Project No: 60493796	
Project: M4-M5 Link Geotech Investigation		Logged by: TC	Checked by: BF
Location: Grass Verge, Railway Parade, Annandale		Start Date: 1/07/2016	End Date: 4/07/2016
Driller: Hagstrom Drilling Pty Ltd	Hole Diameter: 96 mm	Easting: 330747.4 m	RL: 2.13 m
Drill Rig: Hydrapower Scout	Inclination: -90°	Northing: 6250375.0 m	Ver. Datum: AHD
	Bearing: N/A	Hor. Proj/Dat: MGA94/GDA94-56H	Surface:

Field Data						Rock Description		Piezometer Details					
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)		Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe		
AD					2.0	2.0		SILT		20	Depth 0.0 to 0.5 m —		BENTONITE
					2.0	2.0		SILT		60	Depth 0.5 to 2.5 m —		FILTER SAND
					4.0	4.0		SAND		200			
					4.0	4.0		Silty CLAY, dark grey		400	Depth 2.5 to 5.5 m —		PVC SLOTTED SECTION with FILTER SAND
					6.0	6.0		SAND		600			
					6.0	6.0		SAND		800	Depth 5.5 to 6.0 m —		BENTONITE
					8.0	8.0		Sandy CLAY		1000			
					8.0	8.0		SAND		1200			
					10.0	10.0				1400			
					12.0	12.0				1600			
								TC_BH07A Terminated at 6.00 m.					

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: LH

Checked by: BF

Location: Railway Parade, Annandale

Start Date: 5/07/2016

End Date: 11/07/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330818.3 m

RL: 2.32 m

Drill Rig: Delta 550

Inclination: -90°

Northing: 6250435.9 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 8.0 mBGL Screen Top: 5.0 mBGL Screen/Sensor Base: 8.0 mBGL Instrument Details: - Installation Date: 12/07/2016 Development Date: -		
HA	CA									
								Summary Geology (refer to geological log for full descriptions)		
								Defect Spacing (mm)		
								Depth 0.0 to 0.5 m —		
								Depth 0.5 to 3.5 m —		
								Depth 3.5 to 5.0 m —		
								Depth 5.0 to 8.0 m —		
								Depth 8.0 to 8.2 m —		
								Depth 8.2 to 10.0 m —		
								Depth 10.0 to 40.0 m —		
								GATIC COVER		
								BENTONITE		
								FILTER SAND		
								PVC SLOTTED SECTION WITH FILTER SAND		
								FILTER SAND		
								BENTONITE		
								BENTONITE + CEMENT		

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Railway Parade, Annandale

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta 550

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Checked by:BF

Start Date: 5/07/2016

End Date: 11/07/2016

Easting: 330818.3 m

RL: 2.32 m

Northing: 6250435.9 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data						Rock Description		Piezometer Details		
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 8.0 mBGL Screen Top: 5.0 mBGL Screen/Sensor Base: 8.0 mBGL Instrument Details: - Installation Date: 12/07/2016 Development Date: -
HQ3	Run 20	100	100		28.0			SANDSTONE, medium grained, light grey		Depth 10.0 to 40.0 m — BENTONITE + CEMENT
	Run 21	100	100		32.0					
	Run 22	100	100		30.0					
	Run 23				34.0					
	Run 24	100	100		32.0					
	Run 25	100	100		36.0					
	Run 26	100	93		34.0					
	Run 27	100	100		38.0					
	Run 28	100	80		40.0					
					38.0					
				42.0						
				40.0						
				44.0						
				42.0						
				46.0						
				44.0						
				48.0						
				46.0						
				50.0						
				48.0						
				52.0						
				50.0						
				54.0						
				52.0						
				56.0						
				54.0						
				58.0						
				56.0						
				60.0						

REMARKS:

REMARKS:
GROUNDWATER MONITORING NOTES:

Project No:	60493796	
Logged by:	LH	Checked by: BF
Start Date:	27/06/2016	End Date: 1/07/2016
Easting:	330830.3 m	RL: 2.32 m
Northing:	6250444.5 m	Ver. Datum: AHD
Hor. Proj/Dat:	MGA94/GDA94-56H	Surface: Grass

Field Data						Rock Description		Piezometer Details				
Method	HA	ADB	CA	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details:		
Core Run										Pipe Diameter:	Machine slotted PVC pipe	
TCR (%)										Pipe Top:	0.0 mBGL	
RQD (%)										Pipe Base:	21.0 mBGL	
										Screen Top:	21.0 mBGL	
										Screen/Sensor Base:	24.0 mBGL	
										Instrument Details:		
										Installation Date:	4/07/2016	
										Development Date:	-	
					0.0	0.0		Gravelly SAND, fine to medium grained, brown	20	Depth 0.0 to 0.5 m		GATIC COVER
					2.0	2.0		Clayey SAND, fine to medium grained	60			
					4.0	4.0		SAND, medium grained, light brown	200			
					6.0	6.0		Clayey SAND, medium grained, dark grey	600			
					8.0	8.0		Sandy CLAY, brown to light brown	2000			
					10.0	10.0				Depth 0.5 to 16.4 m		GROUT
					12.0	12.0		SANDSTONE, fine to medium grained, red				
					14.0	14.0		NO CORE				
					16.0	16.0		SANDSTONE, fine to medium grained, red-brown				
					18.0	18.0		NO CORE				
					20.0	20.0		SANDSTONE, medium to coarse grained, dark orange-brown				
					22.0	22.0		BRECCIA, medium grained, light grey				
					24.0	24.0		SANDSTONE, medium grained, light grey		Depth 16.4 to 19.0 m		BENTONITE
					26.0	26.0						
					28.0	28.0		MUDSTONE, dark grey		Depth 19.0 to 21.0 m		FILTER SAND
					30.0	30.0		SANDSTONE, medium grained, light grey				
					32.0	32.0				Depth 21.0 to 24.0 m		PVC SLOTTED SECTION WITH FILTER SAND
					34.0	34.0		SANDSTONE, medium to coarse grained				
					36.0	36.0				Depth 24.0 to 25.9 m		FILTER SAND
					38.0	38.0						
					40.0	40.0				Depth 25.9 to 28.9 m		BENTONITE
					42.0	42.0						
					44.0	44.0				Depth 28.9 to 40.0 m		BENTONITE + CEMENT

REMARKS:
GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project: M4-M5 Link Geotech Investigation

Location: Railway Parade, Annandale

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Drill Rig: Delta 550

Inclination: -90°

Bearing: N/A

Project No: 60493796

Logged by: LH

Checked by: BF

Start Date: 27/06/2016

End Date: 1/07/2016

Easting: 330830.3 m

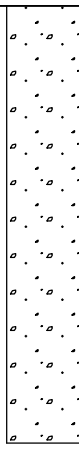
RL: 2.32 m

Northing: 6250444.5 m

Ver. Datum: AHD

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data						Rock Description		Piezometer Details	
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 21.0 mBGL Screen Top: 21.0 mBGL Screen/Sensor Base: 24.0 mBGL Instrument Details: - Installation Date: 4/07/2016 Development Date: -	
HQ3	Run 19	100	100		28.0		MUDSTONE, dark grey	Depth 28.9 to 40.0 m — 	BENTONITE + CEMENT
	Run 20	100	100		32.0		SANDSTONE, medium to coarse grained, light grey		
	Run 21	100	100		34.0		SANDSTONE, medium grained, light grey		
	Run 22	100	100		36.0		SANDSTONE, medium grained, light grey		
	Run 23	100	100		38.0		SANDSTONE, medium grained, light grey		
	Run 24	100	100		40.0		SANDSTONE, medium grained, light grey		
	Run 25	100	100		40.0		TC_BH09 Terminated at 40.00 m.		
					38.0				
					42.0				
					40.0				
					44.0				
					42.0				
					46.0				
					44.0				
					48.0				
					46.0				
					50.0				
					48.0				
					52.0				
					50.0				
					54.0				
					52.0				
					56.0				
					54.0				
					58.0				
					56.0				
					60.0				

REMARKS:

GROUNDWATER MONITORING NOTES:

Client: Sydney Motorway Corporation

Project No: 60493796

Project: M4-M5 Link Geotech Investigation

Logged by: LH

Checked by: BF

Location: Railway Parade, Annandale

Start Date: 27/06/2016

End Date: 1/07/2016

Driller: Hagstrom Drilling Pty Ltd

Hole Diameter: 96 mm

Easting: 330832.7 m

RL: 2.35 m

Drill Rig: Delta 550

Inclination: -90°

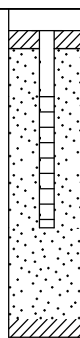
Northing: 6250445.8 m

Ver. Datum: AHD

Bearing: N/A

Hor. Proj/Dat: MGA94/GDA94-56H

Surface: Grass

Field Data						Rock Description		Piezometer Details				
Method	Core Run	TCR (%)	RQD (%)	Ground Water	Reduced Level (m)	Depth (m)	Graphic Log	Summary Geology (refer to geological log for full descriptions)	Defect Spacing (mm)	Construction Details: Machine slotted PVC pipe Pipe Diameter: 50 mm Pipe Top: 0.0 mBGL Pipe Base: 2.0 mBGL Screen Top: 2.0 mBGL Screen/Sensor Base: 5.0 mBGL Instrument Details: - Installation Date: 4/07/2016 Development Date: -		
					2.0	0.0		Gravelly SAND, fine to medium grained, brown	20	Depth 0.0 to 0.5 m —		GATIC COVER
					2.0	0.5		Clayey SAND, fine to medium grained	60	Depth 0.5 to 0.9 m —		BENTONITE
					4.0	1.0		SAND, medium grained, light brown	200	Depth 0.9 to 2.0 m —		FILTER SAND
					4.0	2.0		Clayey SAND, medium grained, dark grey	600	Depth 2.0 to 5.0 m —		PVC SLOTTED SECTION WITH FILTER SAND
					6.0	4.0		Sandy CLAY, brown to light brown	2000	Depth 5.0 to 7.1 m —		FILTER SAND
					8.0	6.0				Depth 7.1 to 7.5 m —		BENTONITE
					8.0	7.50		TC_BH09A Terminated at 7.50 m.				
					10.0	8.0						
					12.0	10.0						
					14.0	12.0						
					16.0	14.0						
					18.0	16.0						
					20.0	18.0						
					22.0	20.0						
					24.0	22.0						
					26.0	24.0						
					28.0	26.0						
					30.0	28.0						

REMARKS: The material properties are taken from the adjacent borehole TC_BH09
GROUNDWATER MONITORING NOTES:

Annexure G – Laboratory permeability and porosity data

DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	EP_BH04 25.30-25.46m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20465-TP
Job No:	S16175	Lab No:	S20465

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	71.4
		Sample Diameter (mm)	61.0

PERMEABILITY $k_{(20)} = 3.2E-08$ (m/sec)

Comments

Permeant Used: Sydney tap water



The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards. Accredited for compliance with ISO/IEC 17025. This document shall not be reproduced, except in full.

NATA Accredited Laboratory Number: 14874

Authorised Signatory:

25/01/2017

Ian Goldschmidt

Date:



Macquarie Geotechnical
Unit 8/10
Bradford Street
Alexandria NSW 2015

DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	MT_BH01 59.43-59.61m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20504-TP
Job No:	S16175	Lab No:	S20504

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	81.9
		Sample Diameter (mm)	61.1

PERMEABILITY $k_{(20)}$ = 6.4E-08 (m/sec)

Comments

Permeant Used: Sydney tap water



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25/01/2017

Date:



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DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	MT_BH07 42.38-42.58m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20535-TP
Job No:	S16175	Lab No:	S20535

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	94.4
		Sample Diameter (mm)	61.1

PERMEABILITY $k_{(20)} = 4.8E-08$ (m/sec)

Comments

Permeant Used: Sydney tap water



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Date:



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DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	HB_BH24 18.27-18.45m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20653-TP
Job No:	S16175	Lab No:	S20653

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	79.4
		Sample Diameter (mm)	61.0

PERMEABILITY $k_{(20)} = 5.3E-08$ (m/sec)

Comments

Permeant Used: Sydney tap water



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Authorised Signatory:

25/01/2017

Ian Goldschmidt

Date:



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DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	MT_BH19 35.16-35.41m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Mudstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20925-TP
Job No:	S16175	Lab No:	S20925

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	65.3
		Sample Diameter (mm)	61.2

PERMEABILITY $k_{(20)} = 1.0E-10$ (m/sec)

Comments

Permeant Used: Sydney tap water



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Authorised Signatory:

Ian Goldschmidt

23/02/2017

Date:



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Unit 8/10
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DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	MT_BH20 42.70-42.85m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	SW Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20978-TP
Job No:	S16175	Lab No:	S20978

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	65.3
		Sample Diameter (mm)	61.2

PERMEABILITY $k_{(20)} = 8.9E-10$ (m/sec)

Comments

Permeant Used: Sydney tap water



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Authorised Signatory:

23/02/2017

Ian Goldschmidt

Date:



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Unit 8/10
Bradford Street
Alexandria NSW 2015

DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	RZ_BH64 38.43-38.61m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S21050-TP
Job No:	S16175	Lab No:	S21050

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	65.3
		Sample Diameter (mm)	61.2

PERMEABILITY $k_{(20)} = 2.1E-09$ (m/sec)

Comments

Permeant Used: Sydney tap water



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DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	RZ_BH67 42.00-42.20m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR SANDSTONE
Project:	M4-M5 Link Project (60493796)	Report No:	S21086-TP
Job No:	S16175	Lab No:	S21086

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	65.3
		Sample Diameter (mm)	61.2

PERMEABILITY $k_{(20)} = 1.4E-09$ (m/sec)

Comments

Permeant Used: Sydney tap water



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DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	MT_BH11 53.38-53.56m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20577-TP
Job No:	S16175	Lab No:	S20577

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	79.7
		Sample Diameter (mm)	61.1

PERMEABILITY $k_{(20)} = 4.4E-09$ (m/sec)

Comments

Permeant Used: Sydney tap water



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DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	MT_BH12 46.11-46.25m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20618-TP
Job No:	S16175	Lab No:	S20618

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	65.1
		Sample Diameter (mm)	61.1

PERMEABILITY $k_{(20)} = 4.1E-08$ (m/sec)

Comments

Permeant Used: Sydney tap water



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DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	MT_BH16 79.45-79.58m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20710-TP
Job No:	S16175	Lab No:	S20710

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	61.2
		Sample Diameter (mm)	60.1

PERMEABILITY $k_{(20)} = 1.5E-07$ (m/sec)

Comments

Permeant Used: Sydney tap water



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DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	RZ_BH60 49.15-49.30m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20741-TP
Job No:	S16175	Lab No:	S20741

Test Procedure:	☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER
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Sampling:	Sampled by Client	Date Sampled:	Unknown
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Preparation:	Prepared in accordance with the test method
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Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	70.0
		Sample Diameter (mm)	61.0

PERMEABILITY $k_{(20)} =$ **1.4E-09 (m/sec)**

Comments

Permeant Used: Sydney tap water



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DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Client:	AECOM	Source:	MT_BH16 39.25-39.43m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Mudstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20757-TP
Job No:	S16175	Lab No:	S20757

Test Procedure: ☒ AS1289 6.7.3 DETERMINATION OF PERMEABILITY OF A SOIL - CONSTANT HEAD METHOD USING A FLEXIBLE WALL PERMEAMETER

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

Undisturbed Sample Condition	Rock Core	Confining Pressure (kPa)	600
		Back Pressure (kPa)	500
		Mean Effective Stress (kPa)	100
		Specimen Saturation Pressure (kPa)	500
		Sample Height (mm)	81.3
		Sample Diameter (mm)	60.8

PERMEABILITY $k_{(20)} = 2.3E-09$ (m/sec)

Comments

Permeant Used: Sydney tap water



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ROCK POROSITY & DENSITY REPORT

Client:	AECOM	Source:	EP_BH04 25.30-25.46m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20465-RP
Job No:	S16175	Lab No:	S20465

Test Procedure:	☒	AS4133 2.1.1 Rock porosity and density tests - Determination of rock porosity and dry density - Saturation and caliper techniques
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Sampling:	Sampled by Client	Date Sampled:	Unknown
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Preparation:	Prepared in accordance with the test method
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	Sample # 1	Sample # 2	Sample # 4	Sample # 4	Sample Average
Dry Density (t/m³)	2.187	2.213	2.192	2.084	2.169
Porosity Value (%)	14.8	12.8	12.4	14.3	13.6
Change In Shape	None	None	None	None	-
Change in Competency	None	None	None	None	-



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ROCK POROSITY & DENSITY REPORT

Client:	AECOM	Source:	HB_BH24 18.27-18.45m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20653-RP
Job No:	S16175	Lab No:	S20653

Test Procedure:	☒	AS4133 2.1.1 Rock porosity and density tests - Determination of rock porosity and dry density - Saturation and caliper techniques
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Sampling:	Sampled by Client	Date Sampled:	Unknown
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Preparation:	Prepared in accordance with the test method
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	Sample # 1	Sample # 2	Sample # 4	Sample # 4	Sample Average
Dry Density (t/m³)	2.289	2.237	2.214	2.213	2.238
Porosity Value (%)	13.2	14.6	14.6	13.9	14.1
Change In Shape	None	None	None	None	-
Change in Competency	None	None	None	None	-



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ROCK POROSITY & DENSITY REPORT

Client:	AECOM	Source:	MT_BH01 59.43-59.61m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20504-RP
Job No:	S16175	Lab No:	S20504

Test Procedure: ☒ AS4133 2.1.1 Rock porosity and density tests - Determination of rock porosity and dry density - Saturation and caliper techniques

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

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	Sample # 1	Sample # 2	Sample # 4	Sample # 4	Sample Average
Dry Density (t/m ³)	2.129	2.021	2.181	2.064	2.099
Porosity Value (%)	13.4	10.8	14.3	13.8	13.1
Change In Shape	None	None	None	None	-
Change in Competency	None	None	None	None	-

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ROCK POROSITY & DENSITY REPORT					
Client:	AECOM		Source:	MT_BH07 42.38-42.58m	
Address:	PO Box Q410, QVB PO Sydney NSW 1230		Sample Description:	FR Sandstone	
Project:	M4-M5 Link Project (60493796)		Report No:	S20535-RP	
Job No:	S16175		Lab No:	S20535	
Test Procedure: ☒ AS4133 2.1.1 Rock porosity and density tests - Determination of rock porosity and dry density - Saturation and caliper techniques					
Sampling: Sampled by Client			Date Sampled:		Unknown
Preparation: Prepared in accordance with the test method					
	Sample # 1	Sample # 2	Sample # 4	Sample # 4	Sample Average
Dry Density (t/m ³)	2.260	2.223	2.235	2.290	2.252
Porosity Value (%)	11.6	11.5	10.7	11.3	11.3
Change In Shape	None	None	None	None	-
Change in Competency	None	None	None	None	-
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ROCK POROSITY & DENSITY REPORT

Client:	AECOM	Source:	MT_BH11 53.38-53.56m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20577-RP
Job No:	S16175	Lab No:	S20577

Test Procedure: ☒ AS4133 2.1.1 Rock porosity and density tests - Determination of rock porosity and dry density - Saturation and caliper techniques

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

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	Sample # 1	Sample # 2	Sample # 4	Sample # 4	Sample Average
Dry Density (t/m ³)	2.059	2.193	2.230	2.170	2.163
Porosity Value (%)	13.5	16.1	14.7	10.0	13.6
Change In Shape	None	None	None	None	-
Change in Competency	None	None	None	None	-

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ROCK POROSITY & DENSITY REPORT

Client:	AECOM	Source:	MT_BH12 46.11-56.25m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20618-RP
Job No:	S16175	Lab No:	S20618

Test Procedure:	☒	AS4133 2.1.1 Rock porosity and density tests - Determination of rock porosity and dry density - Saturation and caliper techniques
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Sampling:	Sampled by Client
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Date Sampled:	Unknown
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Preparation:	Prepared in accordance with the test method
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	Sample # 1	Sample # 2	Sample # 4	Sample # 4	Sample Average
Dry Density (t/m³)	2.095	2.060	2.041	2.012	2.052
Porosity Value (%)	19.2	19.1	18.4	18.1	18.7
Change In Shape	None	None	None	None	-
Change in Competency	None	None	None	None	-



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ROCK POROSITY & DENSITY REPORT

Client:	AECOM	Source:	MT_BH16 79.45-79.58m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20710-RP
Job No:	S16175	Lab No:	S20710

Test Procedure: ☒ AS4133 2.1.1 Rock porosity and density tests - Determination of rock porosity and dry density - Saturation and caliper techniques

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

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	Sample # 1	Sample # 2	Sample # 4	Sample # 4	Sample Average
Dry Density (t/m ³)	2.236	2.251	2.253	2.253	2.249
Porosity Value (%)	14.5	15.0	14.0	14.9	14.6
Change In Shape	None	None	None	None	-
Change in Competency	None	None	None	None	-

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ROCK POROSITY & DENSITY REPORT

Client:	AECOM	Source:	MT_BH16 39.25-39.43m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Mudstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20757-RP
Job No:	S16175	Lab No:	S20757

Test Procedure: ☒ AS4133 2.1.1 Rock porosity and density tests - Determination of rock porosity and dry density - Saturation and caliper techniques

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

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	Sample # 1	Sample # 2	Sample # 4	Sample # 4	Sample Average
Dry Density (t/m ³)	2.519	2.452	2.505	2.530	2.502
Porosity Value (%)	5.3	5.8	5.6	5.8	5.6
Change In Shape	None	None	None	None	-
Change in Competency	None	None	None	None	-

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ROCK POROSITY & DENSITY REPORT

Client:	AECOM	Source:	RZ_BH60 49.15-49.30m
Address:	PO Box Q410, QVB PO Sydney NSW 1230	Sample Description:	FR Sandstone
Project:	M4-M5 Link Project (60493796)	Report No:	S20741-RP
Job No:	S16175	Lab No:	S20741

Test Procedure: ☒ AS4133 2.1.1 Rock porosity and density tests - Determination of rock porosity and dry density - Saturation and caliper techniques

Sampling: Sampled by Client **Date Sampled:** Unknown

Preparation: Prepared in accordance with the test method

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	Sample # 1	Sample # 2	Sample # 4	Sample # 4	Sample Average
Dry Density (t/m ³)	2.010	2.049	2.089	2.065	2.053
Porosity Value (%)	13.7	14.1	14.5	15.0	14.3
Change In Shape	None	None	None	None	-
Change in Competency	None	None	None	None	-

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