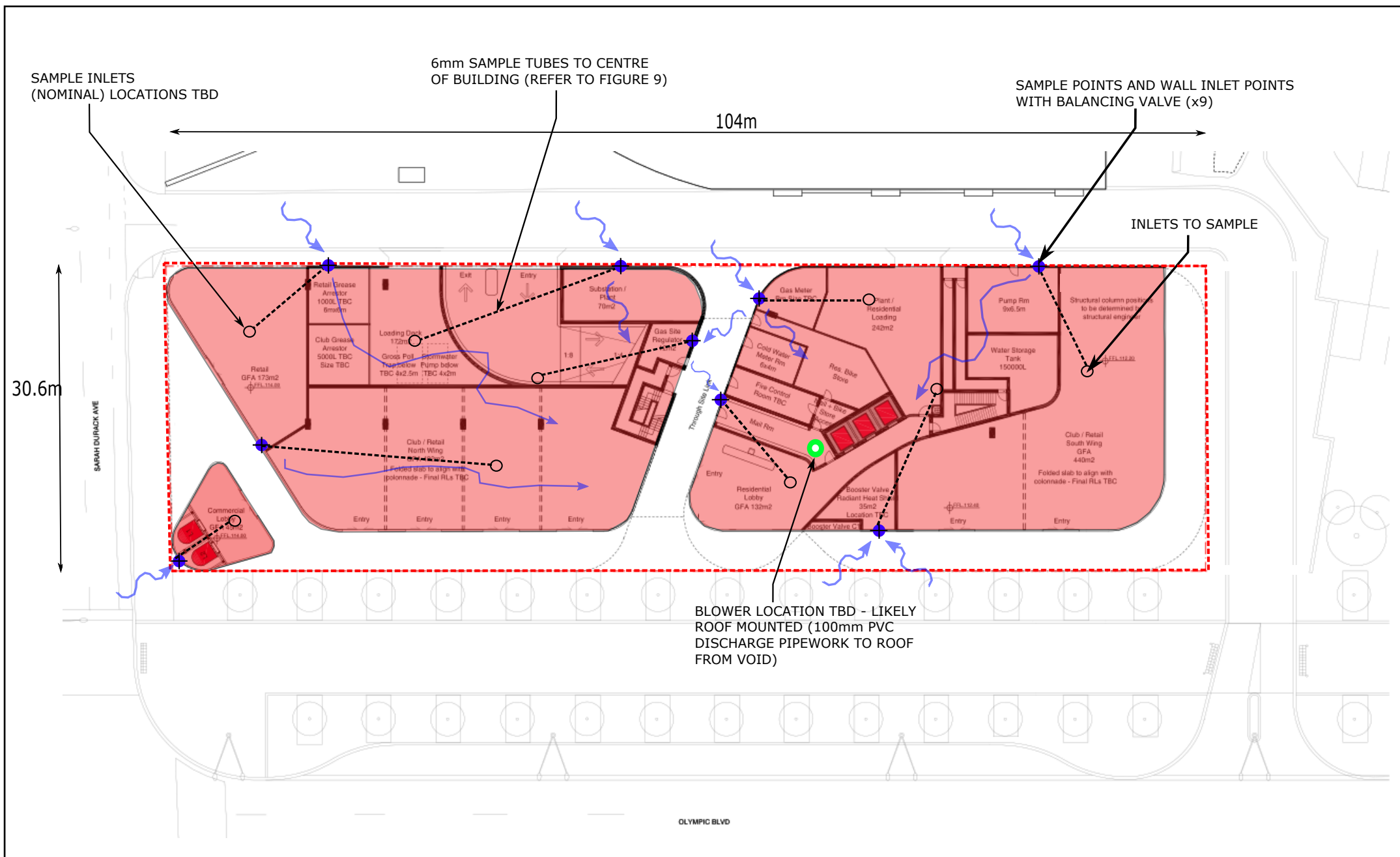




Legend

50mm Drainage Cell and membrane barrier extent

SAMPLE OPENING

SITE BOUNDARY

INLET SUBSLAB MONITORING POINT

BLOWER LOCATION (TBD)

AIR IN



Sydney Office
Phone (02) 9476 1765
Fax (02) 9476 1557

Maitland Office
Phone (02) 4933 0001

Title Drainage Cell, Membrane Barrier Extent and Inlet Subslab Monitoring Points

Client ECOVE

Project No.
DL 3620

Scale
As Shown

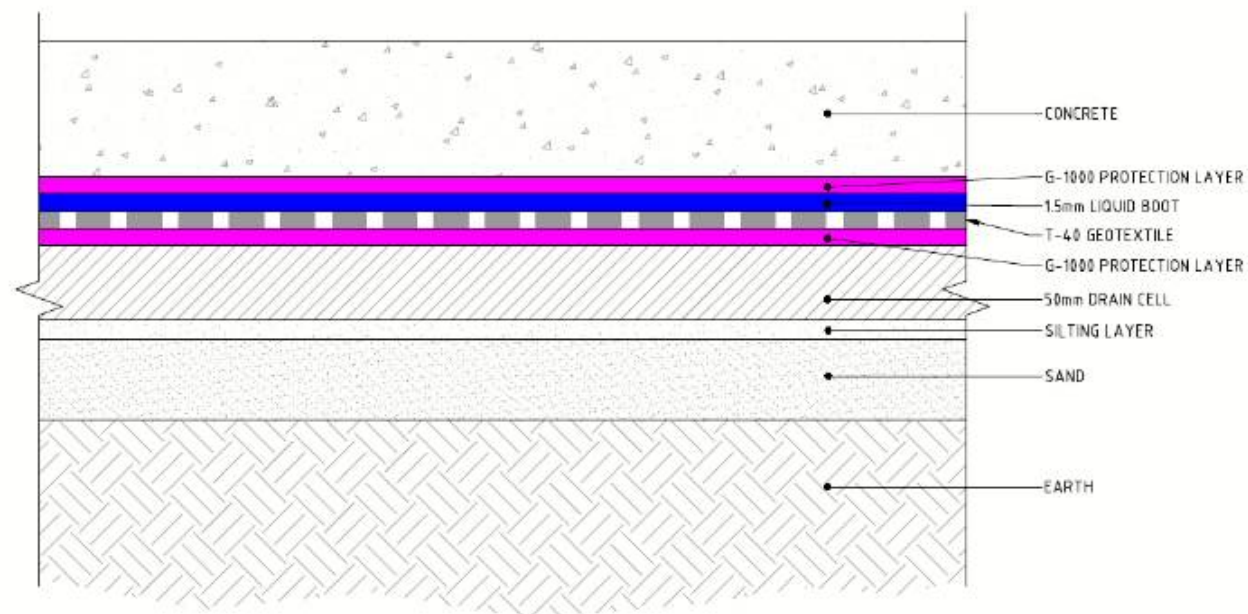
Figure No.
2

Compiled
SB

Date
2/12/2016

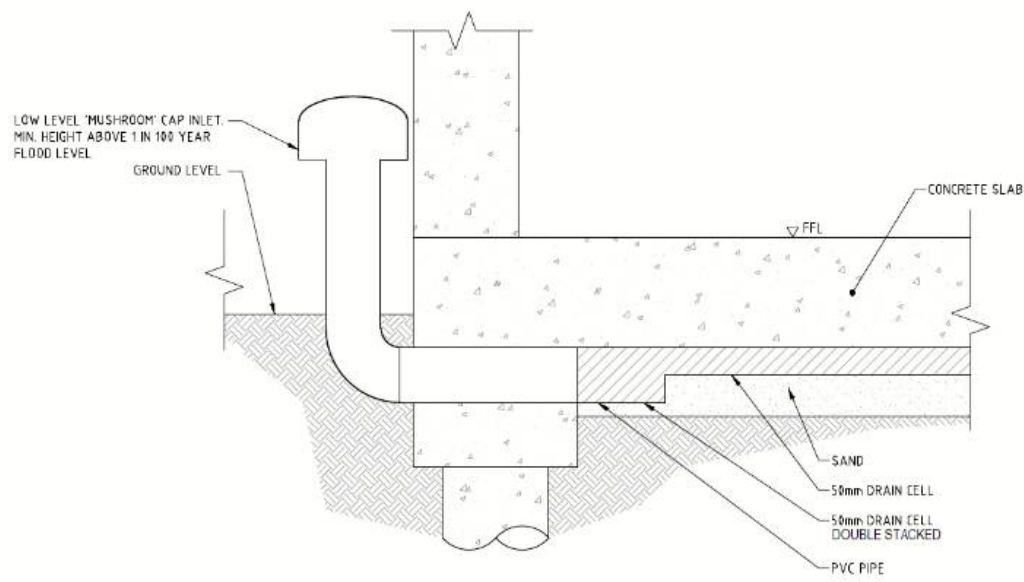
Revision
R00

APPENDIX D FIGURE 3 – TYPICAL CROSS SECTION

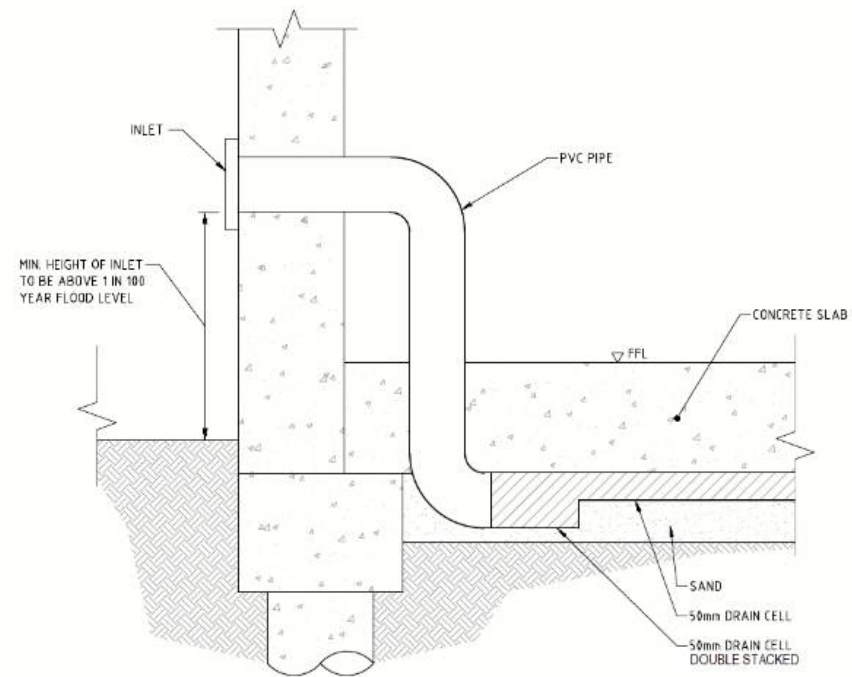


TYPICAL CROSS SECTION
N.T.S

APPENDIX D FIGURE 4 – INLET DETAIL MUSHROOM AND Z TYPE



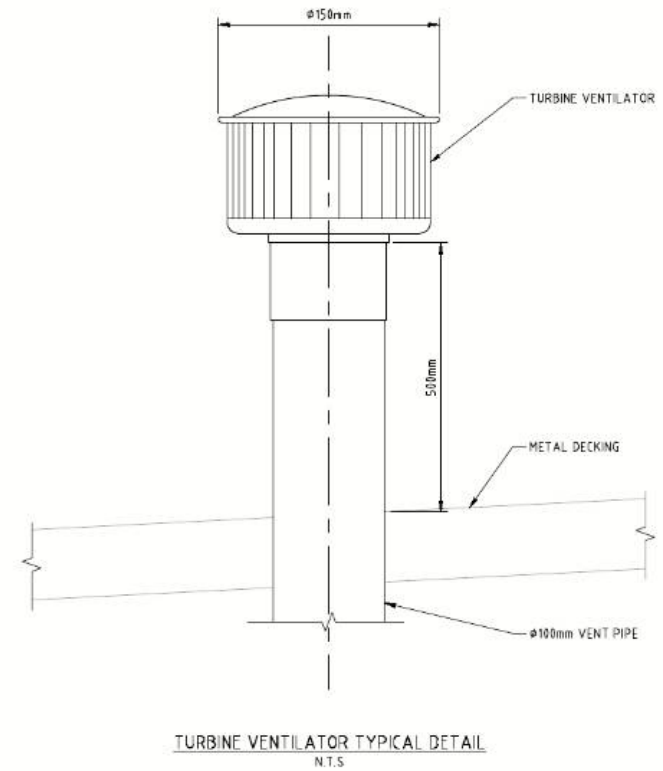
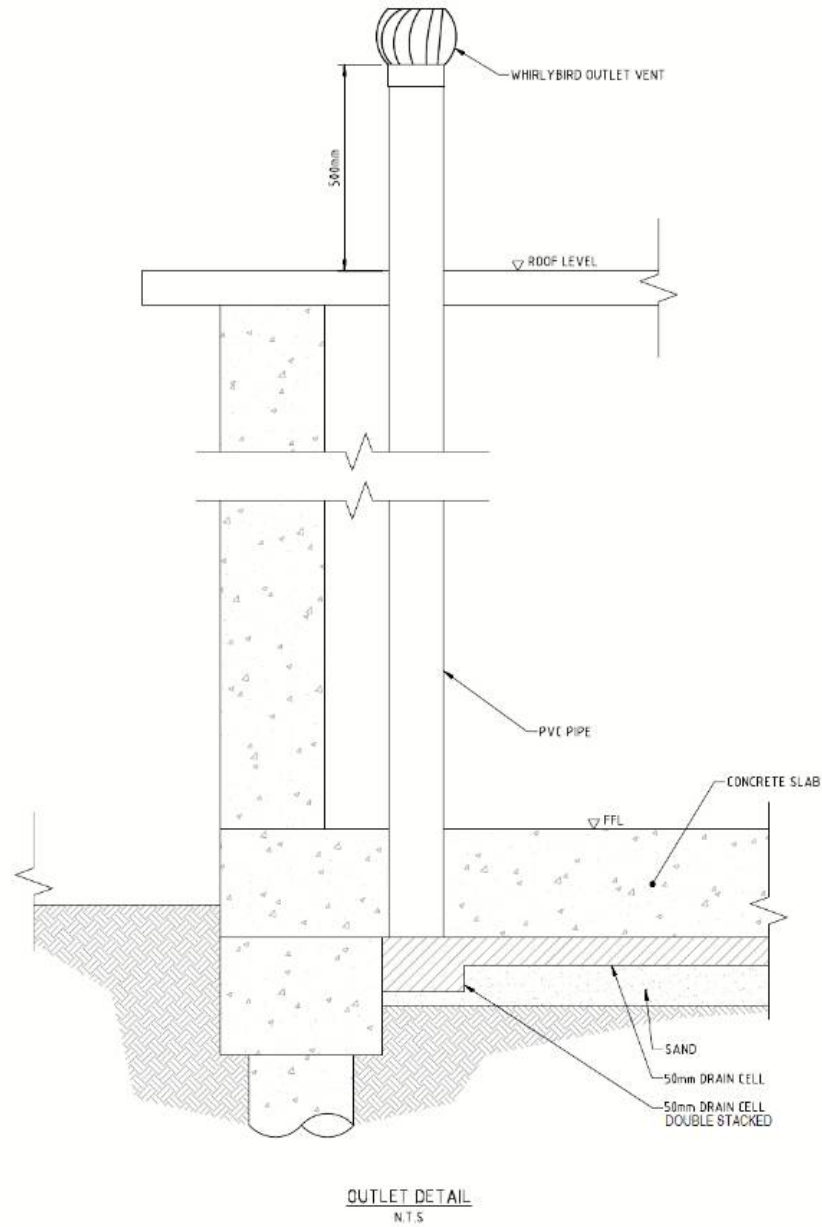
INLET DETAIL - MUSHROOM
N.T.S



INLET DETAIL - Z TYPE
N.T.S

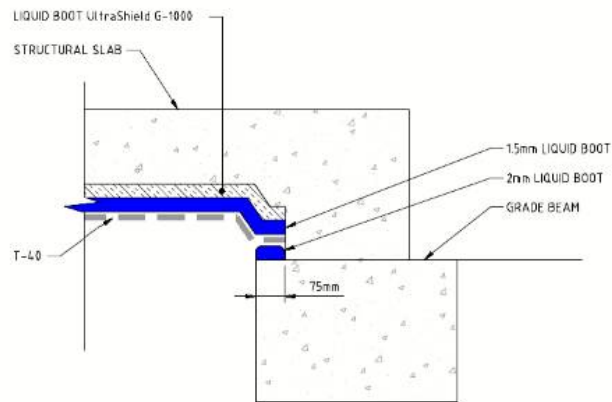
Title INLET DETAILS			
Client ECOVE	Project No. DL 3620	Figure No 4	Date 21/11/2016
	Scale As Shown	Compiled AP	Revision R00

APPENDIX D FIGURE 5 – OUTLET DETAIL AND TURBINE VENTILATOR



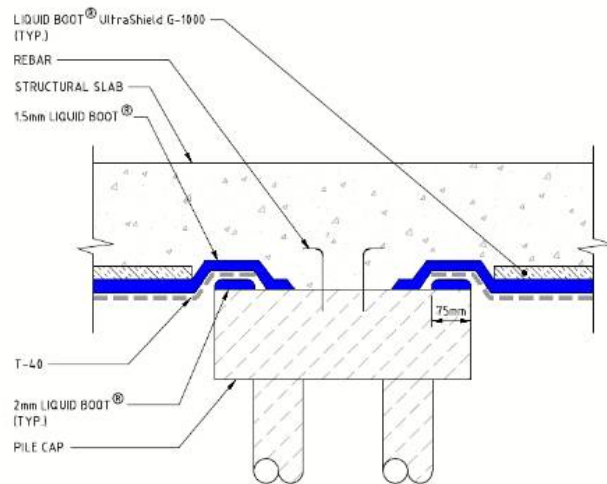
Title OUTLET DETAILS			
Client ECOVE	Project No. DL 3620	Figure No 5	Date 21/11/2016
	Scale As Shown	Compiled AP	Revision R00

APPENDIX D FIGURE 6 – GAS VAPOUR BARRIER DETAIL

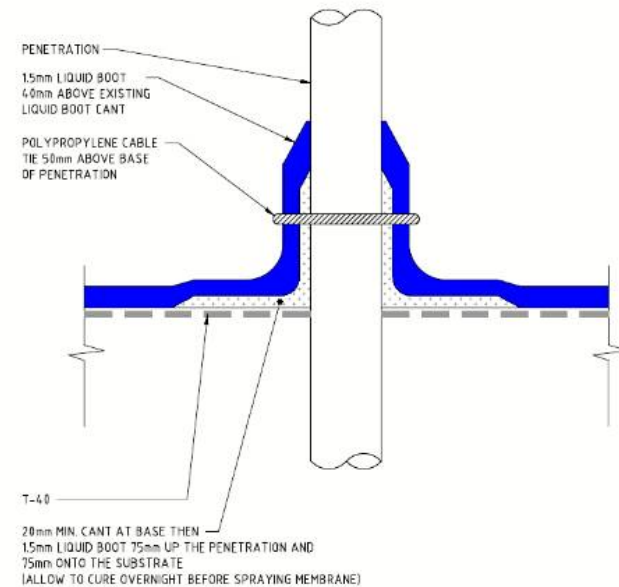


**GAS VAPOR BARRIER
OVER FOOTING AND GRADE BEAMS**
N.T.S

NOTE:
BRING THE MEMBRANE 75mm ONTO THE FOOTINGS, THE
GEOTEXTILE IS THEN ENCAPSULATED IN THE MEMBRANE.

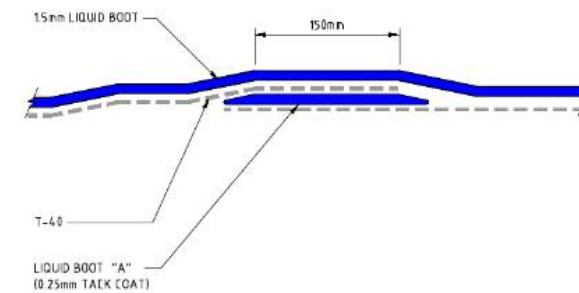


**GAS VAPOR BARRIER
PILE CAP**
N.T.S



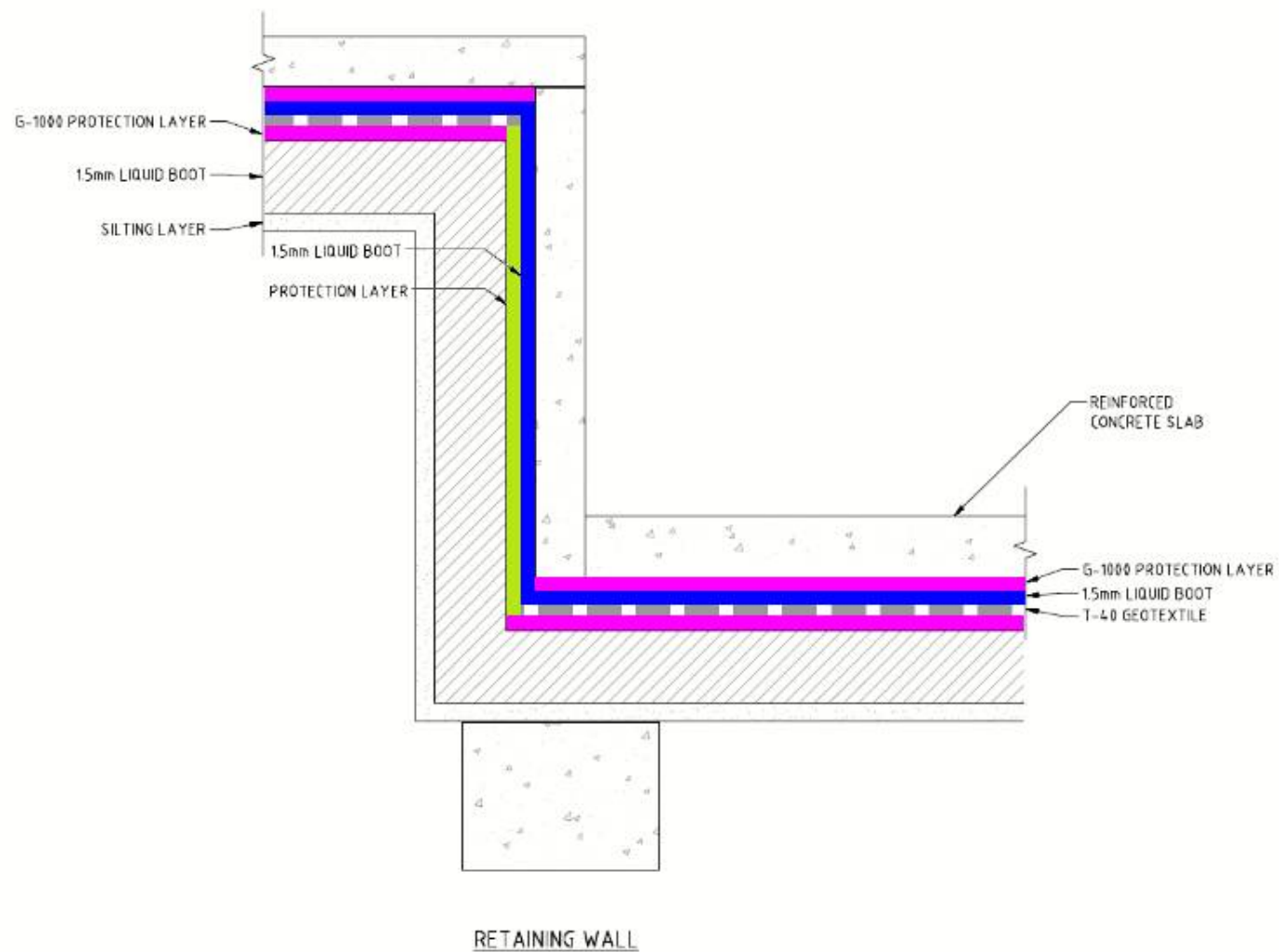
**GAS VAPOR BARRIER
PENETRATIONS ON EARTH OR GRAVEL SUBGRADE**
N.T.S

NOTE:
ALL PENETRATIONS SHALL BE CLEANED AS PER
SPECIFICATIONS BEFORE LIQUID BOOT IS APPLIED.

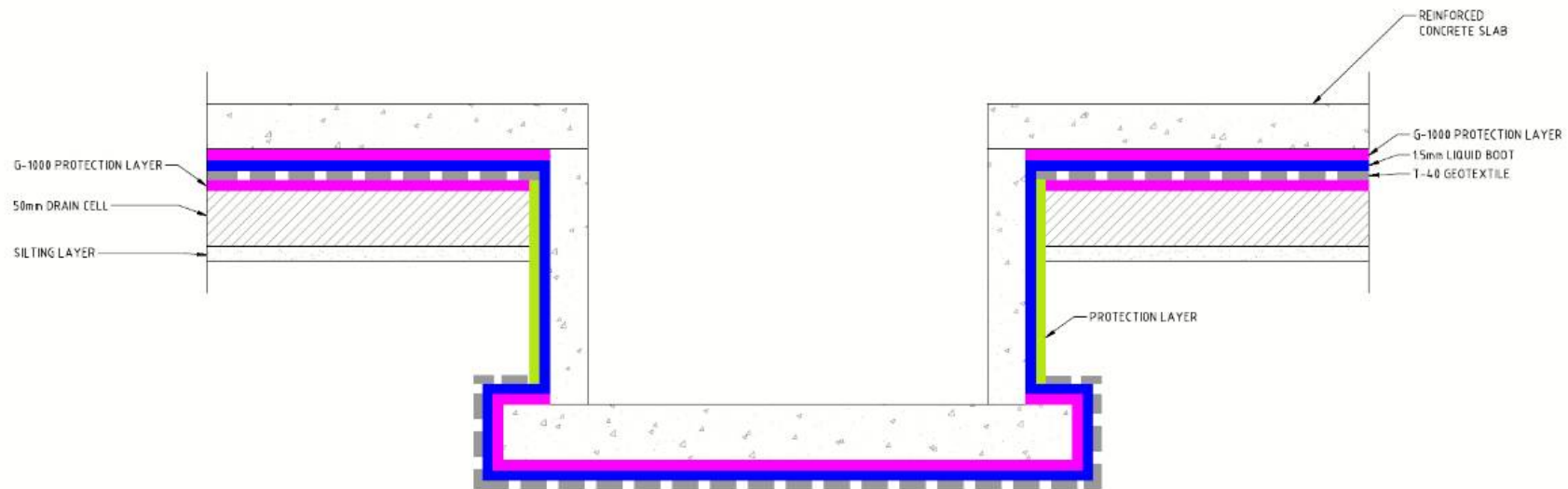


**GAS VAPOR BARRIER
MEMBRANE LAP JOINTS ON GEOTEXTILE**
N.T.S

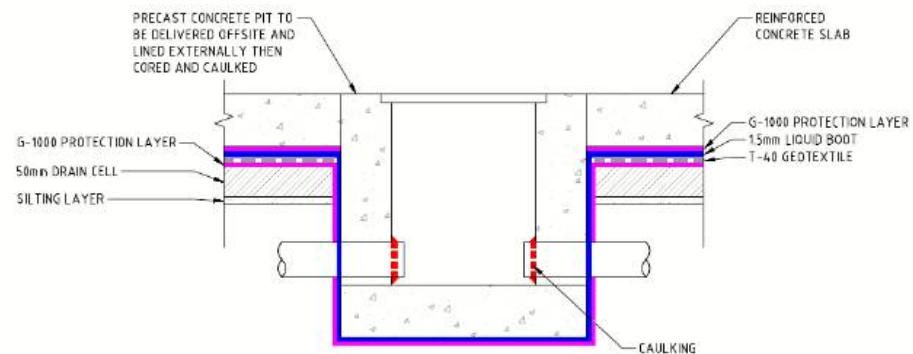
APPENDIX D FIGURE 7 – RETAINING WALL DETAIL



APPENDIX D FIGURE 8 – LIFT PIT AND STORMWATER DETAIL



LIFT PIT CORE
N.T.S



STORMWATER PIT DETAIL
N.T.S

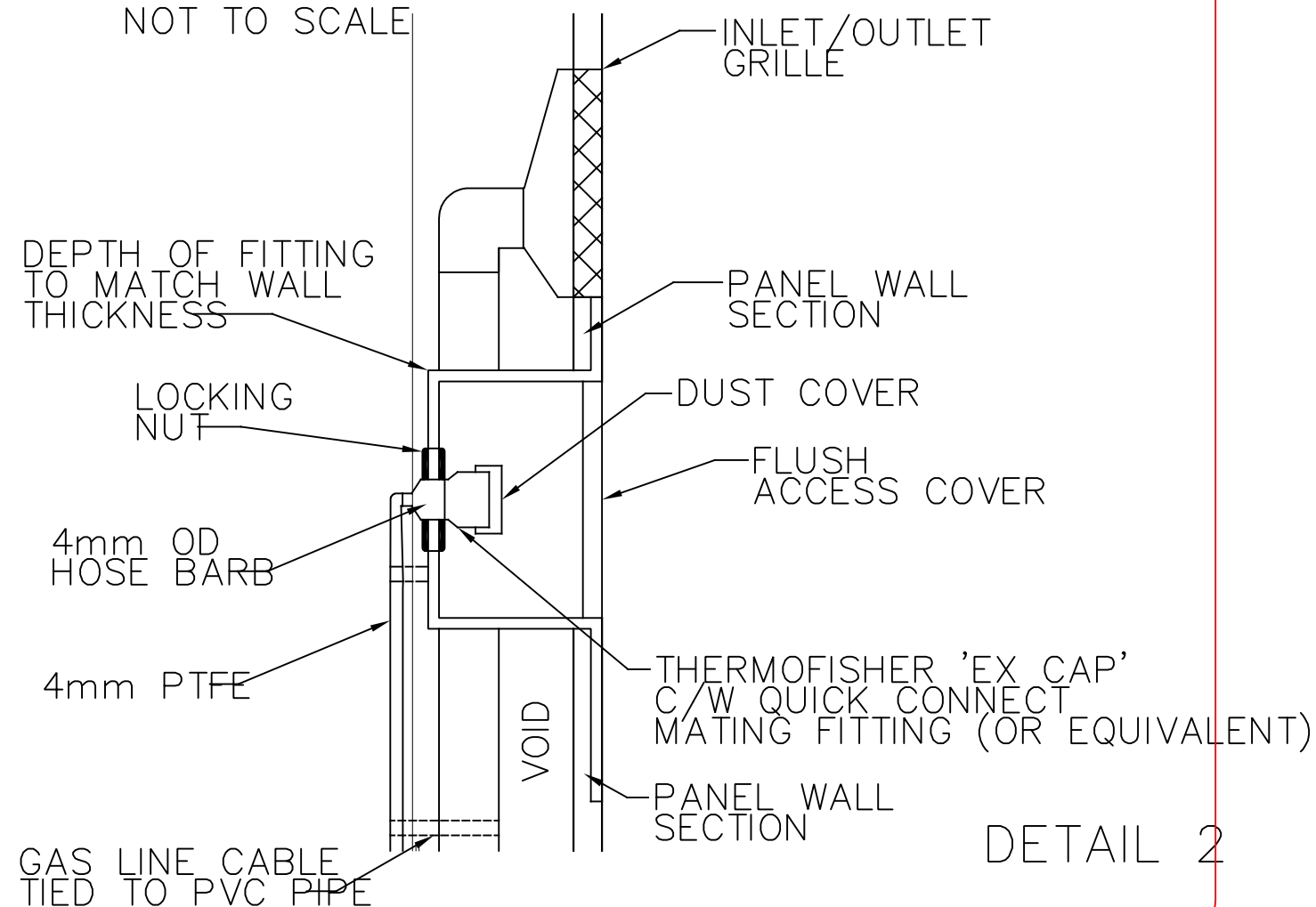
NOTE:
HDPE PITS DO NOT REQUIRE LIQUID BOOT LINING.

Title			
Service Details			
Client	Project No.	Figure No	Date
ECOVE	DL 3620	8	21/11/2016
	Scale	Compiled	Revision
	As Shown	AP	R00

APPENDIX D FIGURE 9 – INLET AND OUTLET DETAIL

WALL SAMPLE POINT DETAIL

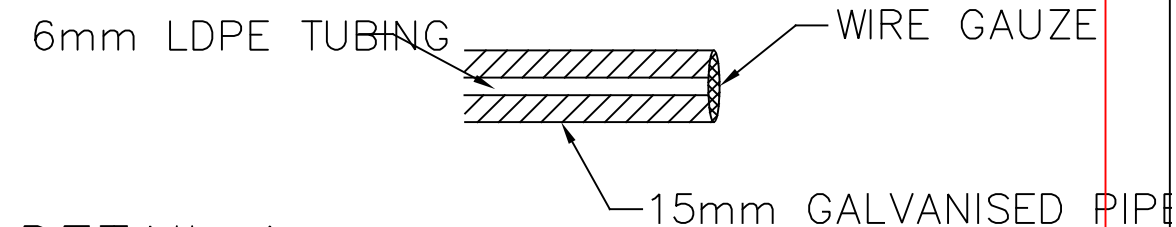
NOT TO SCALE



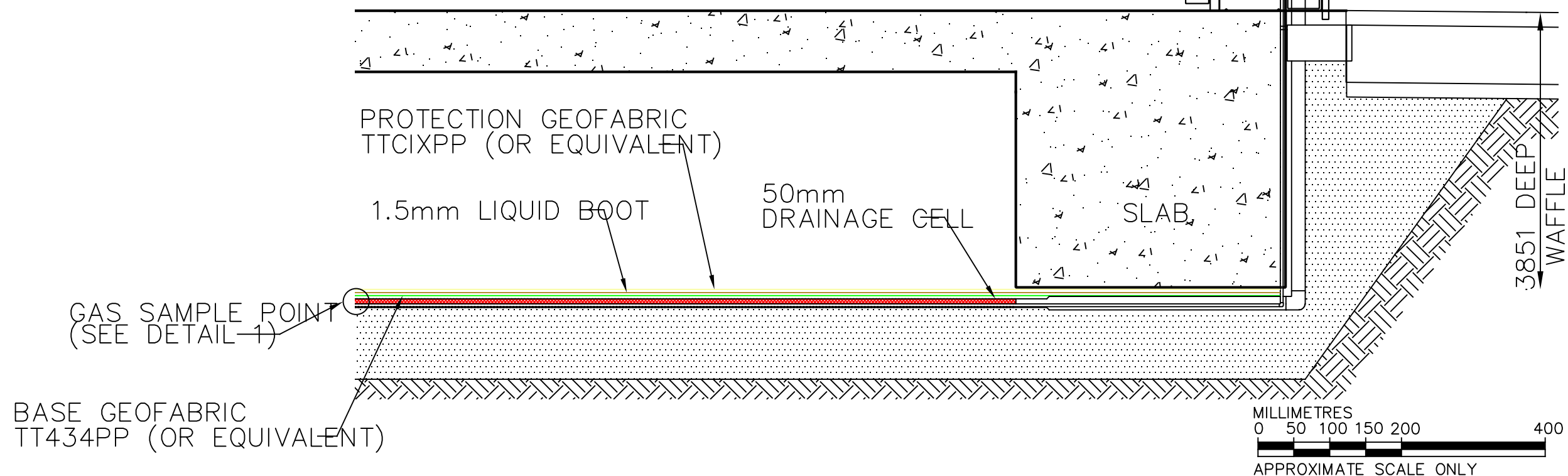
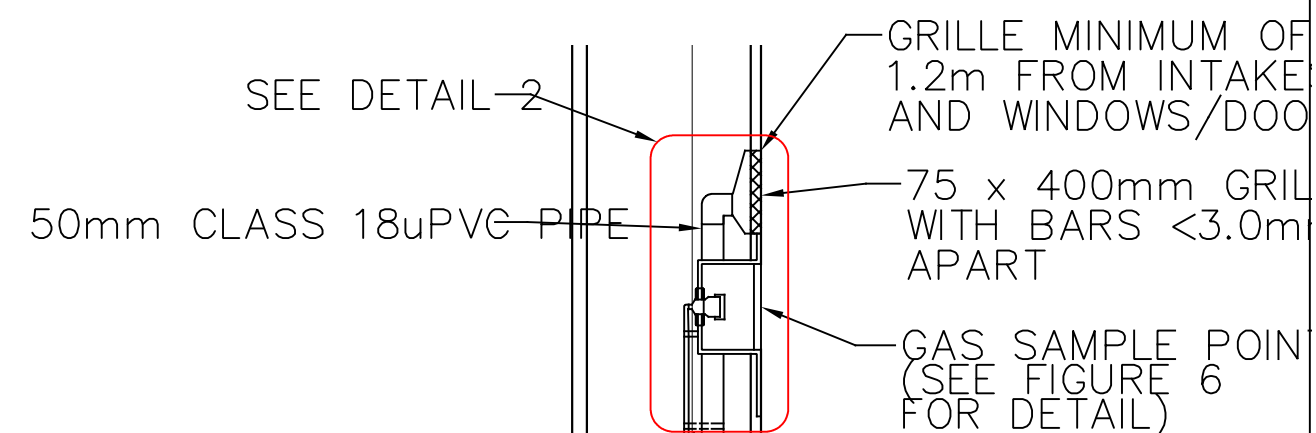
DETAIL 2

GAS SAMPLE POINT DETAIL

NOT TO SCALE



DETAIL 1



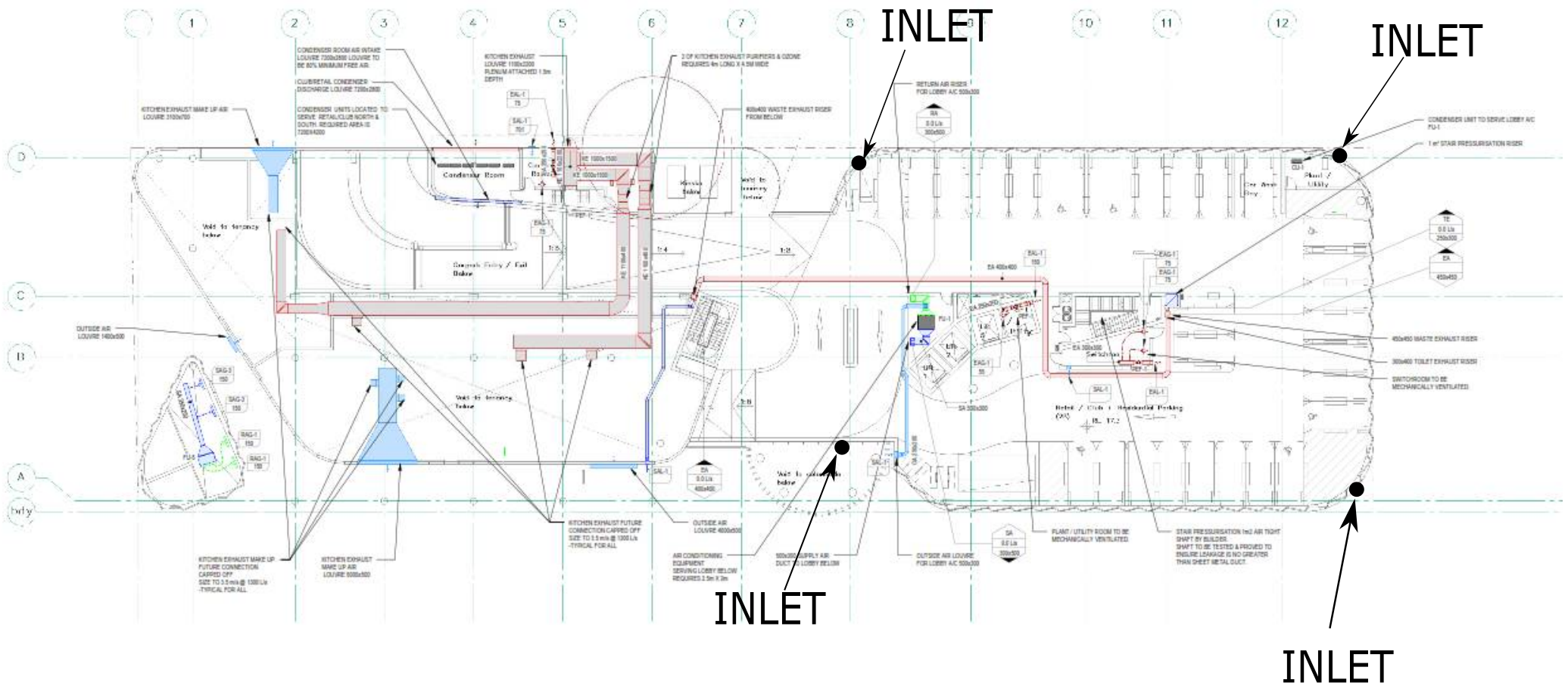
DLA ENVIRONMENTAL
UNIT 3, 38 LEIGHTON PLACE
HORNSBY, NSW 2077
TEL: 02 9476 1765
FAX:
www.dlaenvironmental.com.au

EDGE FOOTING BEAM INLET/OUTLET
TO SUB-SLAB VENTILATION SYSTEM
GAS MITIGATION AREAS

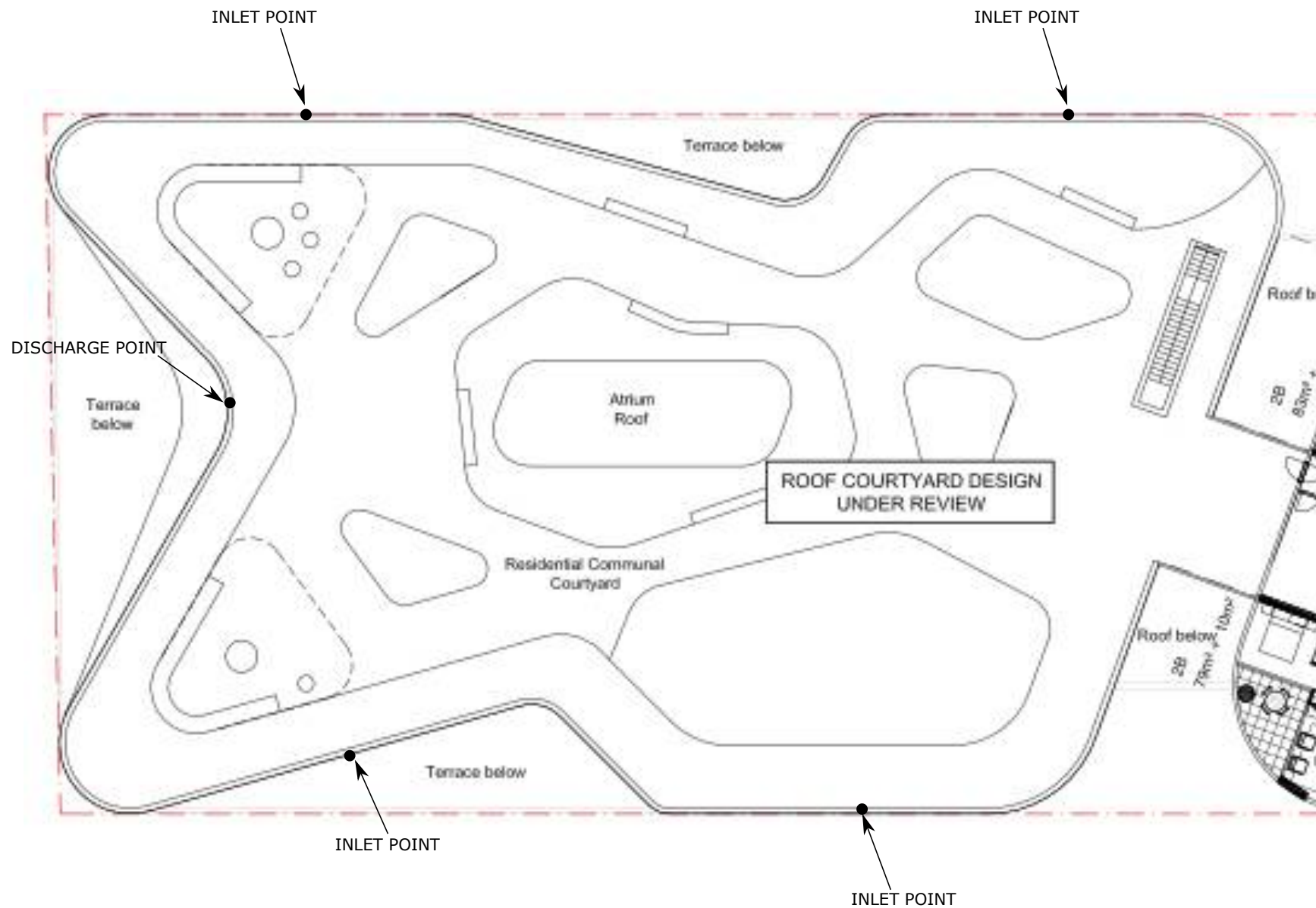
01	22.11.16	ORIGINAL ISSUE	SB	AJM
ISSUE	DATE	AMENDMENTS	DRN	CKD

SHEET SIZE A3	DRAWN: SB REV: 01	DATE: 22/11/16 DWG NAME:	CHECKED	APPROVED	FIG No: FIGURE 9
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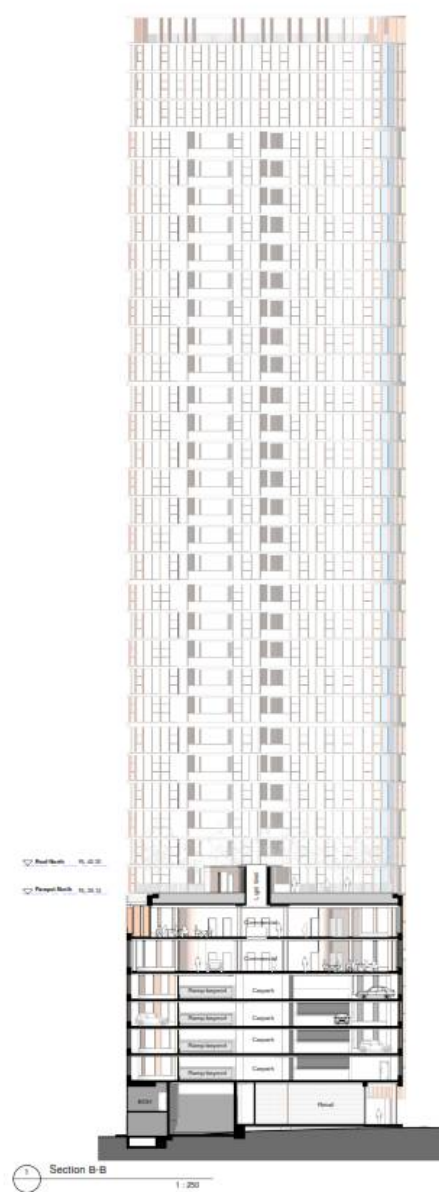
APPENDIX D FIGURE 10 – LEVEL 2 INLET DETAIL



APPENDIX D FIGURE 11 – LEVEL 7 INLET DETAIL



APPENDIX D FIGURE 12 – LEVEL 7 INLET SECTION



- RL 146.00 Top of Building
- RL 145.00 45th Floor
- RL 144.00 Level 44
- RL 143.00 Level 43
- RL 142.00 Level 42
- RL 141.00 Level 41
- RL 140.00 Level 40
- RL 139.00 Level 39
- RL 138.00 Level 38
- RL 137.00 Level 37
- RL 136.00 Level 36
- RL 135.00 Level 35
- RL 134.00 Level 34
- RL 133.00 Level 33
- RL 132.00 Level 32
- RL 131.00 Level 31
- RL 130.00 Level 30
- RL 129.00 Level 29
- RL 128.00 Level 28
- RL 127.00 Level 27
- RL 126.00 Level 26
- RL 125.00 Level 25
- RL 124.00 Level 24
- RL 123.00 Level 23
- RL 122.00 Level 22
- RL 121.00 Level 21
- RL 120.00 Level 20
- RL 119.00 Level 19
- RL 118.00 Level 18
- RL 117.00 Level 17
- RL 116.00 Level 16
- RL 115.00 Level 15
- RL 114.00 Level 14
- RL 113.00 Level 13
- RL 112.00 Level 12
- RL 111.00 Level 11
- RL 110.00 Level 10
- RL 109.00 Level 9
- RL 108.00 Level 8
- RL 107.00 Level 7
- RL 106.00 Level 6
- RL 105.00 Level 5
- RL 104.00 Level 4
- RL 103.00 Level 3
- RL 102.00 Level 2
- RL 101.00 Level 1
- RL 100.00 Level 0
- RL 99.00 Level -1
- RL 98.00 Level -2
- RL 97.00 Level -3
- RL 96.00 Level -4
- RL 95.00 Level -5
- RL 94.00 Level -6
- RL 93.00 Level -7
- RL 92.00 Level -8
- RL 91.00 Level -9
- RL 90.00 Level -10
- RL 89.00 Level -11
- RL 88.00 Level -12
- RL 87.00 Level -13
- RL 86.00 Level -14
- RL 85.00 Level -15
- RL 84.00 Level -16
- RL 83.00 Level -17
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- RL 81.00 Level -19
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- RL -97.00 Level -197
- RL -98.00 Level -198
- RL -99.00 Level -199
- RL -100.00 Level -200

VENT INLET POINT

Section C-C



VENT INLET POINT

Section C-C

DLA
DLA Environmental Services
A Pacific Environment company

Sydney Office
Phone (02) 9476 1765
Fax (02) 9476 1557

Maitland Office
Phone (02) 4933 0001

Title			
VENTILATION INLET POINTS			
Client ECOVE	Project No. DL 3620	Figure No 6	Date 11/10/2016
	Scale As Shown	Compiled AP	Revision R00

APPENDIX D FIGURE 13 – SERVICES SOUTH TOWER

APPENDIX D FIGURE 14 – SERVICES NORTH TOWER

2. ALLOW TO CO-ORDINATE WITH LFG MITIGATION MEASURES
PIPEWORK LAYOUT AND CONFIRM ALL DEPTHS PRIOR TO
CONSTRUCTION.



ORIGINAL SIZE: A1

APPENDIX E – BOM DATA

Sydney, New South Wales

February 2016 Daily Weather Observations

Most observations from Observatory Hill, but some from Fort Denison and Sydney Airport.



Australian Government

Bureau of Meteorology

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C					km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Mo	21.8	26.5	0.2	8.0	7.4	SSE	43	17:42	26.0	42	5	NNW	2	1004.2	25.5	52	4	SE	15	1001.1
2	Tu	17.0	27.9	2.0	5.0	12.9	SE	33	12:48	20.9	62	2	WNW	17	1006.3	26.6	45	3	ESE	24	1004.0
3	We	19.3	28.3	0	7.6	10.7	SSE	43	22:07	23.4	67	5	W	4	1003.6	27.7	59	4	E	26	1002.2
4	Th	19.1	24.8	10.8	7.6	0.8	S	59	14:15	19.7	87	8	SSW	24	1012.0	23.5	55	7	S	33	1012.8
5	Fr	19.6	26.1	3.6	9.6	6.8	SSE	56	10:34	22.0	59	6	S	31	1017.4	23.9	56	5	SSE	39	1017.6
6	Sa	19.9	27.0	1.8	8.8	8.1	SSE	37	23:36	22.8	75	7	SE	20	1018.0	26.4	49	3	ESE	20	1016.9
7	Su	19.1	27.4	0	7.2	10.1	ESE	30	13:05	22.5	76	5	WNW	9	1018.0	25.7	54	3	ESE	17	1016.6
8	Mo	19.0	28.0	0	4.6	12.6	E	24	11:24	23.0	68	2	WNW	11	1019.1	27.0	54	1	ESE	17	1017.9
9	Tu	21.0	27.7	0	9.8	10.3	SSE	39	07:53	25.0	70	6	SSE	26	1020.7	27.3	47	1	SE	19	1019.6
10	We	19.6	28.5	0.2	7.6	12.7	NE	43	16:10	23.2	68	2	W	11	1016.7	27.6	46	1	ENE	22	1012.9
11	Th	20.7	28.4	0	10.4	9.6	E	26	14:24	24.6	65	3	WSW	6	1015.8	26.7	58	7	E	20	1014.2
12	Fr	21.5	28.8	0	6.4	12.0	ENE	33	17:19	25.4	63	2	W	7	1017.0	27.5	58	1	E	22	1015.1
13	Sa	20.7	28.9	0	8.8	12.1	NNE	46	20:10	25.3	60	1	N	9	1014.6	27.7	54	1	NE	24	1011.5
14	Su	21.1	32.5	0	9.6	10.4	SSE	48	17:46	26.2	58	1	NE	2	1008.4	31.5	53	5	SSE	4	1005.3
15	Mo	22.3	29.3	0	8.0	6.9	SW	31	01:40	24.1	75	7	W	15	1011.8	27.4	62	3	ESE	20	1007.7
16	Tu	21.5	27.9	0	7.0	10.8	SSE	48	13:40	25.3	36	1	SSW	17	1009.1	25.6	51	2	SE	31	1008.8
17	We	19.5	26.0	0	8.8	10.4	SSE	39	07:27	20.5	57	3	SSW	22	1011.4	25.5	34	1	ESE	22	1008.4
18	Th	18.3	26.4	0	8.0	11.7	E	30	17:17	22.9	59	3	SSW	11	1009.8	26.1	47	1	ESE	19	1008.7
19	Fr	20.5	29.4	0	8.0	11.1	ENE	35	12:48	23.7	70	4	NW	9	1012.4	28.6	60	1	ENE	20	1009.8
20	Sa	23.1	29.3	0	9.4	5.9	S	52	03:03	24.6	75	7	SSW	24	1017.7	28.8	52	5	S	26	1018.2
21	Su	21.4	27.0	6.0	8.2	4.8	E	37	00:01	21.9	89	6	S	9	1025.4	26.6	67	4	ESE	13	1024.6
22	Mo	20.8	28.8	1.2	3.8	11.6	ENE	39	17:06	24.3	71	1	W	11	1025.4	28.0	59	6	ENE	24	1022.0
23	Tu	21.8	29.7	0	9.4	12.4	NNE	43	17:11	25.4	62	1	N	9	1021.3	28.2	51	1	ENE	22	1017.7
24	We	20.9	29.5	0	11.0	12.3	NNE	46	18:15	26.1	60	0	NNE	11	1016.1	28.4	58	1	ENE	26	1012.9
25	Th	21.9	32.8	0	8.4	12.2	NNE	44	18:45	26.1	62	0	NE	7	1012.4	32.2	45	0	E	17	1009.3
26	Fr	23.2	27.8	0	12.2	5.2	S	63	04:53	25.4	67	1	SSW	28	1014.9	26.7	60	7	SE	22	1015.5
27	Sa	22.5	27.5	0	6.0	10.0	ESE	33	09:53	26.0	60	7	ESE	17	1019.3	25.2	55	5	ESE	22	1019.0
28	Su	20.7	28.1	0	8.0	10.1	E	28	19:07	23.7	62	1	W	11	1018.8	26.3	53	1	E	17	1017.2
29	Mo	20.5	27.7	0	11.2	5.7	ESE	31	13:09	23.0	73	7	W	9	1021.2	27.5	60	5	SE	20	1020.4
Statistics for February 2016																					
Mean		20.6	28.2		8.2	9.6				23.9	65	3		13	1015.1	27.1	53	3		21	1013.4
Lowest		17.0	24.8		3.8	0.8				19.7	36	0	#	2	1003.6	23.5	34	0	SSE	4	1001.1
Highest		23.2	32.8	10.8	12.2	12.9	S	63		26.2	89	8	S	31	1025.4	32.2	67	7	SSE	39	1024.6
Total				25.8	238.4	277.6															

Temperature, humidity, pressure and rainfall observations are from Sydney (Observatory Hill) {station 066062}. Cloud, evaporation and sunshine observations are from Sydney Airport AMO {station 066037}. Wind observations are from Fort Denison {station 066022}. Sydney Airport is about 10 km to the south of Observatory Hill.

IDCJDW2124.201602 Prepared at 16:03 GMT on 7 Sep 2016
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Users of this product are deemed to have read the information and accepted the conditions described in the notes at
<http://www.bom.gov.au/climate/dwo/IDCJDW0000.pdf>

APPENDIX F – BOREHOLE LOGS

Borelog / Monitoring Well

Location BH1

Client:	ECOVE Group	Job Type:	DSI
Project No:	DL3620	Address:	Sydney Olympic Park
Date:	25.01.2016	Logged By:	SB
Contractor:	FICO	Method:	Ute mounted auger
Hole Size	Co-ordinates:		

Method	Depth (m)	Monitoring well Details	Graphic Log	USCS Classification	Material Description	Moisture	Density / Stiffness	Sampling	Comments
					MULCH				
	1			SC	FILL - CLAYEY SAND, light brown				PID - 0.4
				CI	SANDY CLAY, brown				PID - 0.0
	2			SC	CLAYEY SAND, brown with trace gravel	M	F		PID - 0.1
	3			CI	CLAY, red				PID - 0.0
	4				WEATHERED ROCK (moderately to extremely)		St		
	5				WEATHERED ROCK (SHALE), grey	D	H		
	6				End of hole -target depth achieved				
	7								
	8								
	9								

Notes:						Sheet 1 of 8
Method:	MW Construction	Consistency	Plasticity	Density	Moisture	
SS - Solid Flight Auger	 Casing	VS - Very Soft	HP - HighlyPlastic	VL - Very Loose	D - Dry	
HS - Hollow Flight Auger	 Screen	S - Soft	MP - Medium Plasticity	L - Loose	M - Moist	
CC - Concrete Core	 Sand	F - Firm	LP - Low Plasticity	MD - Medium Density	W - Wet	
PT - Push Tube	 Bentonite	VS - Very Stiff		D - Dense		
RC - Rock Coring	 Backfill	H - Hard		VD - Very Dense		
	 Concrete	Friable - Fb				

Borelog / Monitoring Well

Location BH2

Client:	ECOVE Group	Job Type:	DSI
Project No:	DL3620	Address:	Sydney Olympic Park
Date:	25.01.2016	Logged By:	SB
Contractor:	FICO	Method:	Ute mounted auger
Hole Size	Co-ordinates:		

Method	Depth (m)	Monitoring well Details	Graphic Log	USCS Classification	Material Description	Moisture	Density / Stiffness	Sampling	Comments
					MULCH				
	1			SC	FILL - SILTY SAND, brown	M			PID - 0.1
									PID - 0.0
	2								PID - 0.0
	3			CI	FILL - CLAY, black with moderate landfill odour with trace plastics and metal		F		
	4								PID - 0.1
	5				FILL - LANDFILL with organic matter, general refuse and clay	W			PID - 0.1
	6				End of hole -target depth achieved				
	7								
	8								
	9								

Notes:						Sheet 2 of 8
Method:	MW Construction	Consistency	Plasticity	Density	Moisture	
SS - Solid Flight Auger	 Casing	VS - Very Soft	HP - HighlyPlastic	VL - Very Loose	D - Dry	
HS - Hollow Flight Auger	 Screen	S - Soft	MP - Medium Plasticity	L - Loose	M - Moist	
CC - Concrete Core	 Sand	F - Firm	LP - Low Plasticity	MD - Medium Density	W - Wet	
PT - Push Tube	 Bentonite	VS - Very Stiff		D - Dense		
RC - Rock Coring	 Backfill	H - Hard		VD - Very Dense		
	 Concrete	Friable - Fb				

Borelog / Monitoring Well

Location BH4

Client:	ECOVE Group	Job Type:	DSI
Project No:	DL3620	Address:	Sydney Olympic Park
Date:	25.01.2016	Logged By:	AP
Contractor:	FICO	Method:	Truck mounted auger
Hole Size	Co-ordinates:		

Method	Depth (m)	Monitoring well Details	Graphic Log	USCS Classification	Material Description	Moisture	Density / Stiffness	Sampling	Comments
					BITUMEN & ROADBASE				
				SC	FILL - CLAYEY SAND, light brown				
	1				FILL - SANDY CLAY, brown with gravel	D			PID - 0.0
									PID - 1.0
	2			CI	FILL - GRAVELLY SANDY CLAY, yellow/brown/red/orange				PID - 0.0
									PID - 0.0
	3				FILL - SANDY CLAY, brown				
	4						F		PID - 4.9
	5					W			PID - 1.2
	6				FILL - LANDFILL including general refuse, plastics, cloth and voids				PID - 0.8
	7								
	8				End of hole -target depth achieved				
	9								

Notes:						Sheet 4 of 8
Method:	MW Construction	Consistency	Plasticity	Density	Moisture	
SS - Solid Flight Auger	 Casing	VS - Very Soft	HP - HighlyPlastic	VL - Very Loose	D - Dry	
HS - Hollow Flight Auger	 Screen	S - Soft	MP - Medium Plasticity	L - Loose	M - Moist	
CC - Concrete Core	 Sand	F - Firm	LP - Low Plasticity	MD - Medium Density	W - Wet	
PT - Push Tube	 Bentonite	VS - Very Stiff		D - Dense		
RC - Rock Coring	 Backfill	H - Hard		VD - Very Dense		
	 Concrete	Friable - Fb				

Borelog / Monitoring Well

Location BH5

Client:	ECOVE Group	Job Type:	DSI
Project No:	DL3620	Address:	Sydney Olympic Park
Date:	25.01.2016	Logged By:	SB
Contractor:	FICO	Method:	Ute mounted auger
Hole Size	Co-ordinates:		

Method	Depth (m)	Monitoring well Details	Graphic Log	USCS Classification	Material Description	Moisture	Density / Stiffness	Sampling	Comments
					BITUMEN & ROADBASE				
				SC	FILL - SILTY SAND, light brown				
	1					D			PID - 0.0
				CI	FILL - SANDY CLAY, brown with gravel		F		PID - 1.0
	2								
					FILL- CLAY, dark grey, moderate landfill odour	M			PID - 0.0
	3								PID - 0.0
					FILL- WEATHERED SHALE, dark grey	D	H		
	4								
					FILL - LANDFILL with red clay with metals and plastic	M	F		PID - 75.6
	5								
				SC	FILL- CLAYEY SAND, brown				
	6				End of hole -target depth achieved				
	7								
	8								
	9								

Notes:						Sheet 5 of 8
Method:	MW Construction	Consistency	Plasticity	Density	Moisture	
SS - Solid Flight Auger	 Casing	VS - Very Soft	HP - HighlyPlastic	VL - Very Loose	D - Dry	
HS - Hollow Flight Auger	 Screen	S - Soft	MP - Medium Plasticity	L - Loose	M - Moist	
CC - Concrete Core	 Sand	F - Firm	LP - Low Plasticity	MD - Medium Density	W - Wet	
PT - Push Tube	 Bentonite	VS - Very Stiff		D - Dense		
RC - Rock Coring	 Backfill	H - Hard		VD - Very Dense		
	 Concrete	Friable - Fb				

Borelog / Monitoring Well

Location BH6

Client:	ECOVE Group	Job Type:	DSI
Project No:	DL3620	Address:	Sydney Olympic Park
Date:	25.01.2016	Logged By:	AP
Contractor:	FICO	Method:	Truck mounted auger
Hole Size	Co-ordinates:		

Method	Depth (m)	Monitoring well Details	Graphic Log	USCS Classification	Material Description	Moisture	Density / Stiffness	Sampling	Comments
					BITUMEN & ROADBASE				
	1			SC	FILL - SILTY SAND, light brown				PID - 0.4
	2			CI	FILL - SANDY CLAY, brown with trace plastics				PID - 2.6
	3				FILL - SANDY CLAY, grey/brown with trace plastics				PID - 2.1
	4				FILL - LANDFILL with refuse including timber, plastics and sandy clay				PID - 0.1
	5			CI	SILTY CLAY, yellow/white				PID - 3.5
	5			SC	WEATHERED ROCK, pale yellow				
					End of hole -target depth achieved				
	6								
	7								
	8								
	9								

Notes:						Sheet 4 of 8
Method:	MW Construction	Consistency	Plasticity	Density	Moisture	
SS - Solid Flight Auger	 Casing	VS - Very Soft	HP - Highly Plastic	VL - Very Loose	D - Dry	
HS - Hollow Flight Auger	 Screen	S - Soft	MP - Medium Plasticity	L - Loose	M - Moist	
CC - Concrete Core	 Sand	F - Firm	LP - Low Plasticity	MD - Medium Density	W - Wet	
PT - Push Tube	 Bentonite	VS - Very Stiff		D - Dense		
RC - Rock Coring	 Backfill	H - Hard		VD - Very Dense		
	 Concrete	Friable - Fb				

Borelog / Monitoring Well

Location BH8

Client:	ECOVE Group	Job Type:	DSI
Project No:	DL3620	Address:	Sydney Olympic Park
Date:	25.01.2016	Logged By:	SB
Contractor:	FICO	Method:	Ute mounted auger
Hole Size	Co-ordinates:		

Method	Depth (m)	Monitoring well Details	Graphic Log	USCS Classification	Material Description	Moisture	Density / Stiffness	Sampling	Comments
	1			SC	FILL - GRAVEL, grey				
	2			CI	FILL - CLAYEY SAND brown	M			PID - 0.3
	3				FILL - SANDY CLAY, dark brown				PID - 0.4
	4				FILL- CLAYEY SANDY, dark brown with gravel with moderate landfill odour and trace rubber/plastics	M	F		PID - 0.4
	5								PID - 0.1
	6			SC	CLAY, red	W			PID - 0.4
	7				CLAY, grey				
	8				End of hole, target depth achieved				
	9								

Notes:						Sheet 8 of 8
Method:	MW Construction	Consistency	Plasticity	Density	Moisture	
SS - Solid Flight Auger	 Casing	VS - Very Soft	HP - HighlyPlastic	VL - Very Loose	D - Dry	
HS - Hollow Flight Auger	 Screen	S - Soft	MP - Medium Plasticity	L - Loose	M - Moist	
CC - Concrete Core	 Sand	F - Firm	LP - Low Plasticity	MD - Medium Density	W - Wet	
PT - Push Tube	 Bentonite	VS - Very Stiff		D - Dense		
RC - Rock Coring	 Backfill	H - Hard		VD - Very Dense		
	 Concrete	Friable - Fb				

APPENDIX G – CALIBRATION SHEETS

SERVICE OR REPAIR: GA5000

COMPANY	DLA Environmental				
CONTACT	Aidan Marsh				
SERIAL NO.	G500569	CALL NO.	156469	RECEIVED	19/7/2016

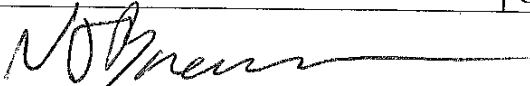
REQUEST/PROBLEM DESCRIPTION
Agents calibration due

This equipment has been calibrated to the manufacturer's specifications, using the standards shown below:

SENSOR	STANDARD	TRACEABILITY LOT NO.	PRE CALIBRATION READING	POST CALIBRATION READING
CH ₄	0 %	315318	0.3 %	0.0 %
	60 %	1764812	62.4 %	60.0 %
CO ₂	Check only 0%	315318	0.1%	0.0 %
	40 %	1764812	42.4 %	40.0 %
O ₂	0 %	315318	0.0 %	0.0 %
	20.9 %	1863033	19.8 %	20.9 %
CO *	0ppm	315318	0 ppm	0 ppm
	100ppm	1863033	93 ppm	100 ppm
H ₂ *	0ppm	315318	0 ppm	0 ppm
	1000ppm	14000	864 ppm	1000 ppm
H ₂ S	0 ppm	315318	0 ppm	0 ppm
	25 ppm	138084	21 ppm	25 ppm

- Firmware updated
- Replaced internal filters
- Checked for adequate pump flow, pump vacuum and leak tested
- Set next service due

COMMENTS/ADDITIONAL REPAIRS/SERVICES PERFORMED
• Bulging of filter on H2 compensated CO cell : sign of filter exhaustion • * H2 compensated CO cell replaced • Battery charger not tested: shows signs of physical damage: recommend replacement

SERVICED BY	Nathaniel Brewer	COMPLETED	5/8/16
SIGNATURE			

“We do more than give you great equipment... We give you great solutions!”

Phone: (Free Call) 1300 735 295		Environmental Assessment Technologies		Fax: (Free Call) 1800 675 123	
Melbourne Branch 5 Caribbean Drive, Scoresby 3179 Email: RentalsEnviroVIC@thermofisher.com	Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113 Email: RentalsEnviroNSW@thermofisher.com	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5007 Email: RentalsEnviroSA@thermofisher.com	Brisbane Branch Unit 2/5 Ross St Newstead 4006 Email: RentalsEnviroQLD@thermofisher.com	Perth Branch 121 Beringarra Ave Malaga WA 6090 Email: RentalsEnviroWA@thermofisher.com	



Gas Detection Air Sampling & Monitoring Environmental & Water Quality Monitoring

Air-Met Scientific Pty Ltd

ABN 73 006 849 949

1300 137 067

Melbourne: 7-11 Ceylon Street, Nunawading, VIC 3131 Ph 03 8878 3380 Fax 03 9877 1230

Sydney: 18-26 Dickson Ave, Artarmon NSW 2064 Ph1300 137 067

Gas Calibration Certificate

Instrument GFM430
Serial No. 10558

Sensors CH4, CO2, O2, H2S, CO

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
	Intensity	✓	
	Operation (segments)	✓	
Pump	Operation	✓	
	Filter	✓	
	Flow	✓	
	Valves, Diaphragm	✓	
PCB	Condition	✓	
	Condition	✓	
Sensor	CH4	✓	
	CO2	✓	
	O2	✓	
	H2S	✓	
	CO	✓	
Alarms	Settings	✓	
Software	Version		
Datalogger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No	Instrument Reading
O2		20.9% Vol O2		Fresh Air	20.90%
CO2		40% Vol CO2	NIST	SY87	40.0% CO2
CH4		60% Vol CH4	NIST	SY87	60.0% CH4

Calibration Done By:

Joanna Wong

Calibration date:

01/02/2016

Next calibration due:

30/07/2016

APPENDIX H – LABORATORY RESULTS

Page _____ of _____

Canister Sampling Field Test Data Sheet and Custody Record

General Information (where applicable)

Company: DLA Project Contact: Aidan Marsh
Project Name: Canister Serial No: 0347
Site Location: Restrictor Serial No:
Site Address: Sampling Date:
Canister Leak Check Date: 1/08/2016 Cleaned/Certified Date: 22/5/16

Canister Sampling Details

	Before shipment (determined in lab with certified gauge)	Before sampling in Field (from canister gauge)	After sampling in Field (from canister gauge)	After receipt (determined in lab with certified gauge)
Vacuum (-"Hg)				
Passive Flow Leak Check		n/a	n/a	n/a
Date/Time/Initial/	01/08/2016			
	Temperature (°C)	Humidity (%)	Weather Conditions	
Start				
Stop				
Date/Time				
Initial				
	Sampling Times		Flow Rates (mL/min)	
	Time	Elapsed Time	Restrictor Flow Rate before shipping	Restrictor Flow Rate on sample receipt
Start				-----
Stop			-----	
Date/Time			01/08/2016	
Initial				

Canister Pressurised to _____ PSI with Helium / Nitrogen PLEASE CIRCLE on receipt

Canister and Sample Gauge Details

	Relinquished Date/Initial ^(lab)	Received by Date/Time ^(sampler)	Relinquished Date/Initial ^(sampler)	Received by Date/Initial ^(lab)
Canister	01/08/2016			
Sample Restrictor	01/08/2016			

(customers please complete shaded areas for each canister)

Customer Comments

Please confirm receipt of sampling equipment



12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS

153075

Client:

DLA Environmental Services Pty Ltd
Unit 3, 38 Leighton Pl
Hornsby
NSW 2077

Attention: Sam Butler

Sample log in details:

Your Reference:	<u>DL3620 - Site 9 - Sydney Olympic Park</u>
No. of samples:	1 sum canister
Date samples received / completed instructions received	07/09/16 / 07/09/16

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date: 13/09/16 / 13/09/16
Date of Preliminary Report: Not Issued

NATA accreditation number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing **Tests not covered by NATA are denoted with *.**

Results Approved By:

David Springer
General Manager



Envirolab Reference: 153075
Revision No: R 00

TO15 in Canisters + ug/m3 calc		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
Vacuum before Shipment	Hg"	-30
Vacuum before Analysis	Hg"	-6
Date prepared	-	09/09/2016
Date analysed	-	09/09/2016
Propylene	ppbv	<4.2
Dichlorodifluoromethane	ppbv	<4.2
Chloromethane	ppbv	<4.2
1,2-Dichlorotetrafluoroethane	ppbv	170
Vinyl chloride	ppbv	260
1,3-Butadiene	ppbv	<4.2
Bromomethane	ppbv	<4.2
Chloroethane	ppbv	220
Ethanol	ppbv	530
Acrolein	ppbv	<4.2
Trichlorofluoromethane (Freon 11)	ppbv	40
Acetone	ppbv	<42
Isopropyl Alcohol	ppbv	<4.2
1,1-Dichloroethene	ppbv	<4.2
1,1,2-Trichlorotrifluoroethane	ppbv	<4.2
Methylene chloride (Dichloromethane)	ppbv	<42
Carbon Disulfide	ppbv	99
trans-1,2-dichloroethene	ppbv	<4.2
MTBE	ppbv	<4.2
1,1-Dichloroethane	ppbv	<4.2
Vinyl Acetate	ppbv	<4.2
MEK	ppbv	<4.2
Hexane	ppbv	11,000
cis-1,2-Dichloroethene	ppbv	52
Ethyl Acetate	ppbv	<4.2
Chloroform	ppbv	<4.2
Tetrahydrofuran	ppbv	<4.2
1,1,1-Trichloroethane	ppbv	<4.2
1,2-Dichloroethane	ppbv	<4.2
Benzene	ppbv	1,900
Carbon tetrachloride	ppbv	<4.2
Cyclohexane	ppbv	8,000
Heptane	ppbv	2,400
Trichloroethene	ppbv	12
1,2-Dichloropropane	ppbv	<4.2
1,4-Dioxane	ppbv	<4.2

TO15 in Canisters + ug/m3 calc		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
Bromodichloromethane	ppbv	<4.2
Methyl Methacrylate	ppbv	<4.2
MIBK	ppbv	<4.2
<i>cis</i> -1,3-Dichloropropene	ppbv	<4.2
<i>trans</i> -1,3-Dichloropropene	ppbv	<4.2
Toluene	ppbv	230
1,1,2-Trichloroethane	ppbv	<4.2
Methyl Butyl Ketone	ppbv	<4.2
Dibromochloromethane	ppbv	<4.2
Tetrachloroethene	ppbv	8.2
1,2-Dibromoethane	ppbv	<4.2
Chlorobenzene	ppbv	1,700
Ethylbenzene	ppbv	350
<i>m</i> -& <i>p</i> -Xylene	ppbv	750
Styrene	ppbv	52
<i>o</i> -Xylene	ppbv	71
Bromoform	ppbv	<4.2
1,1,2,2-Tetrachloroethane	ppbv	<4.2
4-ethyl toluene	ppbv	280
1,3,5-Trimethylbenzene	ppbv	120
1,2,4-Trimethylbenzene	ppbv	620
1,3-Dichlorobenzene	ppbv	15
Benzyl chloride	ppbv	<4.2
1,4-Dichlorobenzene	ppbv	550
1,2-Dichlorobenzene	ppbv	78
1,2,4-Trichlorobenzene	ppbv	6.1
Naphthalene	ppbv	460
Hexachloro- 1,3-butadiene	ppbv	<4.2
Surrogate-Bromochloromethane	% rec	75
Surrogate-1,4-Difluorobenzene	% rec	82
Surrogate-Chlorobenzene-D5	% rec	76

TO15 in Canisters ug/m3		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
Vacuum before Shipment	Hg"	-30
Vacuum before Analysis	Hg"	-6
Date prepared	-	09/09/2016
Date analysed	-	09/09/2016
Propylene	µg/m ³	<7
Dichlorodifluoromethane	µg/m ³	<21
Chloromethane	µg/m ³	<9
1,2-Dichlorotetrafluoroethane	µg/m ³	840
Vinyl chloride	µg/m ³	650
1,3-Butadiene	µg/m ³	<9
Bromomethane	µg/m ³	<16
Chloroethane	µg/m ³	570
Ethanol	µg/m ³	990
Acrolein	µg/m ³	<10
Trichlorofluoromethane (Freon 11)	µg/m ³	230
Acetone	µg/m ³	<99
Isopropyl Alcohol	µg/m ³	<10
1,1-Dichloroethene	µg/m ³	<17
1,1,2-Trichlorotrifluoroethane	µg/m ³	<32
Methylene chloride (Dichloromethane)	µg/m ³	<143
Carbon Disulfide	µg/m ³	310
trans-1,2-dichloroethene	µg/m ³	<17
MTBE	µg/m ³	<15
1,1-Dichloroethane	µg/m ³	<17
Vinyl Acetate	µg/m ³	<15
MEK	µg/m ³	<12
Hexane	µg/m ³	39,000
cis-1,2-Dichloroethene	µg/m ³	210
Ethyl Acetate	µg/m ³	<15
Chloroform	µg/m ³	<20
Tetrahydrofuran	µg/m ³	<12
1,1,1-Trichloroethane	µg/m ³	<23
1,2-Dichloroethane	µg/m ³	<17
Benzene	µg/m ³	6,200
Carbon tetrachloride	µg/m ³	<26
Cyclohexane	µg/m ³	27,000
Heptane	µg/m ³	10,000
Trichloroethene	µg/m ³	63
1,2-Dichloropropane	µg/m ³	<19
1,4-Dioxane	µg/m ³	<15

TO15 in Canisters ug/m3		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
Bromodichloromethane	$\mu\text{g}/\text{m}^3$	<28
Methyl Methacrylate	$\mu\text{g}/\text{m}^3$	<17
MIBK	$\mu\text{g}/\text{m}^3$	<17
<i>cis</i> -1,3-Dichloropropene	$\mu\text{g}/\text{m}^3$	<19
<i>trans</i> -1,3-Dichloropropene	$\mu\text{g}/\text{m}^3$	<19
Toluene	$\mu\text{g}/\text{m}^3$	880
1,1,2-Trichloroethane	$\mu\text{g}/\text{m}^3$	<23
Methyl Butyl Ketone	$\mu\text{g}/\text{m}^3$	<17
Dibromochloromethane	$\mu\text{g}/\text{m}^3$	<14
Tetrachloroethene	$\mu\text{g}/\text{m}^3$	56
1,2-Dibromoethane	$\mu\text{g}/\text{m}^3$	<32
Chlorobenzene	$\mu\text{g}/\text{m}^3$	7,800
Ethylbenzene	$\mu\text{g}/\text{m}^3$	1,500
<i>m</i> -& <i>p</i> -Xylene	$\mu\text{g}/\text{m}^3$	6,600
Styrene	$\mu\text{g}/\text{m}^3$	220
<i>o</i> -Xylene	$\mu\text{g}/\text{m}^3$	310
Bromoform	$\mu\text{g}/\text{m}^3$	<43
1,1,2,2-Tetrachloroethane	$\mu\text{g}/\text{m}^3$	<29
4-ethyl toluene	$\mu\text{g}/\text{m}^3$	1,400
1,3,5-Trimethylbenzene	$\mu\text{g}/\text{m}^3$	580
1,2,4-Trimethylbenzene	$\mu\text{g}/\text{m}^3$	3,000
1,3-Dichlorobenzene	$\mu\text{g}/\text{m}^3$	91
Benzyl chloride	$\mu\text{g}/\text{m}^3$	<22
1,4-Dichlorobenzene	$\mu\text{g}/\text{m}^3$	3,300
1,2-Dichlorobenzene	$\mu\text{g}/\text{m}^3$	470
1,2,4-Trichlorobenzene	$\mu\text{g}/\text{m}^3$	45
Naphthalene	$\mu\text{g}/\text{m}^3$	2,400
Hexachloro- 1,3-butadiene	$\mu\text{g}/\text{m}^3$	<44
Surrogate-Bromochloromethane	% rec	75
Surrogate-1,4-Difluorobenzene	% rec	82
Surrogate-Chlorobenzene-D5	% rec	76

TO15-Ozone Precursor suite in Canisters		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
Vacuum before Shipment	Hg"	-30
Vacuum before Analysis	Hg"	-6
Date prepared	-	09/09/2016
Date analysed	-	09/09/2016
Propylene	ppbv	<4.2
Propane	ppbv	65,000
iso-butane	ppbv	8,500
1-butene	ppbv	18,000
n-butane	ppbv	31,000
trans-2-butene	ppbv	<4.2
cis-2-butene	ppbv	<4.2
iso-pentane	ppbv	15,000
1-pentene	ppbv	<4.2
n-pentane	ppbv	17,000
2-methyl-1,3-butadiene	ppbv	600
trans-2-pentene	ppbv	<4.2
cis-2-pentene	ppbv	210
2,2-dimethylbutane	ppbv	2,200
Cyclopentane	ppbv	<4.2
2,3-dimethylbutane/2MePentane	ppbv	34,000
3-methylpentane	ppbv	18,000
1-hexene	ppbv	<4.2
Hexane	ppbv	11,000
methylcyclopentane	ppbv	5,100
2,4-dimethylpentane	ppbv	8,200
Benzene	ppbv	2,000
Cyclohexane	ppbv	8,900
2-methylhexane	ppbv	4,600
2,3-dimethylpentane	ppbv	9,500
3-methylhexane	ppbv	7,000
2,2,4-trimethylpentane	ppbv	15,000
Heptane	ppbv	2,600
methylcyclohexane	ppbv	15,000
2,3,4-trimethylpentane	ppbv	6,200
Toluene	ppbv	240
2-methylheptane	ppbv	1,100
3-methylheptane	ppbv	3,200
n-octane	ppbv	570
Ethylbenzene	ppbv	350
<i>m</i> -& <i>p</i> -Xylene	ppbv	770
Styrene	ppbv	35

TO15-Ozone Precursor suite in Canisters		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
o-Xylene	ppbv	83
nonane	ppbv	1,300
isopropylbenzene	ppbv	1,400
n-propylbenzene	ppbv	620
m-ethyltoluene	ppbv	82
4-ethyl toluene	ppbv	230
1,3,5-Trimethylbenzene	ppbv	100
o-ethyltoluene	ppbv	230
n-decane	ppbv	1,300
1,2,4-Trimethylbenzene	ppbv	590
1,2,3-trimethylbenzene	ppbv	100
m-diethylbenzene	ppbv	450
p-diethylbenzene	ppbv	190
n-undecane	ppbv	<4.2
n-dodecane	ppbv	180
Surrogate-Bromochloromethane	% rec	75
Surrogate-1,4-Difluorobenzene	% rec	82
Surrogate-Chlorobenzene-D5	% rec	76

TO15 Ozone Precursor suite in Canisters		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
Date prepared	-	09/09/2016
Date analysed	-	09/09/2016
Vacuum before Shipment	Hg"	-30
Vacuum before Analysis	Hg"	-6
Propylene	$\mu\text{g}/\text{m}^3$	<8
Propane	$\mu\text{g}/\text{m}^3$	120,000
iso-butane	$\mu\text{g}/\text{m}^3$	20,000
1-butene	$\mu\text{g}/\text{m}^3$	42,000
n-butane	$\mu\text{g}/\text{m}^3$	73,000
trans-2-butene	$\mu\text{g}/\text{m}^3$	<10
cis-2-butene	$\mu\text{g}/\text{m}^3$	<10
iso-pentane	$\mu\text{g}/\text{m}^3$	45,000
1-pentene	$\mu\text{g}/\text{m}^3$	<12
n-pentane	$\mu\text{g}/\text{m}^3$	51,000
2-methyl-1,3-butadiene	$\mu\text{g}/\text{m}^3$	1,700
trans-2-pentene	$\mu\text{g}/\text{m}^3$	<12
cis-2-pentene	$\mu\text{g}/\text{m}^3$	610
2,2-dimethylbutane	$\mu\text{g}/\text{m}^3$	7,600
Cyclopentane	$\mu\text{g}/\text{m}^3$	<15
2,3-dimethylbutane/2MePentane	$\mu\text{g}/\text{m}^3$	200,000
3-methylpentane	$\mu\text{g}/\text{m}^3$	65,000
1-hexene	$\mu\text{g}/\text{m}^3$	<15
Hexane	$\mu\text{g}/\text{m}^3$	40,000
methylcyclopentane	$\mu\text{g}/\text{m}^3$	33,000
2,4-dimethylpentane	$\mu\text{g}/\text{m}^3$	18,000
Benzene	$\mu\text{g}/\text{m}^3$	6,400
Cyclohexane	$\mu\text{g}/\text{m}^3$	31,000
2-methylhexane	$\mu\text{g}/\text{m}^3$	19,000
2,3-dimethylpentane	$\mu\text{g}/\text{m}^3$	39,000
3-methylhexane	$\mu\text{g}/\text{m}^3$	28,000
2,2,4-trimethylpentane	$\mu\text{g}/\text{m}^3$	70,000
Heptane	$\mu\text{g}/\text{m}^3$	10,000
methylcyclohexane	$\mu\text{g}/\text{m}^3$	59,000
2,3,4-trimethylpentane	$\mu\text{g}/\text{m}^3$	29,000
Toluene	$\mu\text{g}/\text{m}^3$	920
2-methylheptane	$\mu\text{g}/\text{m}^3$	5,100
3-methylheptane	$\mu\text{g}/\text{m}^3$	15,000
n-octane	$\mu\text{g}/\text{m}^3$	2,700
Ethylbenzene	$\mu\text{g}/\text{m}^3$	1,500
<i>m</i> -& <i>p</i> -Xylene	$\mu\text{g}/\text{m}^3$	6,600
Styrene	$\mu\text{g}/\text{m}^3$	150

TO15 Ozone Precursor suite in Canisters		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
o-Xylene	$\mu\text{g}/\text{m}^3$	360
nonane	$\mu\text{g}/\text{m}^3$	7,000
isopropylbenzene	$\mu\text{g}/\text{m}^3$	7,000
n-propylbenzene	$\mu\text{g}/\text{m}^3$	3,000
m-ethyltoluene	$\mu\text{g}/\text{m}^3$	400
4-ethyl toluene	$\mu\text{g}/\text{m}^3$	1,100
1,3,5-Trimethylbenzene	$\mu\text{g}/\text{m}^3$	500
o-ethyltoluene	$\mu\text{g}/\text{m}^3$	1,100
n-decane	$\mu\text{g}/\text{m}^3$	7,300
1,2,4-Trimethylbenzene	$\mu\text{g}/\text{m}^3$	2,900
1,2,3-trimethylbenzene	$\mu\text{g}/\text{m}^3$	520
m-diethylbenzene	$\mu\text{g}/\text{m}^3$	2,500
p-diethylbenzene	$\mu\text{g}/\text{m}^3$	1,000
n-undecane	$\mu\text{g}/\text{m}^3$	<27
n-dodecane	$\mu\text{g}/\text{m}^3$	1,300
Surrogate-Bromochloromethane	% rec	75
Surrogate-1,4-Difluorobenzene	% rec	82
Surrogate-Chlorobenzene-D5	% rec	76

Sulphur spec'n in cans/bags		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
Date prepared	-	08/09/2016
Date analysed	-	08/09/2016
Hydrogen Sulphide	ppbv	30
Carbonyl Sulphide	ppbv	<5
Methyl Mercaptan	ppbv	<5
Ethyl Mercaptan	ppbv	<5
Dimethyl Sulphide	ppbv	20

Sulphur spec'n in cans/bags		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
Date prepared	-	08/09/2016
Date analysed	-	08/09/2016
Hydrogen Sulphide	$\mu\text{g}/\text{m}^3$	50
Carbonyl Sulphide	$\mu\text{g}/\text{m}^3$	<10
Methyl Mercaptan	$\mu\text{g}/\text{m}^3$	<10
Ethyl Mercaptan	$\mu\text{g}/\text{m}^3$	<10
Dimethyl Sulphide	$\mu\text{g}/\text{m}^3$	60

Permanent Gas + Hydrogen		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
Date prepared	-	07/09/2016
Date analysed	-	08/09/2016
Oxygen (O ₂)	%	0.58
Carbon Monoxide (CO)	%	<0.01
Methane (CH ₄)	%	63
Carbon Dioxide (CO ₂)	%	21
Hydrogen (H ₂)	%	<0.01

TPH Air/ Air Phase Hydrocarbon		
Our Reference:	UNITS	153075-1
Your Reference	-----	BH6
	-	
Date Sampled	-----	6/09/2016
Type of sample		gas
Date prepared	-	09/09/2016
Date analysed	-	09/09/2016
TPHC ₅ - C ₈ Aliphatic	µg/m ³	940,000
TPHC ₉ - C ₁₂ Aliphatic	µg/m ³	260,000
TPHC ₉ - C ₁₀ Aromatic	µg/m ³	30,000
TPHC ₆ - C ₁₀ - BTEX (F1)	µg/m ³	1,100,000
TPH>C ₁₀ - C ₁₂ - Naphthalene (F2)	µg/m ³	230,000

Method ID	Methodology Summary
TO15	USEPA TO15 - Analysis of VOC's in air following USEPA TO15 protocols
USEPA 18	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography using USEPA m18.
TO17	USEPA TO17 - Analysis of VOC's in air following USEPA TO17 protocols
AT-004	Sulphur Compounds in Cansiters and Air Bags, determined by GC-SCD based on methods:- ASTM 5504, USEPA TO15 and USEPA m18
AT-003	Gases determined by GC-FID/TCD using methods ASTM 1945, 1946 and USEPA 3C.
AT-005	Measurement of Air-Phase Petroleum Hydrocarbons and Ozone Precursors by GC/MS

Client Reference: DL3620 - Site 9 - Sydney Olympic Park

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
TO15 in Canisters + ug/m3 calc						Base Duplicate %RPD		
Vacuum before Shipment	Hg"			[NT]	153075-1	-30 -30 RPD: 0	[NR]	[NR]
Vacuum before Analysis	Hg"			[NT]	153075-1	-6 -6 RPD: 0	[NR]	[NR]
Date prepared	-			09/09/2016	153075-1	09/09/2016 09/09/2016	LCS-1	09/09/2016
Date analysed	-			09/09/2016	153075-1	09/09/2016 09/09/2016	LCS-1	09/09/2016
Propylene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	LCS-1	105%
Dichlorodifluoromethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Chloromethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
1,2-Dichlorotetrafluoroethane	ppbv	0.5	TO15	<0.5	153075-1	170 170 RPD: 0	[NR]	[NR]
Vinyl chloride	ppbv	0.5	TO15	<0.5	153075-1	260 250 RPD: 4	[NR]	[NR]
1,3-Butadiene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Bromomethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Chloroethane	ppbv	0.5	TO15	<0.5	153075-1	220 220 RPD: 0	[NR]	[NR]
Ethanol	ppbv	0.5	TO15	<0.5	153075-1	530 550 RPD: 4	[NR]	[NR]
Acrolein	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Trichlorofluoromethane (Freon 11)	ppbv	0.5	TO15	<0.5	153075-1	40 39 RPD: 3	[NR]	[NR]
Acetone	ppbv	5	TO15	<5	153075-1	<42 <42	[NR]	[NR]
Isopropyl Alcohol	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
1,1-Dichloroethene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
1,1,2-Trichlorotrifluoroethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Methylene chloride (Dichloromethane)	ppbv	5	TO15	<5	153075-1	<42 <42	[NR]	[NR]
Carbon Disulfide	ppbv	0.5	TO15	<0.5	153075-1	99 100 RPD: 1	[NR]	[NR]
trans-1,2-dichloroethene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
MTBE	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
1,1-Dichloroethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Vinyl Acetate	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
MEK	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Hexane	ppbv	0.5	TO15	<0.5	153075-1	11000 11000 RPD: 0	LCS-1	90%
cis-1,2-Dichloroethene	ppbv	0.5	TO15	<0.5	153075-1	52 50 RPD: 4	[NR]	[NR]
Ethyl Acetate	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Chloroform	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Tetrahydrofuran	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
1,1,1-Trichloroethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
1,2-Dichloroethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Benzene	ppbv	0.5	TO15	<0.5	153075-1	1900 1900 RPD: 0	LCS-1	92%
Carbon tetrachloride	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Cyclohexane	ppbv	0.5	TO15	<0.5	153075-1	8000 6500 RPD: 21	LCS-1	84%
Heptane	ppbv	0.5	TO15	<0.5	153075-1	2400 2400 RPD: 0	LCS-1	97%
Trichloroethene	ppbv	0.5	TO15	<0.5	153075-1	12 11 RPD: 9	[NR]	[NR]
1,2-Dichloropropane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]

Client Reference: DL3620 - Site 9 - Sydney Olympic Park

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
TO15 in Canisters + ug/m3 calc						Base Duplicate %RPD		
1,4-Dioxane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Bromodichloromethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Methyl Methacrylate	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
MIBK	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
cis-1,3-Dichloropropene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
trans-1,3-Dichloropropene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Toluene	ppbv	0.5	TO15	<0.5	153075-1	230 230 RPD: 0	LCS-1	96%
1,1,2-Trichloroethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Methyl Butyl Ketone	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Dibromochloromethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Tetrachloroethene	ppbv	0.5	TO15	<0.5	153075-1	8.2 8.6 RPD: 5	[NR]	[NR]
1,2-Dibromoethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Chlorobenzene	ppbv	0.5	TO15	<0.5	153075-1	1700 1700 RPD: 0	[NR]	[NR]
Ethylbenzene	ppbv	0.5	TO15	<0.5	153075-1	350 360 RPD: 3	LCS-1	100%
m- & p-Xylene	ppbv	1	TO15	<1	153075-1	750 780 RPD: 4	LCS-1	101%
Styrene	ppbv	0.5	TO15	<0.5	153075-1	52 53 RPD: 2	LCS-1	113%
o-Xylene	ppbv	0.5	TO15	<0.5	153075-1	71 75 RPD: 5	LCS-1	103%
Bromoform	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
1,1,1,2-Tetrachloroethane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
4-ethyl toluene	ppbv	0.5	TO15	<0.5	153075-1	280 290 RPD: 4	LCS-1	115%
1,3,5-Trimethylbenzene	ppbv	0.5	TO15	<0.5	153075-1	120 120 RPD: 0	LCS-1	113%
1,2,4-Trimethylbenzene	ppbv	0.5	TO15	<0.5	153075-1	620 650 RPD: 5	LCS-1	107%
1,3-Dichlorobenzene	ppbv	0.5	TO15	<0.5	153075-1	15 17 RPD: 12	[NR]	[NR]
Benzyl chloride	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
1,4-Dichlorobenzene	ppbv	0.5	TO15	<0.5	153075-1	550 590 RPD: 7	[NR]	[NR]
1,2-Dichlorobenzene	ppbv	0.5	TO15	<0.5	153075-1	78 84 RPD: 7	[NR]	[NR]
1,2,4-Trichlorobenzene	ppbv	0.5	TO15	<0.5	153075-1	6.1 6.5 RPD: 6	[NR]	[NR]
Naphthalene	ppbv	0.5	TO15	<0.5	153075-1	460 490 RPD: 6	[NR]	[NR]
Hexachloro- 1,3-butadiene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Surrogate-Bromochloromethane	% rec		TO15	92	153075-1	75 85 RPD: 12	LCS-1	109%
Surrogate-1,4-Difluorobenzene	% rec		TO15	92	153075-1	82 93 RPD: 13	LCS-1	106%
Surrogate-Chlorobenzene-D5	% rec		TO15	93	153075-1	76 81 RPD: 6	LCS-1	106%

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results
TO15 in Canisters ug/m3						Base Duplicate %RPD
Vacuum before Shipment	Hg"			[NT]	153075-1	-30 -30 RPD: 0
Vacuum before Analysis	Hg"			[NT]	153075-1	-6 -6 RPD: 0
Date prepared	-			09/09/2016	153075-1	09/09/2016 09/09/2016
Date analysed	-			09/09/2016	153075-1	09/09/2016 09/09/2016
Propylene	µg/m ³	0.9	TO15	<0.9	153075-1	<7 <7
Dichlorodifluoromethane	µg/m ³	2.5	TO15	<2	153075-1	<21 <21
Chloromethane	µg/m ³	1.0	TO15	<1	153075-1	<9 <9
1,2-Dichlorotetrafluoroethane	µg/m ³	2.5	TO15	<2	153075-1	840 840 RPD: 0
Vinyl chloride	µg/m ³	1.3	TO15	<1	153075-1	650 640 RPD: 2
1,3-Butadiene	µg/m ³	1.1	TO15	<1	153075-1	<9 <9
Bromomethane	µg/m ³	1.9	TO15	<2	153075-1	<16 <16
Chloroethane	µg/m ³	1.3	TO15	<1	153075-1	570 570 RPD: 0
Ethanol	µg/m ³	0.9	TO15	<0.9	153075-1	990 1000 RPD: 1
Acrolein	µg/m ³	1.1	TO15	<1	153075-1	<10 <10
Trichlorofluoromethane (Freon 11)	µg/m ³	2.8	TO15	<3	153075-1	230 220 RPD: 4
Acetone	µg/m ³	11.9	TO15	<10	153075-1	<99 <99
Isopropyl Alcohol	µg/m ³	1.2	TO15	<1	153075-1	<10 <10
1,1-Dichloroethene	µg/m ³	2.0	TO15	<2	153075-1	<17 <17
1,1,2-Trichlorotrifluoroethane	µg/m ³	3.8	TO15	<4	153075-1	<32 <32
Methylene chloride (Dichloromethane)	µg/m ³	20	USEPA18	<20	153075-1	<143 <143
Carbon Disulfide	µg/m ³	1.6	TO15	<2	153075-1	310 320 RPD: 3
trans-1,2-dichloroethene	µg/m ³	2.0	TO15	<2	153075-1	<17 <17
MTBE	µg/m ³	1.8	TO15	<2	153075-1	<15 <15
1,1-Dichloroethane	µg/m ³	2.0	TO15	<2	153075-1	<17 <17
Vinyl Acetate	µg/m ³	1.8	TO15	<2	153075-1	<15 <15
MEK	µg/m ³	1.5	TO15	<1	153075-1	<12 <12
Hexane	µg/m ³	1.8	TO15	<2	153075-1	39000 39000 RPD: 0
cis-1,2-Dichloroethene	µg/m ³	2.0	TO15	<2	153075-1	210 200 RPD: 5
Ethyl Acetate	µg/m ³	1.8	TO15	<2	153075-1	<15 <15
Chloroform	µg/m ³	2.4	TO15	<2	153075-1	<20 <20
Tetrahydrofuran	µg/m ³	1.5	TO15	<1	153075-1	<12 <12
1,1,1-Trichloroethane	µg/m ³	2.7	TO15	<3	153075-1	<23 <23
1,2-Dichloroethane	µg/m ³	2.0	TO15	<2	153075-1	<17 <17
Benzene	µg/m ³	1.6	TO15	<2	153075-1	6200 6200 RPD: 0
Carbon tetrachloride	µg/m ³	3.1	TO15	<3	153075-1	<26 <26
Cyclohexane	µg/m ³	1.7	TO15	<2	153075-1	27000 22000 RPD: 20
Heptane	µg/m ³	2.0	TO15	<2	153075-1	10000 9800 RPD: 2
Trichloroethene	µg/m ³	2.7	TO15	<3	153075-1	63 61 RPD: 3
1,2-Dichloropropane	µg/m ³	2.3	TO15	<2	153075-1	<19 <19
1,4-Dioxane	µg/m ³	1.8	TO15	<2	153075-1	<15 <15

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results
TO15 in Canisters ug/m3						Base Duplicate %RPD
Bromodichloromethane	µg/m ³	3.4	TO15	<3	153075-1	<28 <28
Methyl Methacrylate	µg/m ³	2.0	TO15	<2	153075-1	<17 <17
MIBK	µg/m ³	2.0	TO15	<2	153075-1	<17 <17
cis-1,3-Dichloropropene	µg/m ³	2.3	TO15	<2	153075-1	<19 <19
trans-1,3-Dichloropropene	µg/m ³	2.3	TO15	<2	153075-1	<19 <19
Toluene	µg/m ³	1.9	TO15	<2	153075-1	880 860 RPD: 2
1,1,2-Trichloroethane	µg/m ³	2.7	TO15	<3	153075-1	<23 <23
Methyl Butyl Ketone	µg/m ³	2.0	TO15	<2	153075-1	<17 <17
Dibromochloromethane	µg/m ³	1.6	TO15	<2	153075-1	<14 <14
Tetrachloroethene	µg/m ³	3.4	TO15	<3	153075-1	56 59 RPD: 5
1,2-Dibromoethane	µg/m ³	3.8	TO15	<4	153075-1	<32 <32
Chlorobenzene	µg/m ³	2.3	TO15	<2	153075-1	7800 7600 RPD: 3
Ethylbenzene	µg/m ³	2.2	TO15	<2	153075-1	1500 1600 RPD: 6
m- & p-Xylene	µg/m ³	4.3	TO15	<4	153075-1	6600 6500 RPD: 2
Styrene	µg/m ³	2.1	TO15	<2	153075-1	220 230 RPD: 4
o-Xylene	µg/m ³	2.2	TO15	<2	153075-1	310 320 RPD: 3
Bromoform	µg/m ³	5.2	TO15	<5	153075-1	<43 <43
1,1,1,2-Tetrachloroethane	µg/m ³	3.4	TO15	<3	153075-1	<29 <29
4-ethyl toluene	µg/m ³	2.5	TO15	<2	153075-1	1400 1400 RPD: 0
1,3,5-Trimethylbenzene	µg/m ³	2.5	TO15	<2	153075-1	580 600 RPD: 3
1,2,4-Trimethylbenzene	µg/m ³	2.5	TO15	<2	153075-1	3000 3200 RPD: 6
1,3-Dichlorobenzene	µg/m ³	3.0	TO15	<3	153075-1	91 100 RPD: 9
Benzyl chloride	µg/m ³	2.6	TO15	<3	153075-1	<22 <22
1,4-Dichlorobenzene	µg/m ³	3.0	TO15	<3	153075-1	3300 3600 RPD: 9
1,2-Dichlorobenzene	µg/m ³	3.0	TO15	<3	153075-1	470 500 RPD: 6
1,2,4-Trichlorobenzene	µg/m ³	3.7	TO15	<4	153075-1	45 48 RPD: 6
Naphthalene	µg/m ³	2.6	TO15	<3	153075-1	2400 2600 RPD: 8
Hexachloro- 1,3-butadiene	µg/m ³	5.3	TO15	<5	153075-1	<44 <44
Surrogate-Bromochloromethane	% rec		TO15	92	153075-1	75 85 RPD: 12
Surrogate-1,4-Difluorobenzene	% rec		TO15	92	153075-1	82 93 RPD: 13
Surrogate-Chlorobenzene-D5	% rec		TO15	93	153075-1	76 81 RPD: 6

Client Reference: DL3620 - Site 9 - Sydney Olympic Park

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
TO15-Ozone Precursor suite in Canisters						Base Duplicate %RPD		
Vacuum before Shipment	Hg"			[NT]	153075-1	-30 -30 RPD: 0	[NR]	[NR]
Vacuum before Analysis	Hg"			[NT]	153075-1	-6 -6 RPD: 0	[NR]	[NR]
Date prepared	-			09/09/2016	153075-1	09/09/2016 09/09/2016	LCS-1	09/09/2016
Date analysed	-			09/09/2016	153075-1	09/09/2016 09/09/2016	LCS-1	09/09/2016
Propylene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	LCS-1	113%
Propane	ppbv	0.5	TO15	<0.5	153075-1	65000 62000 RPD: 5	[NR]	[NR]
iso-butane	ppbv	0.5	TO15	<0.5	153075-1	8500 8300 RPD: 2	[NR]	[NR]
1-butene	ppbv	0.5	TO15	<0.5	153075-1	18000 18000 RPD: 0	[NR]	[NR]
n-butane	ppbv	0.5	TO15	<0.5	153075-1	31000 29000 RPD: 7	[NR]	[NR]
trans-2-butene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
cis-2-butene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
iso-pentane	ppbv	0.5	TO15	<0.5	153075-1	15000 15000 RPD: 0	LCS-1	114%
1-pentene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
n-pentane	ppbv	0.5	TO15	<0.5	153075-1	17000 17000 RPD: 0	LCS-1	101%
2-methyl-1,3-butadiene	ppbv	0.5	TO15	<0.5	153075-1	600 580 RPD: 3	[NR]	[NR]
trans-2-pentene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
cis-2-pentene	ppbv	0.5	TO15	<0.5	153075-1	210 170 RPD: 21	[NR]	[NR]
2,2-dimethylbutane	ppbv	0.5	TO15	<0.5	153075-1	2200 2100 RPD: 5	[NR]	[NR]
Cyclopentane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
2,3-dimethylbutane/2MePentane	ppbv	1	TO15	<1.0	153075-1	34000 33000 RPD: 3	[NR]	[NR]
3-methylpentane	ppbv	0.5	TO15	<0.5	153075-1	18000 18000 RPD: 0	[NR]	[NR]
1-hexene	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	[NR]	[NR]
Hexane	ppbv	0.5	TO15	<0.5	153075-1	11000 11000 RPD: 0	LCS-1	110%
methylcyclopentane	ppbv	0.5	TO15	<0.5	153075-1	5100 4900 RPD: 4	[NR]	[NR]
2,4-dimethylpentane	ppbv	0.5	TO15	<0.5	153075-1	8200 7700 RPD: 6	[NR]	[NR]
Benzene	ppbv	0.5	TO15	<0.5	153075-1	2000 2000 RPD: 0	LCS-1	116%
Cyclohexane	ppbv	0.5	TO15	<0.5	153075-1	8900 8700 RPD: 2	LCS-1	110%
2-methylhexane	ppbv	0.5	TO15	<0.5	153075-1	4600 4700 RPD: 2	[NR]	[NR]
2,3-dimethylpentane	ppbv	0.5	TO15	<0.5	153075-1	9500 9600 RPD: 1	[NR]	[NR]
3-methylhexane	ppbv	0.5	TO15	<0.5	153075-1	7000 7500 RPD: 7	[NR]	[NR]
2,2,4-trimethylpentane	ppbv	0.5	TO15	<0.5	153075-1	15000 15000 RPD: 0	LCS-1	104%
Heptane	ppbv	0.5	TO15	<0.5	153075-1	2600 2500 RPD: 4	LCS-1	109%
methylcyclohexane	ppbv	0.5	TO15	<0.5	153075-1	15000 15000 RPD: 0	[NR]	[NR]
2,3,4-trimethylpentane	ppbv	0.5	TO15	<0.5	153075-1	6200 6000 RPD: 3	[NR]	[NR]
Toluene	ppbv	0.5	TO15	<0.5	153075-1	240 240 RPD: 0	LCS-1	108%
2-methylheptane	ppbv	0.5	TO15	<0.5	153075-1	1100 1100 RPD: 0	[NR]	[NR]
3-methylheptane	ppbv	0.5	TO15	<0.5	153075-1	3200 3200 RPD: 0	[NR]	[NR]
n-octane	ppbv	0.5	TO15	<0.5	153075-1	570 560 RPD: 2	LCS-1	108%
Ethylbenzene	ppbv	0.5	TO15	<0.5	153075-1	350 350 RPD: 0	LCS-1	108%
m- & p-Xylene	ppbv	1	TO15	<1	153075-1	770 750 RPD: 3	LCS-1	109%
Styrene	ppbv	0.5	TO15	<0.5	153075-1	35 34 RPD: 3	LCS-1	80%
o-Xylene	ppbv	0.5	TO15	<0.5	153075-1	83 78 RPD: 6	LCS-1	102%

Client Reference: DL3620 - Site 9 - Sydney Olympic Park

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
TO15-Ozone Precursor suite in Canisters						Base Duplicate %RPD		
nonane	ppbv	0.5	TO15	<0.5	153075-1	1300 1100 RPD: 17	LCS-1	111%
isopropylbenzene	ppbv	0.5	TO15	<0.5	153075-1	1400 1400 RPD: 0	[NR]	[NR]
n-propylbenzene	ppbv	0.5	TO15	<0.5	153075-1	620 620 RPD: 0	[NR]	[NR]
m-ethyltoluene	ppbv	0.5	TO15	<0.5	153075-1	82 85 RPD: 4	[NR]	[NR]
4-ethyl toluene	ppbv	0.5	TO15	<0.5	153075-1	230 220 RPD: 4	LCS-1	87%
1,3,5-Trimethylbenzene	ppbv	0.5	TO15	<0.5	153075-1	100 110 RPD: 10	LCS-1	99%
o-ethyltoluene	ppbv	0.5	TO15	<0.5	153075-1	230 230 RPD: 0	[NR]	[NR]
n-decane	ppbv	0.5	TO15	<0.5	153075-1	1300 1300 RPD: 0	LCS-1	109%
1,2,4-Trimethylbenzene	ppbv	0.5	TO15	<0.5	153075-1	590 580 RPD: 2	LCS-1	99%
1,2,3-trimethylbenzene	ppbv	0.5	TO15	<0.5	153075-1	100 110 RPD: 10	[NR]	[NR]
m-diethylbenzene	ppbv	0.5	TO15	<0.5	153075-1	450 450 RPD: 0	[NR]	[NR]
p-diethylbenzene	ppbv	0.5	TO15	<0.5	153075-1	190 190 RPD: 0	LCS-1	86%
n-undecane	ppbv	0.5	TO15	<0.5	153075-1	<4.2 <4.2	LCS-1	109%
n-dodecane	ppbv	0.5	TO15	<0.5	153075-1	180 170 RPD: 6	LCS-1	120%
Surrogate-Bromochloromethane	% rec		TO17	92	153075-1	75 85 RPD: 12	LCS-1	109%
Surrogate-1,4-Difluorobenzene	% rec		TO17	92	153075-1	82 93 RPD: 13	LCS-1	106%
Surrogate-Chlorobenzene-D5	% rec		TO17	93	153075-1	76 81 RPD: 6	LCS-1	106%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results		
TO15 Ozone Precursor suite in Canisters						Base Duplicate %RPD		
Date prepared	-			09/09/2016	153075-1	09/09/2016 09/09/2016		
Date analysed	-			09/09/2016	153075-1	09/09/2016 09/09/2016		
Vacuum before Shipment	Hg"			[NT]	153075-1	-30 -30 RPD: 0		
Vacuum before Analysis	Hg"			[NT]	153075-1	-6 -6 RPD: 0		
Propylene	µg/m ³	0.9	TO15	<0.9	153075-1	<8 <8		
Propane	µg/m ³	0.9	TO15	<0.90	153075-1	120000 110000 RPD: 9		
iso-butane	µg/m ³	1.2	TO15	<1.2	153075-1	20000 20000 RPD: 0		
1-butene	µg/m ³	1.1	TO15	<1.1	153075-1	42000 41000 RPD: 2		
n-butane	µg/m ³	1.2	TO15	<1.2	153075-1	73000 70000 RPD: 4		
trans-2-butene	µg/m ³	1.1	TO15	<1.1	153075-1	<10 <10		
cis-2-butene	µg/m ³	1.1	TO15	<1.1	153075-1	<10 <10		
iso-pentane	µg/m ³	1.5	TO15	<1.5	153075-1	45000 44000 RPD: 2		
1-pentene	µg/m ³	1.4	TO15	<1.4	153075-1	<12 <12		
n-pentane	µg/m ³	1.5	TO15	<1.5	153075-1	51000 49000 RPD: 4		
2-methyl-1,3-butadiene	µg/m ³	1.4	TO15	<1.4	153075-1	1700 1600 RPD: 6		
trans-2-pentene	µg/m ³	1.4	TO15	<1.4	153075-1	<12 <12		
cis-2-pentene	µg/m ³	1.4	TO15	<1.4	153075-1	610 470 RPD: 26		
2,2-dimethylbutane	µg/m ³	1.8	TO15	<1.8	153075-1	7600 7400 RPD: 3		
Cyclopentane	µg/m ³	1.8	TO15	<1.8	153075-1	<15 <15		

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results
TO15 Ozone Precursor suite in Canisters						Base Duplicate %RPD
2,3-dimethylbutane/2MePentane	µg/m ³	3.5	TO15	<3.5	153075-1	200000 190000 RPD: 5
3-methylpentane	µg/m ³	1.8	TO15	<1.8	153075-1	65000 63000 RPD: 3
1-hexene	µg/m ³	1.7	TO15	<1.7	153075-1	<15 <15
Hexane	µg/m ³	1.8	TO15	<2	153075-1	40000 39000 RPD: 3
methylcyclopentane	µg/m ³	2.0	TO15	<2.0	153075-1	33000 32000 RPD: 3
2,4-dimethylpentane	µg/m ³	1.7	TO15	<1.7	153075-1	18000 17000 RPD: 6
Benzene	µg/m ³	1.6	TO15	<2	153075-1	6400 6300 RPD: 2
Cyclohexane	µg/m ³	1.7	TO15	<2	153075-1	31000 30000 RPD: 3
2-methylhexane	µg/m ³	2.0	TO15	<2.0	153075-1	19000 19000 RPD: 0
2,3-dimethylpentane	µg/m ³	2.0	TO15	<2.0	153075-1	39000 39000 RPD: 0
3-methylhexane	µg/m ³	2.0	TO15	<2.0	153075-1	28000 30000 RPD: 7
2,2,4-trimethylpentane	µg/m ³	2.3	TO15	<2.3	153075-1	70000 68000 RPD: 3
Heptane	µg/m ³	2.0	TO15	<2	153075-1	10000 10000 RPD: 0
methylcyclohexane	µg/m ³	2.0	TO15	<2.0	153075-1	59000 58000 RPD: 2
2,3,4-trimethylpentane	µg/m ³	2.3	TO15	<2.3	153075-1	29000 28000 RPD: 4
Toluene	µg/m ³	1.9	TO15	<2	153075-1	920 900 RPD: 2
2-methylheptane	µg/m ³	2.3	TO15	<2.3	153075-1	5100 5300 RPD: 4
3-methylheptane	µg/m ³	2.3	TO15	<2.3	153075-1	15000 15000 RPD: 0
n-octane	µg/m ³	2.3	TO15	<2.3	153075-1	2700 2600 RPD: 4
Ethylbenzene	µg/m ³	2.2	TO15	<2	153075-1	1500 1500 RPD: 0
m- & p-Xylene	µg/m ³	4.3	TO15	<4	153075-1	6600 6500 RPD: 2
Styrene	µg/m ³	2.1	TO15	<2	153075-1	150 140 RPD: 7
o-Xylene	µg/m ³	2.2	TO15	<2	153075-1	360 340 RPD: 6
nonane	µg/m ³	2.6	TO15	<2.6	153075-1	7000 5800 RPD: 19
isopropylbenzene	µg/m ³	2.5	TO15	<2.5	153075-1	7000 6800 RPD: 3
n-propylbenzene	µg/m ³	2.5	TO15	<2.5	153075-1	3000 3000 RPD: 0
m-ethyltoluene	µg/m ³	2.5	TO15	<2.5	153075-1	400 420 RPD: 5
4-ethyl toluene	µg/m ³	2.5	TO15	<2	153075-1	1100 1100 RPD: 0
1,3,5-Trimethylbenzene	µg/m ³	2.5	TO15	<2	153075-1	500 540 RPD: 8
o-ethyltoluene	µg/m ³	2.5	TO15	<2.5	153075-1	1100 1100 RPD: 0
n-decane	µg/m ³	2.9	TO15	<2.9	153075-1	7300 7500 RPD: 3
1,2,4-Trimethylbenzene	µg/m ³	2.5	TO15	<2	153075-1	2900 2900 RPD: 0
1,2,3-trimethylbenzene	µg/m ³	2.5	TO15	<2.5	153075-1	520 520 RPD: 0
m-diethylbenzene	µg/m ³	2.7	TO15	<2.7	153075-1	2500 2500 RPD: 0
p-diethylbenzene	µg/m ³	2.7	TO15	<2.7	153075-1	1000 1000 RPD: 0
n-undecane	µg/m ³	3.2	TO15	<3.2	153075-1	<27 <27
n-dodecane	µg/m ³	3.5	TO15	<3.5	153075-1	1300 1200 RPD: 8
Surrogate-Bromochloromethane	% rec		TO17	92	153075-1	75 85 RPD: 12
Surrogate-1,4-Difluorobenzene	% rec		TO17	92	153075-1	82 93 RPD: 13
Surrogate-Chlorobenzene-D5	% rec		TO17	93	153075-1	76 81 RPD: 6

Client Reference: DL3620 - Site 9 - Sydney Olympic Park

QUALITY CONTROL Sulphur spec'n in cans/bags	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			08/09/2016	[NT]	[NT]	LCS-1	08/09/2016
Date analysed	-			08/09/2016	[NT]	[NT]	LCS-1	08/09/2016
Hydrogen Sulphide	ppbv	5	AT-004	<5	[NT]	[NT]	LCS-1	104%
Carbonyl Sulphide	ppbv	5	AT-004	<5	[NT]	[NT]	LCS-1	112%
Methyl Mercaptan	ppbv	5	AT-004	<5	[NT]	[NT]	LCS-1	114%
Ethyl Mercaptan	ppbv	5	AT-004	<5	[NT]	[NT]	LCS-1	109%
Dimethyl Sulphide	ppbv	5	AT-004	<5	[NT]	[NT]	LCS-1	101%
QUALITY CONTROL Sulphur spec'n in cans/bags	UNITS	PQL	METHOD	Blank				
Date prepared	-			08/09/2016				
Date analysed	-			08/09/2016				
Hydrogen Sulphide	µg/m ³	7	AT-004	<7				
Carbonyl Sulphide	µg/m ³	12	AT-004	<10				
Methyl Mercaptan	µg/m ³	9.8	AT-004	<10				
Ethyl Mercaptan	µg/m ³	13	AT-004	<10				
Dimethyl Sulphide	µg/m ³	13	AT-004	<10				
QUALITY CONTROL Permanent Gas + Hydrogen	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			07/09/2016	[NT]	[NT]	LCS-1	07/09/2016
Date analysed	-			08/09/2016	[NT]	[NT]	LCS-1	08/09/2016
Oxygen (O ₂)	%	0.01	AT-003	<0.01	[NT]	[NT]	LCS-1	100%
Carbon Monoxide (CO)	%	0.01	AT-003	<0.01	[NT]	[NT]	LCS-1	99%
Methane (CH ₄)	%	0.01	AT-003	<0.01	[NT]	[NT]	LCS-1	103%
Carbon Dioxide (CO ₂)	%	0.01	AT-003	<0.01	[NT]	[NT]	LCS-1	98%
Hydrogen (H ₂)	%	0.01	AT-003	<0.01	[NT]	[NT]	LCS-1	97%
QUALITY CONTROL TPH Air/ Air Phase Hydrocarbon	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			09/09/2016	153075-1	09/09/2016 09/09/2016	LCS-1	09/09/2016
Date analysed	-			09/09/2016	153075-1	09/09/2016 09/09/2016	LCS-1	09/09/2016
TPHC ₅ - C ₈ Aliphatic	µg/m ³	200	AT-005	<200	153075-1	940000 870000 RPD: 8	LCS-1	109%
TPHC ₉ - C ₁₂ Aliphatic	µg/m ³	50	AT-005	<50	153075-1	260000 220000 RPD: 17	LCS-1	112%
TPHC ₉ - C ₁₀ Aromatic	µg/m ³	100	AT-005	<100	153075-1	30000 30000 RPD: 0	LCS-1	95%

Client Reference: DL3620 - Site 9 - Sydney Olympic Park

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
TPH Air/ Air Phase Hydrocarbon						Base II Duplicate II %RPD		
TPHC ₆ - C ₁₀ - BTEX (F1)	µg/m ³	200	TO15	<200	153075-1	1100000 990000 RPD: 11	LCS-1	99%
TPH>C ₁₀ - C ₁₂ - Naphthalene (F2)	µg/m ³	40	TO15	<40	153075-1	230000 220000 RPD: 4	LCS-1	104%

Report Comments:

TO15:

PQL has been raised due to interference from analytes(other than those being tested) in the sample/s.

Ozone precursors:

PQL has been raised due to the high concentration of analytes in the sample/s, resulting in the sample/s requiring dilution.

Asbestos ID was analysed by Approved Identifier:

Not applicable for this job

Asbestos ID was authorised by Approved Signatory:

Not applicable for this job

INS: Insufficient sample for this test

PQL: Practical Quantitation Limit

NT: Not tested

NR: Test not required

RPD: Relative Percent Difference

NA: Test not required

<: Less than

>: Greater than

LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

3620 Site 9

Date: 1/2

Technician. S.B.

Time:

Barometric pressure 998

(start)

Barometric pressure 996

(finish

Weather: Cloudy

Ground conditions: Moist

Start 10:30 am

Finish 11:36 am.

[illegible]

5.6

Technician S.B

[illegible]

DP

Technician: 58

Weather: Sunny
Ground conditions: moist / dry
Start 2:00 pm
Finish 3:30 pm

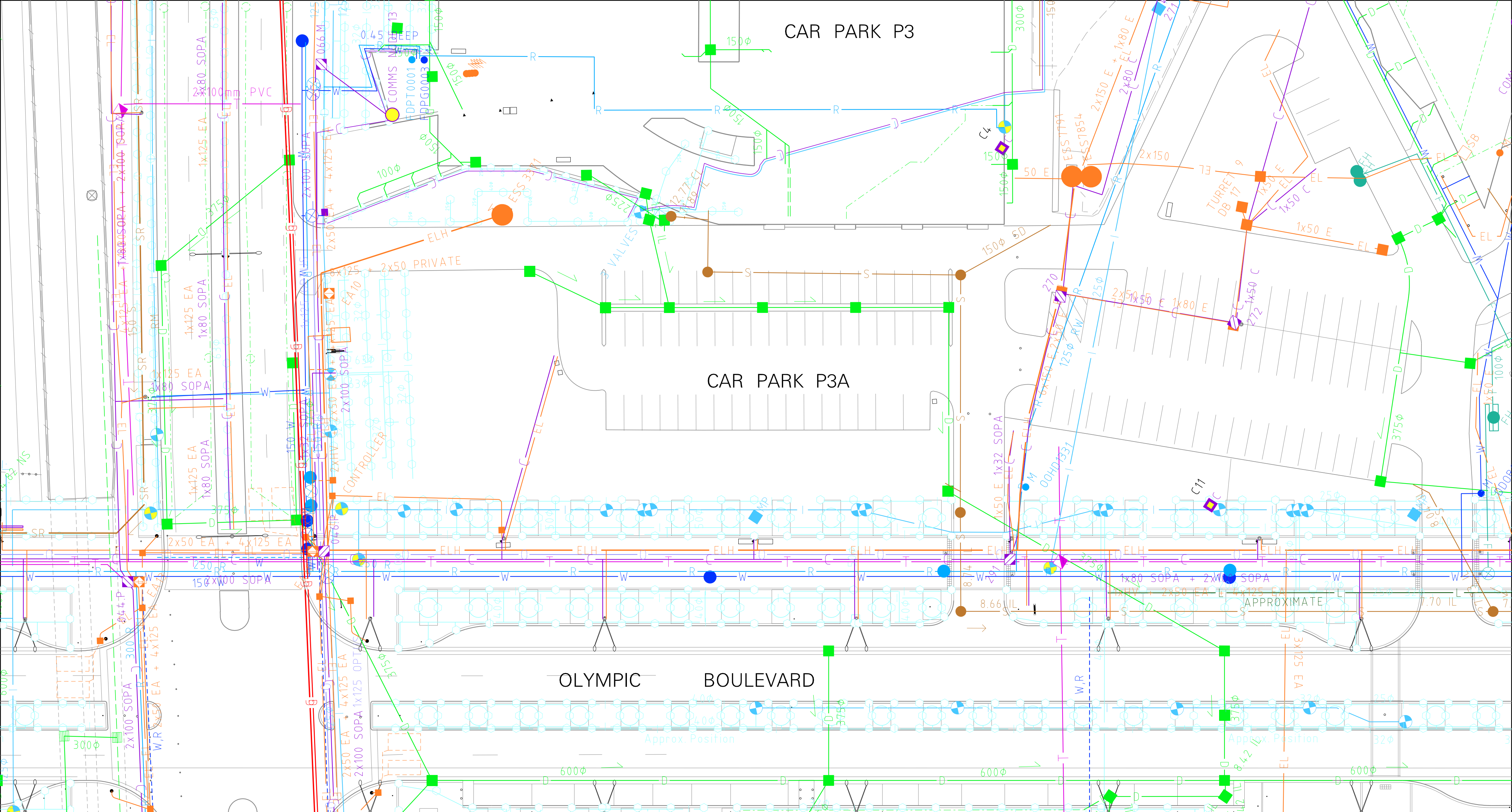
[illegible]

Finish 2 p 10m

Technician: A. Marsh / S. Butler

[illegible]

APPENDIX I – EXISTING SERVICES



ELECTRICITY		COMMUNICATIONS		DRAINAGE		LEACHATE		SEWER		WATER		FIRE		IRRIGATION		GAS		NOTES: THE LOCATION OF SERVICES SHOWN HAVE BEEN COMPILED FROM INFORMATION OBTAINED FROM VARIOUS SOURCES AND VARY IN COMPLETENESS AND ACCURACY. DETAILS OF ALL NON SOPA ASSETS SHOULD BE VERIFIED WITH THE RELEVANT AUTHORITY. THESE PLANS ARE FOR VERIFICATION PURPOSES AND SHOULD BE USED WITH CAUTION. IF INFORMATION SHOWN ON THIS PLAN IS FOUND TO BE INCORRECT, PLEASE INFORM THE SOPA SPATIAL INFORMATION SERVICES UNIT	
EL LOW VOLTAGE EH HIGH VOLTAGE ELH LOW-HIGH VOLTAGE T TRENCH CC CONDUIT CROSSING CP SCADA PIT PB PIT SB PILLAR BOX SS SWITCH BOX ESS SUB-STATION		T TELSTRA CC CONDUIT CROSSING CP TELSTRA PIT OP OPTUS CP OPTUS PIT SOPA SOPA CC CONDUIT CROSSING CC SOPA HEARING LOOP CP SOPA PIT CC SOPA COMMS NODE CP SOPA IC (IRRIG. CONTROLLER) CP PRIVATE CP PRIVATE PIT		D PIPE S SURFACE DRAIN MH PIT CD CDOS UNIT FA FLOW ARROW FP FLUSH POINT SD SUBSOIL DRAIN		L DRAIN LR RISING MAIN LG GRAVITY MAIN CA COMPRESSED AIR MH MANHOLE PP PUMP PIT MH MANHOLE PM PIEZOMETER SM SETTLEMENT MONUMENT LM LEACHATE MEMBRANE		S MAIN SR RISING MAIN P PIT MH MANHOLE SCV SCOUR VALVE V VENT ST SEPTIC TANK SPS PUMPING STATION UB UTILITY BOX FW FLOW ARROW GA GREASE ARRESTOR TWP TRADE WASTE PIT		W POTABLE R RECYCLED CC CONDUIT CROSSING SV STOP VALVE AV AIR VALVE HR HYDRANT T TAP M METER UB UTILITY BOX		F MAIN SV STOP VALVE FHC HYDRANT FHC HYDRANT COVER FHP HYDRANT PILLAR FHR HYDRANT HOSE REEL FHM HYDRANT MAIN CONNECTION FSC SPRINKLER MAIN CONNECTION		I MAIN CC CONDUIT CROSSING ISV ISOLATION VALVE SV SOLENOID VALVE AV AIR VALVE QC QC VALVE FLV FLUSH VALVE MP METER PIT P PUMP SP SPRINKLER CONTROLLER CP COMMS PIT CL COMMS LINE		G MAIN SV STOP VALVE M METER P PIT R REGULATOR			
																OIL			
																P PIPELINE			

PRODUCT OF SOPA SPATIAL INFORMATION SERVICES UNIT

0 5 10 15 20 25m

NOTES

SYDNEY OLYMPIC PARK SERVICES

SYDNEY OLYMPIC PARK AUTHORITY
8 AUSTRALIA AVENUE SYDNEY OLYMPIC PARK NSW 2127
PH (02) 9714 7300 FAX (02) 9714 7818

DISTRIBUTION CONTROL

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SydneyOlympicPark

DR G. NO. : 051-P-P-0051 REV. A
SCALE: 1:250 AT A1

PLT DATE: 18/11/2015

APPENDIX J – SPECIFICATION DETAILS



Drain-Cel™ Drainage

POLYFABRICS AUSTRALIA PTY LTD | ABN. 12 009 223 278 | W. www.polyfabrics.com.au
NEW SOUTH WALES: A. 5 Frost Rd CAMPBELLTOWN NSW 2560 | T. (02) 4620 2500 | F. (02) 4627 6488
QUEENSLAND: A. UNIT 13, 63 Burnside Rd STAPYLTON QLD 4207 | T. (07) 3451 0500 | F. (07) 3804 6511
VICTORIA: A. 144 Northbourne Rd CAMPBELLFIELD VIC 3061 | T. (03) 9305 0300 | F. (03) 9308 9288

Drain-Cel™ 30mm & 50mm Drainage Cell



Specifications	Standard Used	Drain-Cel™ 30mm	Drain-Cel™ LD 30mm	Drain-Cel™ 50mm
Width		500mm		
Length		600mm		
Height		30mm	30mm	50mm
Surface Void Area		68% void	68% void	>90% void
Internal Void Area		95%	95%	>95% void
Material		90% recycled polypropylene + 10% propriety mix	90% recycled polypropylene + 10% propriety mix	100% recycled polypropylene
Colour		Black		
Biological & Chemical Resistance		Unaffected by moulds and algae, soil-borne chemicals, bacteria and bitumen, oils and light acid, alkaline solutions	Unaffected by moulds and algae, soil-borne chemicals, bacteria and bitumen, oils and light acid, alkaline solutions	Unaffected by moulds and algae, soil-borne chemicals, bacteria and bitumen, oils and light acid, alkaline solutions
Service Temperature		-10°C to 85°C		
Compressive Strength/Ultimate Load	ASTM D1621	>150 t/m ²	>102 t/m ²	>225 t/m ²
Flow Rate	ASTM D4716	>18.95 L/m/s @ 1% gradient	>18.95 L/m/s @ 1% gradient	>23.5 L/m/s @ 1% gradient

Applications:

- Roof gardens
- Landscaped decks
- Planter boxes
- Retaining & basement walls

Advantages:

- Easy installation - panel size 1200x1000mm
- Light weight and High compressive strength
- Durable
- Enviromental - use of recycled material

LIQUID BOOT®

SPRAY-APPLIED GAS VAPOR BARRIER

DESCRIPTION

LIQUID BOOT® is a seamless, spray-applied, water-based membrane containing no VOCs, which provides a barrier against vapor intrusion into structures. LIQUID BOOT® is installed under slab and on below grade vertical walls as a gas vapor barrier to minimize vapor and nuisance water migration into buildings. LIQUID BOOT® spray-application directly to penetrations, footings, grade beams, pile caps and other irregular surfaces, provides for a fully-adhered gas vapor barrier system.

APPLICATIONS

LIQUID BOOT® is used as an underslab and below-grade vertical wall gas vapor barrier, used to minimize vapor and nuisance water (non-hydrostatic conditions) migration into buildings. LIQUID BOOT® is ideal for methane migration control. LIQUID BOOT® is also NSF® certified for use as a potable water liner in concrete water reservoirs and tanks greater than 300,000 gallons to protect the concrete from water seepage.

BENEFITS

- Spray-application provides excellent sealing of penetrations, eliminating the need for mechanical fastening
- Seamless, monolithic membrane eliminates seaming-related membrane failures
- Unique formulation provides superior protection from methane gases and water vapor
- Fully adhered system reduces risk of gas migration
- Protection from methane gas, VOCs, chlorinated solvents and other contaminants

INSTALLATION

Protect all adjacent areas not to receive gas vapor barrier. Ambient temperature shall be within manufacturer's specifications. All plumbing, electrical, mechanical and structural items to be under or passing through the gas vapor barrier shall be secured in their proper positions and appropriately protected prior to membrane application. Gas vapor barrier shall be installed before placement of reinforcing steel. Expansion joints must be filled with a conventional waterproof expansion joint material. Surface preparation shall be per manufacturer's specification. A minimum thickness of 60 dry mils, unless specified otherwise.

LIMITED WARRANTY

CETCO warrants its products to be free of defects. This warranty only applies when the product is applied by Approved Applicators trained by CETCO. As factors which affect the result obtained from this product, including weather, equipment, construction, workmanship and other variables are all beyond CETCO's control, we warrant only that the material herein conforms to our product specifications. Under this warranty we will replace at no charge any product proved to be defective within 12 months of manufacture, provided it has been applied in accordance with our written directions for uses we recommend as suitable for this product. This warranty is in lieu of any and all other warranties expressed or implied (including any implied warranty of merchantability or fitness for a particular use), and the Manufacturer shall have no further liability of any kind including liability for consequential or incidental damages resulting from any defects or any delays caused by replacement or otherwise. This warranty shall become valid only when the product has been paid for in full.



In addition to superior chemical resistance performance, LIQUID BOOT® spray-application effectively seals penetrations, footings, grade beams and other irregular surfaces that are considered critical vapor intrusion pathways.

EQUIPMENT

- COMPRESSOR: Minimum output of 155-185 cubic feet per minute (CFM)
- PUMPS: For "A" drum, an air-powered piston pump of 4:1 ratio (suggested model: Graco, 4:1 Bulldog). For "B" drum, an air-powered diaphragm pump (0 -100 psi)
- HOSES: For "A" drum, ½" wire hose with a solvent resistant core (for diesel cleaning flush), hose rated for 500 psi minimum. For "B" drum, a 3/8" fluid hose rated at only 300 psi may be used.
- SPRAY WAND: Only the spray wand sold by CETCO is approved for the application of LIQUID BOOT®.
- SPRAY TIPS: Replacement tips can be purchased separately from CETCO.

PACKAGING

LIQUID BOOT® is available in the following packaging options:

- 55 Gallon Drum
- 275 Gallon Tote

LIQUID BOOT[®] SPRAY-APPLIED GAS VAPOR BARRIER

TESTING DATA

CHEMICAL & PHYSICAL PROPERTIES		
CHEMICAL PROPERTY	TEST METHOD	RESULT
Acid Exposure (10% H ₂ SO ₄ for 90 days)	ASTM D543	Less than 1% weight change
Benzene Diffusion Test	Tested at 43,000 ppm	2.90 x 10 ⁻¹¹ m ² /day
Chemical Resistance: VOCs, BTEXs (tested at 20,000 ppm)	ASTM D543	Less than 1% weight change
Chromate Exposure (10% Chromium6+ salt for 31 days)	ASTM E96	Less than 1% weight change
Diesel (1000 mg/l), Ethylbenzene (1000 mg/l), Naphthalene (5000 mg/l) and Acetone (500 mg/l) Exposure for 7 days	ASTM D543	Less than 1% weight change; Less than 1% tensile strength change
Hydrogen Sulfide Gas Permeability	ASTM D1434	None Detected
Methane Permeability	ASTM 1434-82	Passed*
Microorganism Resistance	ASTM D4068-88	Passed*
Oil Resistance	ASTM D543-87	Passed*
PCE Diffusion Coefficient	Tested at 120 mg/L	1.32 x 10 ⁻¹³ m ² /sec
Radon Permeability	Tested by US Dept. of Energy	Zero permeability to Radon (222Rn)
TCE Diffusion Coefficient	Tested at 524 mg/L	9.07 x 10 ⁻¹³ m ² /sec

PHYSICAL PROPERTY	TEST METHOD	RESULT
Accelerated Weathering and Ultraviolet Exposure	ASTM D822	No adverse effect after 500 hours
Air Infiltration	ASTM E283-91	0 cfm/sq. ft.
Bonded Seam Strength Tests	ASTM D6392	Passed*
Coefficient of Friction (with geotextile both sides)	ASTM D5321	0.72
Cold Bend Test	ASTM D146	Passed. Ø cracking at -25 °F
Dead Load Seam Strength	City of Los Angeles	Passed*
Electric Volume Resistivity	ASTM D257	1.91 x 10 ¹⁰ ohms-cm
Elongation	ASTM D412	1,332% Ø reinforcement, 90% recovery
Elongation w/8 oz. non-woven geotextile both sides	ASTM D751	100% (same as geotextile tested separately)
Environmental Stress-Cracking	ASTM D1693-78	Passed*
Flame Spread	ASTM E108	Class A with top coat (comparable to UL790)
Freeze-Thaw Resistance (100 Cycles)	ASTM A742	Meets criteria. Ø spalling or disbondment
Heat Aging	ASTM D4068-88	Passed*
Hydrostatic Head Resistance	ASTM D751	Tested to 138 feet or 60 psi
Potable Water Containment	ANSI/NSF 61	NSF Certified for tanks >300,000 gal
Puncture Resistance w/8 oz. non-woven geotextile both sides	ASTM D4833	286 lbs. (travel of probe = 0.756 in)
Sodium Sulfate (2% water solution)	ASTM D543, D412, D1434	Less than 1% weight change
Soil Burial	ASTM E154-88	Passed
Tensile Bond Strength to Concrete	ASTM D413	2,556 lbs/ft ² uplift force
Tensile Strength	ASTM D412	58 psi without reinforcement
Tensile Strength w/8 oz. non-woven geotextile both sides	ASTM D751	196 psi (same as geotextile tested separately)
Toxicity Test	22 CCR 66696	Passed
Water Penetration Rate	ASTM D2434	<7.75 x 10 ⁻⁹ cm/sec
Water Vapor Permeance	ASTM E96	0.069 perms

*Passes all Los Angeles City and County Methane Criteria

North America: 847.851.1800 | 800.527.9948 | www.CETCO.com

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UPDATED: NOVEMBER 2013

TDS_LIQUIDBOOT_AM_EN_201311_v1

BASEFABRIC™ T-40

NON-WOVEN GEOTEXTILE FABRIC

DESCRIPTION

BASEFABRIC™ T-40 is a long lasting, durable, non-woven geotextile manufactured from high quality polypropylene. BASEFABRIC™ T-40 is a continuous filament, heat-bonded geotextile fabric with superior uniformity that reinforces and separates the membrane from soil particles. BASEFABRIC™ T-40 is manufactured to meet or exceed the minimum average roll values listed in the table below.

APPLICATION

BASEFABRIC™ T-40 serves as the base layer to the LIQUID BOOT® and LIQUID BOOT® PLUS vapor intrusion mitigation systems.

BENEFITS

Installed directly on the subgrade, BASEFABRIC™ T-40 provides a uniform substrate for the LIQUID BOOT® vapor intrusion barrier to be spray-applied to.

INSTALLATION

Product should be installed in accordance with specific installation guide specifications.

TESTING DATA

PHYSICAL PROPERTIES		
PROPERTY	TEST METHOD	RESULT
Grab Tensile Strength	ASTM D 4632	130 lbs. (578 N)
Elongation	ASTM D 4632	60%
Trapezoid Tear	ASTM D 4533	60 lbs. (270 N)
CBR Puncture	ASTM D 6241	225 lbs. (0.98 kN)
UV Stability	ASTM D 4355	70%
A.O.S.	ASTM D 4751	70 US Sieve (0.21 mm)
Permittivity	ASTM D 4491	.7 sec ⁻¹
Vertical Water Flow Rate	ASTM D 4491	60 gpm/ft ² (2,460 l/min/m ²)
Area		417 yd ² (350 m ²)
Weight		113 lbs. (51 kg)
Diameter		9 in. (23 cm)



BASEFABRIC™ T-40 is a needle-punched, non-woven geotextile with superior tensile strength and puncture resistance.

PACKAGING

- 12.5 ft x 300 ft (3.8 m x 91 m) rolls

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UPDATED: FEBRUARY 2014

TDS_BASEFABRIC-T40_AM_EN_201403_v1

ULTRASHIELD™ G-1000

NON-WOVEN GEOTEXTILE FABRIC

DESCRIPTION

ULTRASHIELD™ G-1000 is a polypropylene, staple fiber, non-woven geotextile. The fibers are needled-punched, forming a stable network that retains dimensional stability relative to each other. The geotextile is resistant to ultraviolet degradation and biological and chemical environments found in soils. Manufacturing Quality Control tests have been performed and are accredited by the Geosynthetic Accreditation Institute's Laboratory Accreditation Program (GAI-LAP).

APPLICATION

ULTRASHIELD™ G-1000 is designed for use as a underslab adhesion protection course specially designed and required for underslab LIQUID BOOT® applications where the membrane must

remain attached to the underslab of the building. This is to ensure the membrane remains in place despite soil settlement, which is common when building is on a landfill.

BENEFITS

ULTRASHIELD™ G-1000 is installed directly over the finished LIQUID BOOT® vapor intrusion barrier, providing superior protection from other trades.

PACKAGING

- 15 ft. x 180 ft. (4.5 m x 55 m) Rolls



ULTRASHIELD™ G-1000 is a needle-punched, non-woven geotextile with superior tensile strength and puncture resistance.

TESTING DATA

PHYSICAL PROPERTIES			
PROPERTY	TEST METHOD	RESULT (ENGLISH)	RESULT (METRIC)
Tensile Bond Strength to Concrete ³	ASTM C 297-94	7 psi	
Mass/Unit Area	ASTM D 5261	10.0 oz/yd ²	339 g/m ²
Thickness	ASTM D 5199	105 mils	2.7 mm
Tensile Strength	ASTM D 4632	270 lbs.	1202 N
Elongation	ASTM D 4632	50%	50%
CBR Puncture Strength	ASTM D6241	725 lbs.	3226 N
Trapezoid Tear	ASTM D 4533	105 lbs.	467 N
UV Resistance	ASTM D 4355	70%	70%
A.O.S.	ASTM D 4751	100 U.S. Sieve	0.150 mm
Permittivity	ASTM D 4491	1.2 sec ⁻¹	1.2 sec ⁻¹
Permeability	ASTM D 4491	0.30 cm/sec	0.30 cm/sec
Water Flow Rate	ASTM D 4491	85 gal/min/ft ²	3463 l/min/m ²

Notes:

¹ The property values listed above are effective 04/2011 and are subject to change without notice.

² All values shown are in weaker principal direction and are Minimum average roll values (MARV), except for AOS, which is a Maximum average roll value.

³ Historical value, based on past testing.

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UPDATED: FEBRUARY 2014

TDS_ULTRASHIELD-G1000_AM_EN_201403_v1

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