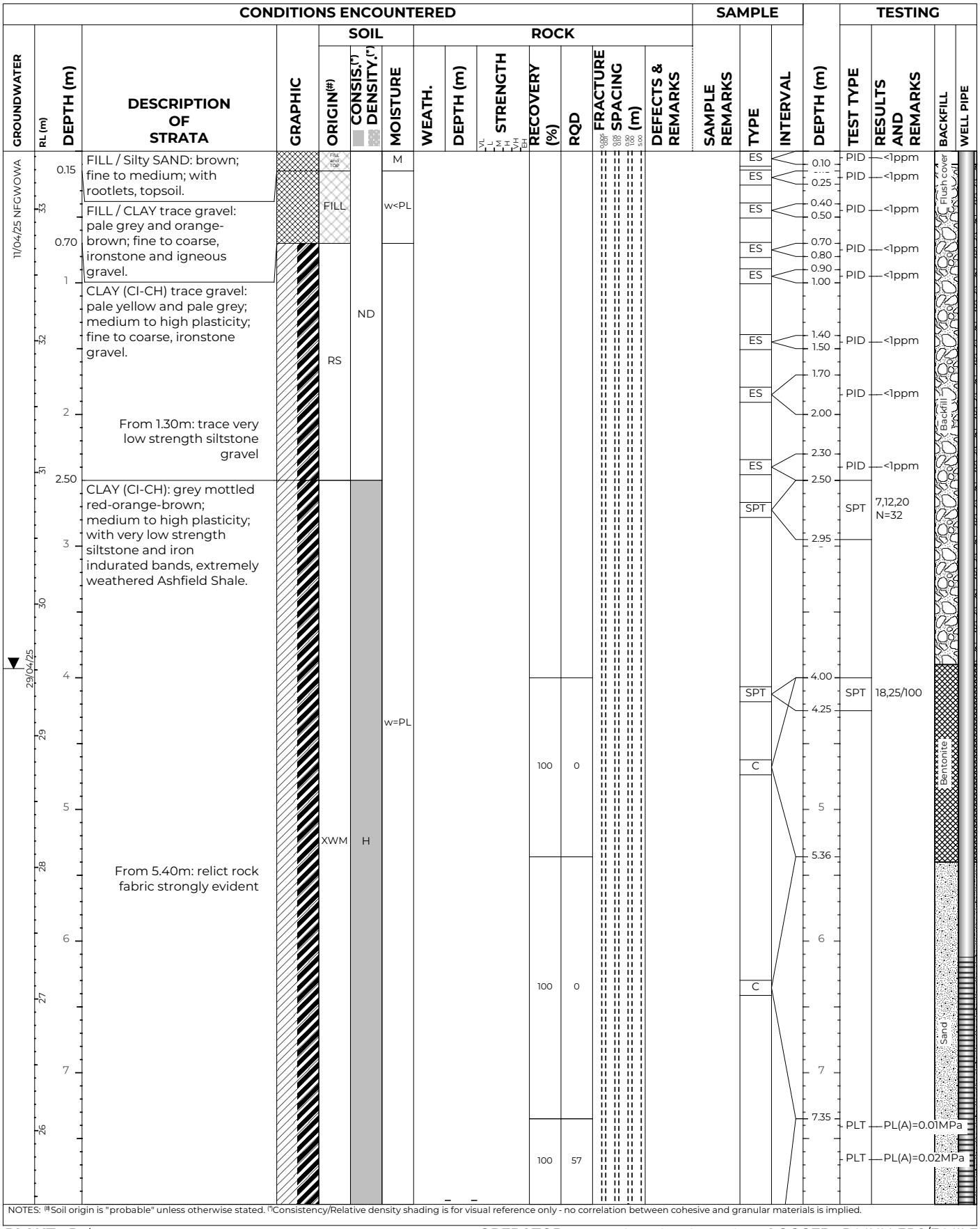
BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 33.4 AHD
COORDINATE: E:330003.9, N:6247685.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH06
PROJECT No: 234875.00
DATE: 04/04/25 - 11/04/25
SHEET: 1 of 2



NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: R.MULLERS/E.MILE
METHOD: HA to 1.68m, then AD/T to 2.5m, then WB to 4m, then NMLC to 12.12m
CASING: HW to 2.5m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 33.4 AHD
COORDINATE: E:330003.9, N:6247685.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH06
PROJECT No: 234875.00
DATE: 04/04/25 - 11/04/25
SHEET: 2 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL ORIGIN(#)	SOIL CONSIS.(†) DENSITY.(†)	SOIL MOISTURE	ROCK WEATH.	ROCK DEPTH (m)	ROCK STRENGTH	ROCK RECOVERY (%)	ROCK RQD	ROCK FRACTURE SPACING (m)	ROCK DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS	BACKFILL	WELL PIPE
	25	8.00	SILTSTONE: dark grey and grey; interlaminated with pale grey fine grained sandstone (<5%). Ashfield Shale.					HW - MW	8.00	VL				8.52m: CS, PR, SM, gravel				9	PLT	PL(A)=0.03MPa		
									8.56					8.83m: P, 0-5°, PR, CN, RF		C			PLT	PL(A)=0.46MPa		
	24	9						SW - FR		M	100	57		9.52m: JT, 40-60°, ST, CN, SM					PLT	PL(A)=0.46MPa		
																			PLT	PL(A)=0.35MPa		
		10							10.15									10			Sand	
	23	10.60	LAMINITE: pale grey, black, fine grained; sandstone, interlaminited with shreds (50/50).						10.50					10.34m: P, 0-5°, PR, VNR Clay, RF 10.50m: P, 0-5°, PR, VNR Clay, SM 10.56m: P, 0-5°, PR, VNR Clay, SM 10.70m: P, 0-5°, PR, VNR Clay, SM 10.81m: P, 0-5°, PR, CN, SM 10.89m: P, 0-5°, PR, VNR Clay, RF 11.17-11.58m: P x13, 0-5°, PR, RF, Clay 0-3 mm				10.08	PLT	PL(A)=0.38MPa		
		11						FR		M H	100	73				C		11	PLT	PL(A)=0.91MPa		
	22	12												12.00m: JT, 75°, PR, CN, SM				12	PLT	PL(A)=0.79MPa		
			Borehole discontinued at 12.12m depth. Target Depth Reached.															12.12	PLT	PL(A)=0.74MPa		
		13																				
		14																				
		15																				

NOTES: (#)Soil origin is "probable" unless otherwise stated. (†)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: R.MULLERS/E.MILE
METHOD: HA to 1.68m, then AD/T to 2.5m, then WB to 4m, then NMLC to 12.12m
CASING: HW to 2.5m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Combined Log

CORE PHOTO LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 33.4 AHD
COORDINATE: E:330003.9, N:6247685.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH06
PROJECT No: 234875.00
DATE: 04/04/25 - 11/04/25
SHEET: 1 of 1



4.00-8.00 m depth



8.00-12.12 m depth

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BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 30.2 AHD
COORDINATE: E:330035.2, N:6247658.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH07
PROJECT No: 234875.00
DATE: 14/04/25
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL ORIGIN(#)	SOIL CONSIS.(*) DENSITY.(*)	SOIL MOISTURE	ROCK WEATH.	ROCK DEPTH (m)	ROCK STRENGTH	ROCK RECOVERY (%)	ROCK RQD	ROCK FRACTURE SPACING (m)	ROCK DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS
14/04/25 NFGWOWA	30	0.05	ASPHALTIC CONCRETE.																	
		0.30	FILL / CLAY trace sand trace gravel: dark grey-brown; fine sand; fine to medium, sandstone gravel.		FILL	ND										D/ES	0.10–0.20	0.10	PID	<1ppm
																D/ES	0.40–0.50	0.40	PID	<1ppm
		1	CLAY (CI-CH): grey mottled red-orange-brown; medium to high plasticity.			St										D/ES	0.80–1.00	0.80	PID	<1ppm
	29															SPT	1.00–1.45	1.00	SPT	3,5,5 N=10
		2																1.45		
	28				RS													2		
		3					w<PL									SPT	2.50–2.95	2.50	SPT	13,12,25 N=37
	27																	2.95		
		4																4.00		
	26															SPT	4.00–4.43	4.00	SPT	8,18,25/130
		4.60	CLAY (CI-CH): grey mottled red-orange-brown; medium to high plasticity; with iron indurated bands, extremely weathered Ashfield Shale.			H												4.43		
		5																5		
	25																			
		6			XWM													6		
	24																			
		7																7.00		
	23															SPT	7.00–7.22	7.00	SPT	11,17,25/50 (HB)
		7.55	LAMINITE: [description over].					HW - MW	7.55	L - M	100	16		7.55-7.62m: P x4, 0-5°, PR, VNR Fe, RF 7.62-7.68m: EW, Clay 7.75m: P, 0-5°, PR,				7.22		
																		7.35		
																			PLT	PL(A)=0.24MPa
																			PLT	PL(A)=0.25MPa
																			PLT	PL(A)=0.35MPa

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Combined Log

PLANT: Bobcat
METHOD: AD/T to 2.5m, then WB to 7m, then NMLC to 11.96m
REMARKS:

OPERATOR: Groundtest (J.Johnson)

LOGGED: E.MILERS
CASING: HW to 2.5m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 30.2 AHD
COORDINATE: E:330035.2, N:6247658.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH07
PROJECT No: 234875.00
DATE: 14/04/25
SHEET: 2 of 2

CONDITIONS ENCOUNTERED																				SAMPLE				TESTING	
				SOIL				ROCK																	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(†) DENSITY.(†)	MOISTURE	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	22	8.00	LAMINITE: dark grey and orange-brown; with pale grey fine grained sandstone interlaminited with dark grey shale (40% sandstone and 60% shale). Ashfield Shale. From 8.00m-11.96m: Interlaminate with dark grey shale (40% sandstone and 60% shale)					HW - MW	8.60	L - M	100	16		SN Fe, RF 7.80m: P, 0-5°, PR, SN Fe, RF 7.84m: EW, Clay, 40mm 7.91-813m: P x11, 0-5°, PR, VNR Fe, RF 8.16m: JT, 20-40°, PR, RF 8.20-830m: P x5, 0-5°, PR, VNR Fe, RF 8.32m: CS, clay/gravel 50mm 8.42m: CS, Clay, 70mm 8.51-860m: SS, Clay, 5-30mm 8.64-873m: JT, 70-80°, IR, SN Fe, RF 8.73m: CS, Clay, 10mm 8.83m: P, 0-5°, PR, SN Fe, RF 8.93m: EW, Clay, 20mm 8.99-9.10m: CS, Clay 9.15-10.82m: P x20, 0-5°, PR, SM-RF, clay 0-5mm 11.69m: JT, 40-60°, CU, CN, SM 11.86m: JT, 20-40°, IR, CN, RF		C				
	21	9								M								9.10	PLT	PL(A)=0.52MPa
								MW - SW											PLT	PL(A)=0.51MPa
	20	10							10.30									10	PLT	PL(A)=0.88MPa
									10.60		100	61				C				
	19	11						SW - FR		M - H								11	PLT	PL(A)=1.1MPa
		12	Borehole discontinued at 11.96m depth. Target Depth Reached.															11.96		
		13																		
		14																		
		15																		

NOTES: (#)Soil origin is "probable" unless otherwise stated. (†)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
METHOD: AD/T to 2.5m, then WB to 7m, then NMLC to 11.96m
REMARKS:

OPERATOR: Groundtest (J.Johnson)

LOGGED: E.MILERS
CASING: HW to 2.5m

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Combined Log

CORE PHOTO LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 30.2 AHD
COORDINATE: E:330035.2, N:6247658.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH07
PROJECT No: 234875.00
DATE: 14/04/25
SHEET: 1 of 1



7.22-11.96 m depth

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BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 29.1 AHD
COORDINATE: E:330070.5, N:6247675.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH08
PROJECT No: 234875.00
DATE: 09/04/25
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL ORIGIN(#)	SOIL CONSIS.(†) DENSITY.(†)	SOIL MOISTURE	ROCK WEATH.	ROCK DEPTH (m)	ROCK STRENGTH	ROCK RECOVERY (%)	ROCK RQD	ROCK FRACTURE SPACING (m)	ROCK DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS
09/04/25 NFGWOWA	29	0.07	ASPHALTIC CONCRETE.			NA	NA													
		0.10	FILL / GRAVEL; medium to coarse, igneous; 30mm thick.		FILL	ND										ES	0.20–0.30	0.20	PID	<1ppm
			FILL / Sandy CLAY trace gravel: red-brown mottled grey; fine sand; fine to medium, sandstone gravel; trace rootlets.													ES	0.30–0.50	0.30	PID	<1ppm
		0.80																0.50		
	28	1	FILL / CLAY trace sand: grey mottled red-orange-brown; medium to high plasticity; fine sand.		FILL	(F)	w<PL								*	ES	0.80–1.00	0.80	PID	<1ppm
																B	1.00–1.30	1.00		
																SPT	1.00–1.45	1.30	SPT	2,3,3 N=6
	27	2																1.45		
		2.40	CLAY (CI-CH): dark grey; medium to high plasticity; possibly alluvial, possibly fill.		possibly ALV	VS to S												2		
	26	3														SPT	2.50–2.95	2.50	SPT	0,0,1 N=1
		3.50	CLAY (CI-CH): grey; medium to high plasticity.															2.95		
	25	4					w=PL											4.00		
			3.50m: becoming grey		RS	St										SPT	4.00–4.45	4.45	SPT	2,4,6 N=10
	24	5																5		
		5.79				H			5.79							SPT	5.50–5.79	5.50	SPT	12,25/135
			CORE LOSS (630mm).			ND	ND											5.79		
	23	6																6		
		6.42							6.42											
			CLAY (CI-CH): grey and red-brown; medium to high plasticity; with bands of ironstone and very low strength siltstone.								77	0								
	22	7			XWM	H	NDF									C		7		

NOTES: (#)Soil origin is "probable" unless otherwise stated. (†)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: E.MILERS
METHOD: AD/T to 2.5m, then WB to 5.8m, then NMLC to 13.3m
CASING: HW to 2.5m
REMARKS: * BD5/20250409 taken from 0.8-1.0m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Generated with CORE-GS by Geroc - Combined Log

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 29.1 AHD
COORDINATE: E:330070.5, N:6247675.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH08
PROJECT No: 234875.00
DATE: 09/04/25
SHEET: 2 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL ORIGIN(#)	SOIL CONSIS.(†) DENSITY.(*)	SOIL MOISTURE	ROCK WEATH.	ROCK DEPTH (m)	ROCK STRENGTH	ROCK RECOVERY (%)	ROCK RQD	ROCK FRACTURE SPACING (m)	ROCK DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS
	21		[CONT] CLAY (CI-CH): grey and red-brown; medium to high plasticity; with bands of ironstone and very low strength siltstone.		XWM	H	NDF				77	0								
		8.50							8.50									8.53		
	20	9	SILTSTONE: dark grey; 5% pale grey, fine grained sandstone laminations. Ashfield Shale.											8.53-9.10m: P x9, 0-5°, PR, Clay, SM, 0-10mm				9		
														9.40m: JT, 30°, PR, CN, SM					PLT	PL(A)=0.01MPa
														9.42-9.85m: P x7, 0-5°, PR, Clay, 0-5mm						
		10.00						XW to HW		VL	100	0		10.00m: EW, Clay, 20mm 10.10m: EW, Clay, 20mm		C		10	PLT	PL(A)=0.01MPa
	19		SILTSTONE: dark grey; 5-15% pale grey, fine grained sandstone laminations. Ashfield Shale.											10.26-10.70m: P x5, 0-5°, PR, CN, SM						
														10.75-10.85m: JT x2, 50°, UN, Clay, SM, 0-5mm 10.88m: EW, Clay, 40mm 11.00m: EW, Clay, 10mm 11.15-11.52m: P x5, 0-5°, PR, CN, SM					PLT	PL(A)=0.05MPa
	18	11																11	PLT	PL(A)=0.03MPa
									11.55					11.53-11.66m: FG				11.66		
														11.75-12.00m: P x9, 0-5°, PR, CN, SM 11.76-12.00m: JT x7, 50-80°, IR-CU, SM, CN						
	17	12						SW to FR		M	100	45				C		12	PLT	PL(A)=0.30MPa
														12.06-13.25m: P x13, 0-5°, PR, SM, Clay 0-10mm 12.16-13.28m: JT x4, 40-80°, PR, CN, SM					PLT	PL(A)=0.54MPa
	16	13																13.30		
			Borehole discontinued at 13.30m depth. Target Depth Reached.																	
		14																		
		15																		

NOTES: (#) Soil origin is "probable" unless otherwise stated. (†) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
METHOD: AD/T to 2.5m, then WB to 5.8m, then NMLC to 13.3m
REMARKS: * BD5/20250409 taken from 0.8-1.0m

OPERATOR: Groundtest (J.Johnson)

LOGGED: E.MILERS
CASING: HW to 2.5m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Generated with CORE-GS by Geroc - Combined Log

CORE PHOTO LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 29.1 AHD
COORDINATE: E:330070.5, N:6247675.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH08
PROJECT No: 234875.00
DATE: 09/04/25
SHEET: 1 of 1



5.79-10.00 m depth



10.00-13.30 m depth

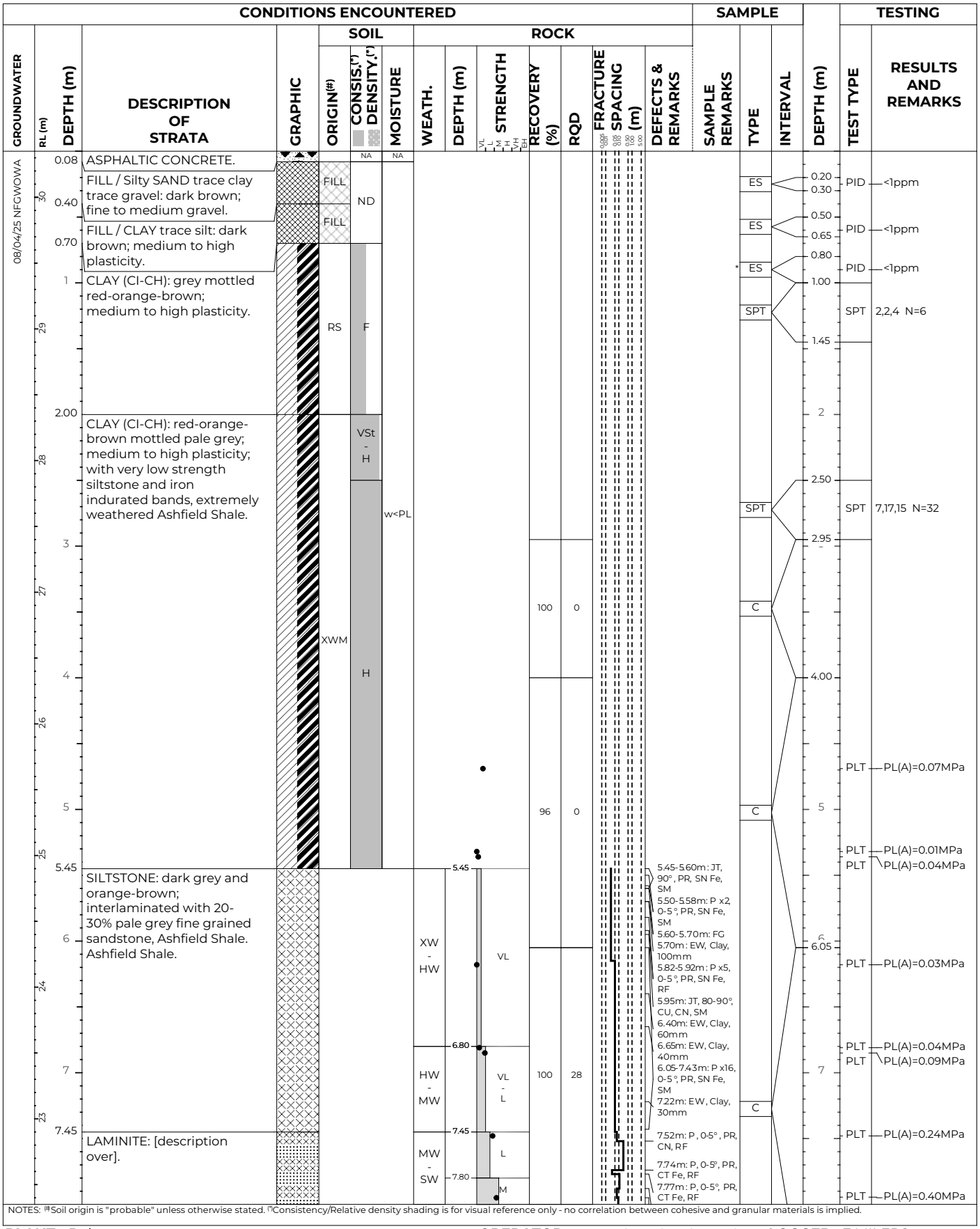
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BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 30.4 AHD
COORDINATE: E:330087.8, N:6247716.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH09
PROJECT No: 234875.00
DATE: 08/04/25
SHEET: 1 of 2



NOTES: (#)Soil origin is "probable" unless otherwise stated. (^)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: E.MILERS
METHOD: AD/T to 2.95m, then NMLC to 11.64m
CASING: HW to 2.75m
REMARKS: * BD4/20250409 taken from 0.8-1.0m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 30.4 AHD
COORDINATE: E:330087.8, N:6247716.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH09
PROJECT No: 234875.00
DATE: 08/04/25
SHEET: 2 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL: ORIGIN(#)	SOIL: CONSIS.(*) DENSITY.(*)	SOIL: MOISTURE	ROCK: WEATH.	ROCK: DEPTH (m)	ROCK: STRENGTH	ROCK: RECOVERY (%)	ROCK: RQD	ROCK: FRACTURE SPACING (m)	ROCK: DEFECTS & REMARKS	SAMPLE: SAMPLE REMARKS	SAMPLE: TYPE	SAMPLE: INTERVAL	DEPTH (m)	TESTING: TEST TYPE	TESTING: RESULTS AND REMARKS
	22	8.00	LAMINITE: dark grey shale; interlaminated with pale grey, fine grained sandstone (<30%). Ashfield Shale.					MW - SW			100	28		7.88m: P, 0-5°, PR, CT Fe, RF 7.95m: P, 0-5°, PR, CT Clay, RF 8.04m: EW, PR Clay, SM, 10mm 8.45m: P, 0-5°, PR, CT Fe, SM 8.47m: P, 0-5°, PR, CT Fe, SM				8.50	PLT	PL(A)=0.57MPa
	21	9							9.50	M				9.43m: P, 0-5°, PR, CT Fe, SM 9.62m: P, 0-5°, PR, CT Clay, SM 9.67m: EW, PR Clay, SM, 10mm 9.76m: EW, PR, Clay, SM, 10mm 9.80m: EW, PR, Clay, SM, 5mm 9.90m: EW, PR, Clay, SM, 5mm				9	PLT	PL(A)=0.54MPa
	20	10						SW - FR			100	56		10.15m: P, 0-5°, PR, CN, SM 10.35m: JT, 30-50°, ST, CT Clay, RF		C		10	PLT	PL(A)=0.76MPa
	19	11							11.10	M FR				10.90m: P, 0-5°, PR, SM 10.98m: P, 0-5°, PR, VNR Clay, SM 11.08m: P, 0-5°, PR, VNR Clay, SM 11.30m: P, 0-5°, PR, VNR Clay, SM				11	PLT PLT	PL(A)=1.6MPa PL(A)=0.94MPa
		12	Borehole discontinued at 11.64m depth. Target Depth Reached.															11.64		
		13																		
		14																		
		15																		

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
METHOD: AD/T to 2.95m, then NMLC to 11.64m
REMARKS: * BD4/20250409 taken from 0.8-1.0m

OPERATOR: Groundtest (J.Johnson)

LOGGED: E.MILERS
CASING: HW to 2.75m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

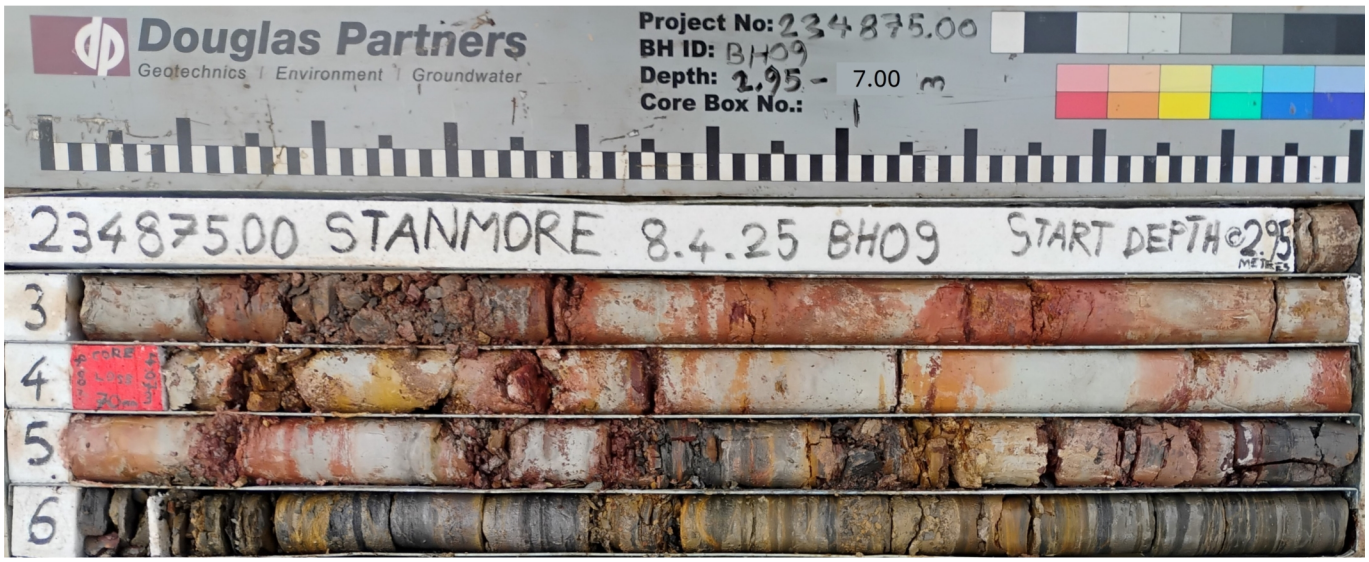
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CORE PHOTO LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 30.4 AHD
COORDINATE: E:330087.8, N:6247716.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH09
PROJECT No: 234875.00
DATE: 08/04/25
SHEET: 1 of 1



2.95-7.00 m depth



7.00-11.64 m depth

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Douglas PARTNERS

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 30.7 AHD
COORDINATE: E:330037.0, N:6247707.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH10
PROJECT No: 234875.00
DATE: 28/04/25 - 29/04/25
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL ORIGIN(#)	SOIL CONSIS.(†) DENSITY.(*)	SOIL MOISTURE	ROCK WEATH.	ROCK DEPTH (m)	ROCK STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS
28/04/25 NFGWOWA	30	0.04	CONCRETE PAVERS.		FILL	ND	w<PL									D		0.05	PID	<1ppm
		0.30	FILL / SAND trace clay trace gravel: pale brown and brown; fine to coarse; fine to coarse, sandstone gravel; brick fragments.		FILL											ES		0.20 0.25	PID	<1ppm
																D				
																D/ES		0.50 0.60	PID	<1ppm
	29	0.90 1	FILL / Sandy CLAY trace organics trace gravel: dark brown; fine to coarse sand; decomposed organics; fine to medium, sandstone gravel.		RS	ND	w=PL									D/ES		1.00 1.10	PID	<1ppm
																D/ES		1.20 1.30		
		1.60 2	CLAY (CI-CH) trace gravel: grey mottled red-orange-brown; medium to high plasticity; fine, ironstone gravel.													D/ES		1.70 2.00	PID	<1ppm
	28		CLAY (CI-CH): grey and red-brown; medium to high plasticity; with very low strength siltstone bands and medium strength iron indurated bands, extremely weathered Ashfield Shale.		XWM	H	NDF				100	0				C		2.12 3 3.54	PLT	PL(A)=0.02MPa PL(A)=0.04MPa PL(A)=0.01MPa PL(A)=0.03MPa PL(A)=0.03MPa
	27	3.70 4	CORE LOSS (530mm).		NA	ND	ND		3.70		42	0				C		3.92 4		
		4.23			XWM	H	NDF		4.23		22	0				C		4.32		
	26	4.50	SANDSTONE: dark grey and orange-brown; with medium strength ironstone bands up to 50mm thick. Ashfield Shale.					XW and HW	4.50	VL	100	0	SEAM	4.53-4.54m: P x2, 5°, PR, SN Fe, RF 4.60m: EW, Clay, 30mm 4.72-4.83m: EW, Clay 4.85-5.05m: P x3, 0-5°, SN Fe 5.15m: EW, Clay, 30mm 5.25- 5.38m: FG		C		5.38	PLT	PL(A)=0.49MPa PL(A)=0.05MPa PL(A)=0.05MPa PL(A)=0.11MPa
	25	5							4.72 4.83	SEAM VL										
									5.44 5.54	SEAM VL			SEAM	5.44-5.54m: EW, Clay 5.56m: P, 5°, PR, SN Fe, RF 5.67-5.74m: EW, Clay 5.76m: EW, Clay, 20mm 5.91m: JT, 50°, PR, CN, SM 6.02-6.44m: P x12, 0-5°, PR, SN Fe 6.13-6.34m: JT, 70-90°, IR, SN Fe, SM 6.44-6.53m: CS, 0-45°, Clay 6.59m: P, 0°, PR, SN Fe, SM 6.62m: EW, Clay, 50mm 6.70-6.72m: P x2, 0-5°, PR, SN Fe, SM 6.75m: JT, 10-70°, CU, SN Fe, RF 6.85m: EW, Clay, 20mm 6.95-7.14m: P x4, 0-5°, PR, SN Fe, SM					
	24	5.83 6	SILTSTONE: dark grey and brown. Ashfield Shale.					HW to MW	5.83	VL to L	96	0				C		6	PLT	PL(A)=0.33MPa PL(A)=0.03MPa PL(A)=0.09MPa PL(A)=0.04MPa PL(A)=0.11MPa PL(A)=0.08MPa
		6.86 6.91	CORE LOSS (50mm).						6.91									6.91 7		
	23							MW	7.04	L	100	20				C			PLT	PL(A)=0.12MPa PL(A)=0.12MPa
								HW - MW	7.65										PLT	PL(A)=0.13MPa PL(A)=0.13MPa
											100	24						7.90		

NOTES: (#)Soil origin is "probable" unless otherwise stated. (†)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Proline
OPERATOR: Tightsite (Ben B)
LOGGED: E.MILERS
METHOD: HA to 2.12m, then NMLC to 11.64m
CASING: HQ to 2.1m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Combined Log

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 30.7 AHD
COORDINATE: E:330037.0, N:6247707.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH10
PROJECT No: 234875.00
DATE: 28/04/25 - 29/04/25
SHEET: 2 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL: ORIGIN(#)	SOIL: CONSIS.(†) DENSITY.(*)	SOIL: MOISTURE	ROCK: WEATH.	ROCK: DEPTH (m)	ROCK: STRENGTH	ROCK: RECOVERY (%)	ROCK: RQD	ROCK: FRACTURE SPACING (m)	ROCK: DEFECTS & REMARKS	SAMPLE: SAMPLE REMARKS	SAMPLE: TYPE	SAMPLE: INTERVAL	DEPTH (m)	TESTING: TEST TYPE	TESTING: RESULTS AND REMARKS
	22	8.00	SILTSTONE: dark grey and brown. Ashfield Shale [continued].					HW - MW		L				7.16-7.46m: JT x5, 20-90°, PR-IR, RF-SM, SN-VNR Fe 7.50m: P, 0-5°, PR Fe, RF, 10mm 7.68-7.85m: P x4, 0-5°, IR, SN Fe, RF 7.85m: EW, Clay, 30mm 7.96m: EW, CT Clay, 50mm 8.05-8.25m: JT x5, 45-80°, IR, SM, Fe & Clay 0-5mm 8.26m: P, 0-5°, PR, CT Clay, RF 8.30m: P, 0-5°, PR, CT Clay, RF 8.30-8.40m: SS, 70°, PR, TI, <10mm throw 8.40-8.50m: JT, 60-90°, IR, Clay, RF, 0-2mm 8.60m: EW, PR, Clay, SM, 10mm 8.76m: P, 0-5°, PR, Clay, SM, 2mm 8.91m: P, 0-5°, PR, Clay, SM, 2mm 8.97m: JT, 30°, IR, CT Clay, RF 9.20m: F, 45°, PR, CN, SM, >10mm throw, 40° bed fold 9.10-9.70m: F, 20-50° 9.32-9.66m: , JT/SS x6, 45-70°, PR-CU, part HE/SM, CN, throw 0-5mm 9.90-10.25m: JT x11, 40-50°, UN, CN, SM, PR-UN, SM-TI, CN 10.40-10.80m: JT x6, 30-40°, ST, CN, RF, ST-PR, RF-TI, CN					
									8.60											
	21	9	LAMINITE: dark grey shale (60%); interlaminited with pale grey (40%), fine grained sandstone laminations. Ashfield Shale. 9.20m: (Inferred fault zone) Bedding displaced and rotated from 9.2m-9.7m.					MW - SW		M	100	24				C			PLT	PL(A)=0.06MPa
																			PLT	PL(A)=0.31MPa
																		9.07		
																			PLT	PL(A)=0.53MPa
									9.90											
											100	27				C			PLT	PL(A)=0.63MPa
		10.00	SILTSTONE: dark grey; with 15% pale grey, fine grained sandstone laminations.															10		
																			PLT	PL(A)=1.1MPa
	20																	10.54	PLT	PL(A)=0.61MPa
								SW - FR		H									PLT	PL(A)=0.85MPa
		11									100	91				C		11	PLT	PL(A)=1.1MPa
																			PLT	PL(A)=1.6MPa
																			PLT	PL(A)=1.1MPa
			Borehole discontinued at 11.64m depth. Target Depth Reached.															11.64		
		12																		
		13																		
		14																		
		15																		

NOTES: (#) Soil origin is "probable" unless otherwise stated. (†)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Proline
METHOD: HA to 2.12m, then NMLC to 11.64m
REMARKS:

OPERATOR: Tightsite (Ben B)

LOGGED: E.MILERS
CASING: HQ to 2.1m

Refer to explanatory notes for symbol and abbreviation definitions

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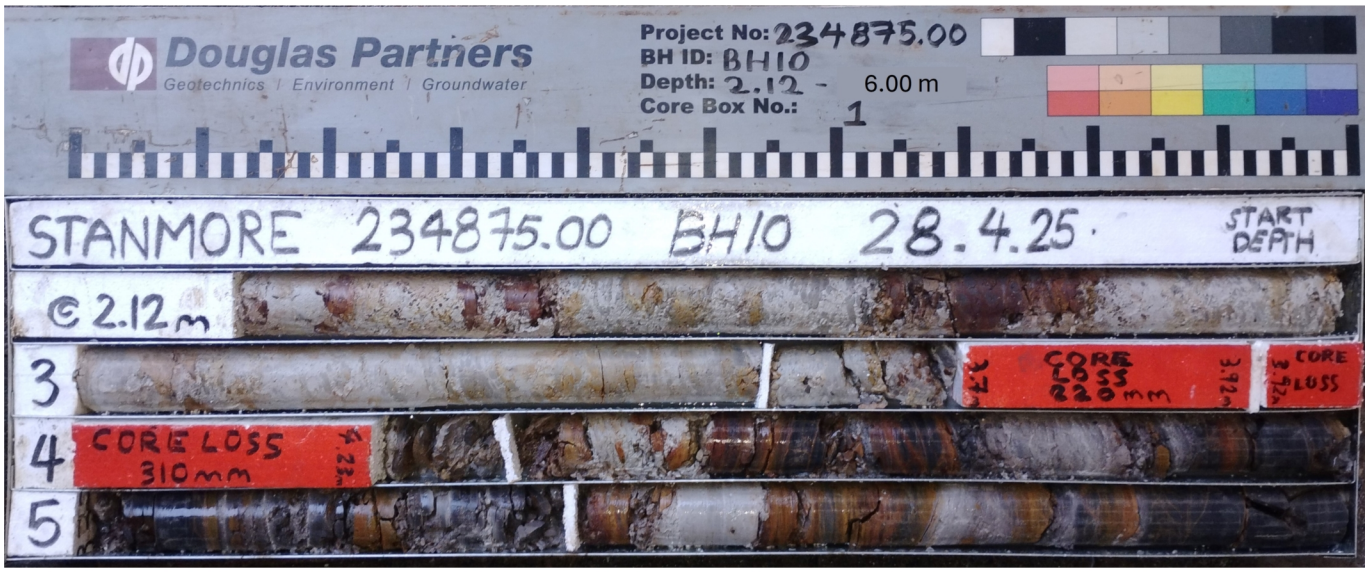
Douglas PARTNERS

CORE PHOTO LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 30.7 AHD
COORDINATE: E:330037.0, N:6247707.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH10
PROJECT No: 234875.00
DATE: 28/04/25 - 29/04/25
SHEET: 1 of 2



2.12-6.00 m depth



6.00-10.00 m depth

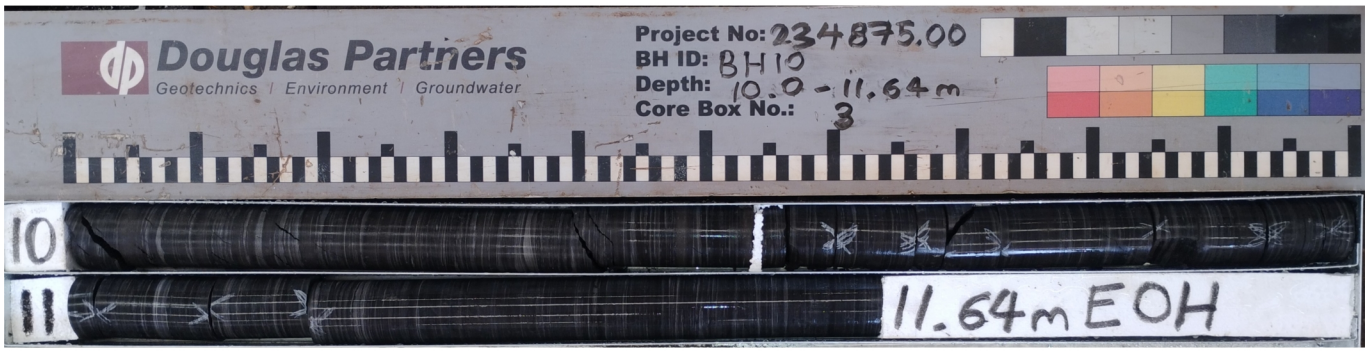
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CORE PHOTO LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 30.7 AHD
COORDINATE: E:330037.0, N:6247707.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH10
PROJECT No: 234875.00
DATE: 28/04/25 - 29/04/25
SHEET: 2 of 2



10.00-11.64 m depth

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BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 33.0 AHD
COORDINATE: E:330134.1, N:6247760.5
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH11
PROJECT No: 234875.00
DATE: 09/04/25 - 10/04/25
SHEET: 1 of 2

CONDITIONS ENCOUNTERED																	SAMPLE				TESTING	
				SOIL			ROCK															
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	WEATH.	DEPTH (m)	STRENGTH VL L M H VH EH	RECOVERY (%)	RQD	FRACTURE SPACING (m) 0.06 0.08 0.10 0.30 >0.60	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
09/04/25 NFGWOWA	33	0.06	CONCRETE PAVER.			NA	NA											0.50	PID	<1ppm
		0.12	PAVER BASE SAND.		FILL		NDF											0.60		
		0.24																0.80		
		0.34	CONCRETE.		FILL		w<PL											1.00		
		0.50	FILL / GRAVEL: grey; igneous, road base.													ES		1.20	SPT	4,7,6 N=13
	32	1	FILL / Silty CLAY trace sand trace gravel: dark brown; fine sand; fine gravel.													ES		1.45	PID	<1ppm
			FILL / Silty SAND: pale brown and grey; fine to medium.		FILL	ND	D									SPT		1.50		
																ES		1.80		
	31	2																2	PID	<1ppm
		2.30																2.20		
			CLAY (CI-CH): grey mottled red-brown; medium to high plasticity.		RS	St										SPT		2.50		
	30	3																2.95	SPT	3,5,7 N=12
		3.30																4.00		
			CLAY (CI-CH): grey mottled red-orange-brown; medium to high plasticity; with ironstone gravel and bands.			VSt to H	w=PL									SPT		4.45	SPT	13,14,17 N=31
	29	4			XWM													5		
	28	5				H												5.50		
																SPT		5.90	SPT	10,15,25/100
		5.90																6		
	27	6	CLAY (CI-CH): grey and brown; medium to high plasticity; with bands of ironstone and very low strength siltstone.		XWM						100	0								
		6.70							6.70	(VL)				6.70-6.85m: JT x2, 60°, PR, SN Fe						
	26	7	SILTSTONE: dark grey and orange-brown; 20-30% extremely weathered material. Ashfield Shale.					XW	6.90	SEAM			SEAM	6.90-7.20m: DS, 300mm						
									7.20					7.25-7.32m: B x2, 10-20°, PR, SN Fe, SM						
								XW - HW	7.25	VL - L	100	21		7.32-8.00m: FG, 680mm						

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: E.MILERS
METHOD: DT to 0.34m, then AD/T to 2m, then WB to 5.9m, then NMLC to 12.98m
CASING: HW to 2m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Generated with CORE-GS by Geroc - Combined Log

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 33.0 AHD
COORDINATE: E:330134.1, N:6247760.5
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH11
PROJECT No: 234875.00
DATE: 09/04/25 - 10/04/25
SHEET: 2 of 2

CONDITIONS ENCOUNTERED																				SAMPLE				TESTING	
				SOIL				ROCK																	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(†) DENSITY.(†)	MOISTURE	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	25		[CONT] SILTSTONE: dark grey and orange-brown; 20-30% extremely weathered material. Ashfield Shale.					XW - HW		VL - L				8.05m: JT, 30°, PR, SN Fe, SM 8.15-8.50m: DS, 350mm						
	24	8.70 9	SILTSTONE: dark grey. Ashfield Shale.						8.70		100	21		8.62-8.70m: DS, 80mm 8.80m: JT, 60°, PR, CT Clay, SM 9.00m: JT, 85°, PR, TI, (8.88-9.05) 9.10m: JT, 50°, PR, CN, SM 9.43-9.50m: JT x2, 30-60°, PR, CN, SM, fragmented 9.75-9.90m: JT x2, 60-70°, PR, CN, SM				9	PLT PLT	PL(A)=0.55MPa PL(A)=0.23MPa
	23	10.00	LAMINITE: dark grey shale (50%); interlaminited with fine grained pale grey sandstone (50%).					FR	11.00	L - M	100	66		10.78-10.95m: B x4, 0-10°, PR, CT Clay, SM 11.05m: EW, Clay 10mm 11.10m: B, 0°, PR, VNR Clay, SM 11.25m: JT, 30-50°, ST, CN, SM 12.32m: B, 5°, PR, VNR Clay, SM 12.36m: B, 0°, PR, VNR Clay, SM 12.69m: B, 0°, PR, CN, SM				10 11 12	PLT PLT PLT PLT PLT	PL(A)=0.42MPa PL(A)=0.38MPa PL(A)=0.33MPa PL(A)=0.97MPa PL(A)=0.92MPa
	22	11								M										
	21	12																		
		13	Borehole discontinued at 12.98m depth. Target Depth Reached.																	
		14																		
		15																		

NOTES: (#) Soil origin is "probable" unless otherwise stated. (†) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: E.MILERS
METHOD: DT to 0.34m, then AD/T to 2m, then WB to 5.9m, then NMLC to 12.98m
CASING: HW to 2m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

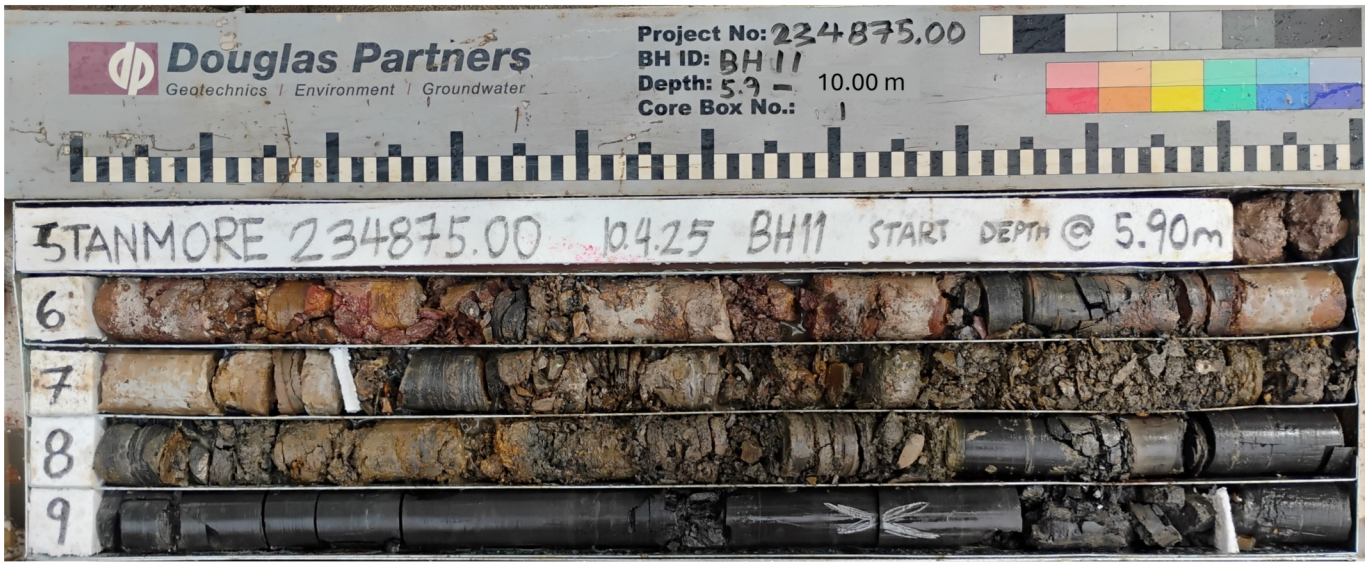
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CORE PHOTO LOG

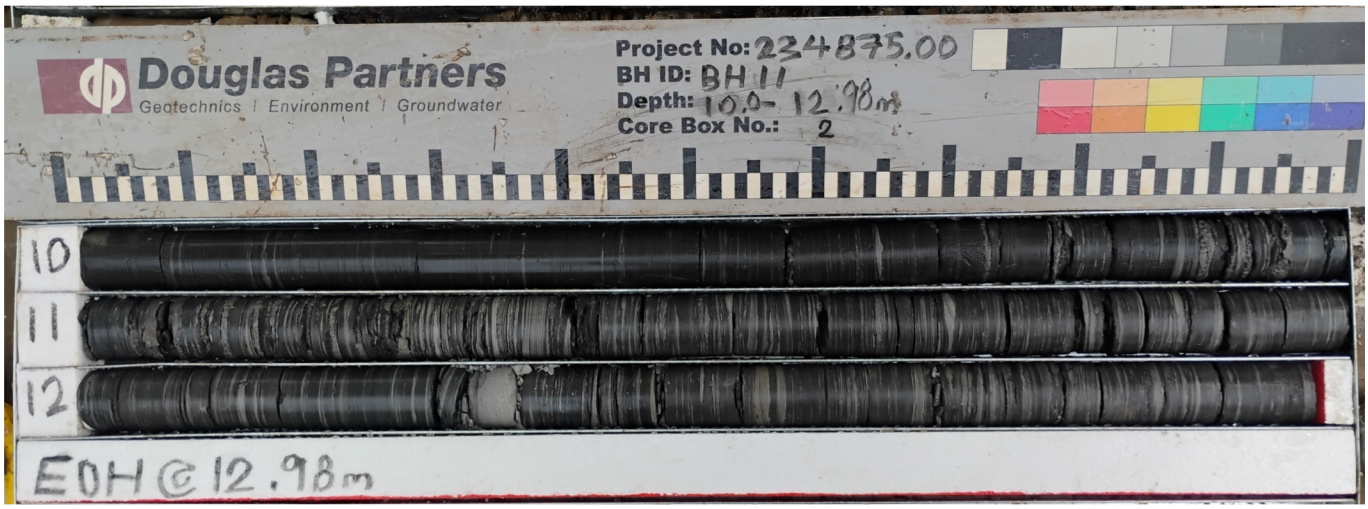
CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 33.0 AHD
COORDINATE: E:330134.1, N:6247760.5
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH11
PROJECT No: 234875.00
DATE: 09/04/25 - 10/04/25
SHEET: 1 of 1



5.90-10.00 m depth



10.00-12.98 m depth

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BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 33.7 AHD
COORDINATE: E:330153.3, N:6247775.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH12
PROJECT No: 234875.00
DATE: 10/04/25
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL ORIGIN(#)	SOIL CONSIS.(*) DENSITY.(*)	SOIL MOISTURE	ROCK WEATH.	ROCK DEPTH (m)	ROCK STRENGTH	ROCK RECOVERY (%)	ROCK RQD	ROCK FRACTURE SPACING (m)	ROCK DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS
10/04/25 NFGWOWA	33	0.06	CONCRETE PAVERS.			NA	NA													
		0.10	PAVERS.																	
		0.24	CONCRETE SLAB.		FILL	ND	NDF													
		0.50	FILL / GRAVEL; fine to coarse, igneous.																	
	33		FILL / Silty CLAY: dark brown; tile fragment.		FILL	VS	w<PL									ES	0.40–0.50	0.40	PID	<1ppm
		1														ES	0.80–1.00	0.80	PID	<1ppm
																SPT	1.00–1.30	1.00	SPT	0,1,1 N=2
																ES	1.30–1.50	1.30	PID	<1ppm
	32	1.60	FILL / Silty SAND: pale brown and grey; fine to medium.		FILL	(VL) - (L)	D											1.50		
		2														ES	1.80–2.30	1.80	PID	<1ppm
		2.30	CLAY (CI-CH): grey mottled red-brown; medium to high plasticity.															2		
	31				RS	St - VSt	w<PL											2.30		
		3														SPT	2.50–3.00	2.50	SPT	3,6,6 N=12
																ES		2.60	PID	<1ppm
																		3.00		
		4.00	CLAY (CI-CH): grey mottled red-brown; medium to high plasticity; with beds of ironstone and very low strength siltstone.															4.00		
	30																			
		5			XWM	H	w=PL									SPT	4.00–4.45	5	SPT	8,25,25 N=50
	29																	4.45		
		6																6		
	28	6.50	SILTSTONE: dark grey and orange-brown. Ashfield Shale.					HW	6.50	(VL)								7		
	27	7																		
	26																			

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: E.MILERS
METHOD: DT to 0.24m, then AD/T to 3m, then WB to 8.11m, then NMLC to 12.88m
CASING: HW to 3m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Generated with CORE-GS by Geroc - Combined Log

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 33.7 AHD
COORDINATE: E:330153.3, N:6247775.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH12
PROJECT No: 234875.00
DATE: 10/04/25
SHEET: 2 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL: ORIGIN(#)	SOIL: CONSIS.(*) DENSITY.(*)	SOIL: MOISTURE	ROCK: WEATH.	ROCK: DEPTH (m)	ROCK: STRENGTH	ROCK: RECOVERY (%)	ROCK: RQD	ROCK: FRACTURE SPACING (m)	ROCK: DEFECTS & REMARKS	SAMPLE: SAMPLE REMARKS	SAMPLE: TYPE	SAMPLE: INTERVAL	DEPTH (m)	TESTING: TEST TYPE	TESTING: RESULTS AND REMARKS
	25		[CONT] SILTSTONE: dark grey and orange-brown. Ashfield Shale.					HW	8.11	(VL) (VL) - (L)				8.11-8.25m: FG, SN Fe 140mm 8.30-8.36m: B x3, 0-10°, PR, SN Fe, SM 8.38m: JT, 30°, PR, SN Fe, RF 8.40-8.50m: B x3, 0-10°, PR, SN Fe, SM 8.58m: B, 0°, PR, CT Clay, SM 8.71-8.78m: B x3, 0-5°, PR, SN Fe, SM 8.98m: EW, 20 mm 9.05-9.25m: JT x3, 30-70°, PR, SN Fe, SM 9.33m: B, PR, INF Clay, SM 9.42m: B, PR, INF Clay, SM 9.55m: JT, 60°, PR, SN Fe, SM 9.73-9.76m: B x2, 10-15°, PR, CN, RF 10.26m: B, PR, CT Clay, RF 10.60-10.76m: JT x3, 60-80°, PR, CN, SM				8.11		
		8.40							8.40											
	24	9	SILTSTONE: dark grey; 1% pale grey, fine grained sandstone laminations. Ashfield Shale.					SW	9.25	M	100	51				C		9	PLT	PL(A)=0.40MPa
																			PLT	PL(A)=0.39MPa
																			PLT	PL(A)=0.32MPa
		10																10	PLT	PL(A)=0.35MPa
	23																		PLT	PL(A)=0.51MPa
		11						FR										11		
		11.50																11.10	PLT	PL(A)=0.51MPa
	22		SILTSTONE: dark grey; 1-5% pale grey, fine grained sandstone laminations. Ashfield Shale.																	
		12									100	100				C		12		
			From 12.30m: 30-40% pale grey, fine grained sandstone laminations						12.30	H				12.43m: B, 0-10°, UN, CN, SM					PLT	PL(A)=1.1MPa
	21									H									PLT	PL(A)=1.2MPa
		13	Borehole discontinued at 12.88m depth. Target Depth Reached.															12.88		
		14																		
		15																		

NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: E.MILERS
METHOD: DT to 0.24m, then AD/T to 3m, then WB to 8.11m, then NMLC to 12.88m
CASING: HW to 3m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

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CORE PHOTO LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 33.7 AHD
COORDINATE: E:330153.3, N:6247775.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH12
PROJECT No: 234875.00
DATE: 10/04/25
SHEET: 1 of 1



8.11-12.88 m depth

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BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 31.7 AHD
COORDINATE: E:330193.8, N:6247769.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH13
PROJECT No: 234875.00
DATE: 17/04/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[^]	DENSITY.[^]	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
17/04/25 NFGWOWA	31	0.02	FILL / SYNTHETIC GRASS; 15mm thick.		FILL					ES		0.10	PID	<1ppm
		0.07	FILL / CONCRETE SLAB; 50mm thick.									0.20		
		0.33	FILL / GRAVEL; medium to coarse, igneous.		FILL									
		0.48	FILL / CONCRETE; inferred retaining wall footing.											
			FILL / Silty Gravelly CLAY trace roots; apparent void present.		FILL									
	30	1	Borehole discontinued at 0.90m depth. Practical refusal on concrete rubble in fill.											
	29	2												
	28	3												
	27	4												
	26	5												
	25	6												
	24	7												

NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
METHOD: DT to 0.07m, then AD/T to 0.33m, then DT to 0.48m
REMARKS:

OPERATOR: Groundtest (J.Johnson)

LOGGED: E.MILERS
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 31.3 AHD
COORDINATE: E:330220.6, N:6247752.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH14
PROJECT No: 234875.00
DATE: 14/04/25 - 15/04/25
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL ORIGIN(#)	SOIL CONSIS.(†) DENSITY.(†)	SOIL MOISTURE	ROCK WEATH.	ROCK DEPTH (m)	ROCK STRENGTH	ROCK RECOVERY (%)	ROCK RQD	ROCK FRACTURE SPACING (m)	ROCK DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS
14/04/25 NFGWOWA	31	0.06	ASPHALTIC CONCRETE.			NA	NA													
			FILL / Silty CLAY with sand trace gravel: pale grey-brown; fine sand; fine, igneous gravel; rootlets.		FILL	ND										ES	0.10–0.20	PID	<1ppm
		0.70														ES	0.40–0.50	PID	<1ppm
		1	CLAY trace silt: red-orange-brown mottled grey; medium to high plasticity.													ES	0.80–1.00	PID	<1ppm
	30					F to St	w<PL									SPT	1.00–1.30	SPT	2,3,4 N=7
																ES	1.30–1.50	PID	<1ppm
		2			RS														
	29															SPT	2.50–2.95	SPT	8,9,24 N=33
		3				VSt to H													
	28																		
		4.00	CLAY (CI-CH): grey mottled red-brown; medium to high plasticity; with bands of ironstone and very low strength siltstone.													SPT	4.00–4.45	SPT	20,24,25 N=49
	27																		
		5			XWM	H	w=PL												
	26															SPT	5.50–5.77	SPT	10,25/120
		6																	
	25																		
		7.00	CORE LOSS (680mm).		NA	ND	ND		7.00		74	0				SPT	7.00–7.11	SPT	25/110
	24	7.68	SILTSTONE: [description over].					HW	7.68	SOIL/VL			SOIL/VL	7.68-7.85m: FG, 170mm 7.85-7.91m: EW,					
									7.95										PLT PL(A)=0.14MPa

NOTES: (#)Soil origin is "probable" unless otherwise stated. (†)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: E.MILERS
METHOD: AD/T to 2.5m, then WB to 7m, then NMLC to 12.73m
CASING: HW to 2.5m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 31.3 AHD
COORDINATE: E:330220.6, N:6247752.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH14
PROJECT No: 234875.00
DATE: 14/04/25 - 15/04/25
SHEET: 2 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL: ORIGIN(#)	SOIL: CONSIS.(*) DENSITY.(*)	SOIL: MOISTURE	ROCK: WEATH.	ROCK: DEPTH (m)	ROCK: STRENGTH	ROCK: RECOVERY (%)	ROCK: RQD	ROCK: FRACTURE SPACING (m)	ROCK: DEFECTS & REMARKS	SAMPLE: SAMPLE REMARKS	SAMPLE: TYPE	SAMPLE: INTERVAL	DEPTH (m)	TESTING: TEST TYPE	TESTING: RESULTS AND REMARKS
	23	8.00	SILTSTONE: dark grey and orange-brown; 5-20% extremely weathered seams. Ashfield Shale.					HW		VL - L	74	0		Clay 60mm 8.08-8.38m: JT x6, 10-70°, PR, CT Clay 8.38m: EW, Clay 20mm 8.47m: JT, 60°, PR, SN Fe, SM 8.53-8.67m: B x4, 0-10°, PR, CT Clay, RF 8.80-9.24m: JT x9, 30-60°, PR, SN Fe 9.26-9.30m: B x3, 0-10°, PR, SN Fe, SM 9.35-9.50m: JT x2, 60-80°, PR, SN Fe, (fragmented) 9.50-9.55m: DS, 50mm 9.61-9.75m: JT x3, 40-80°, PR, SN Fe, SM 9.86m: EW, Clay 20mm 10.11m: JT, 20°, UN, VNR Clay, SM 10.33-10.55m: JT x3, 30-50°, PR, CN, SM 10.90m: JT, 10°, PR, CN, SM 12.16m: B, 0°, PR, VNR Clay, SM 12.35m: B, 0°, PR, VNR Clay, SM		C			PLT	PL(A)=0.05MPa
	22	9																9			
		9.75	SILTSTONE: dark grey. Ashfield Shale.						9.75	L - M								9.60			
	21	10							10.00									10			
	20	11	From 11.24m: 1-5% pale grey, fine grained sandstone laminations					FR		M	100	78				C		11			
	19	12																12			
		12.10	LAMINITE: dark grey shale (60%); interlaminited with pale grey, fine grained, sandstone (40%).						12.30	H								12.73			
		13	Borehole discontinued at 12.73m depth. Target Depth Reached.																		
		14																			
		15																			

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
METHOD: AD/T to 2.5m, then WB to 7m, then NMLC to 12.73m
REMARKS:

OPERATOR: Groundtest (J.Johnson)

LOGGED: E.MILERS
CASING: HW to 2.5m

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Combined Log

CORE PHOTO LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 31.3 AHD
COORDINATE: E:330220.6, N:6247752.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH14
PROJECT No: 234875.00
DATE: 14/04/25 - 15/04/25
SHEET: 1 of 1



7.00-12.73 m depth

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BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 28.9 AHD
COORDINATE: E:330206.3, N:6247718.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH15
PROJECT No: 234875.00
DATE: 15/04/25 - 16/04/25
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL ORIGIN(#)	SOIL CONSIS.(^)/DENSITY.(^)	SOIL MOISTURE	ROCK WEATH.	ROCK DEPTH (m)	ROCK STRENGTH	ROCK RECOVERY (%)	ROCK RQD	ROCK FRACTURE SPACING (m)	ROCK DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS	BACKFILL	WELL PIPE
15/04/25 NFGWOWA	28	0.06	ASPHALTIC CONCRETE.			NA	NA											0.10			Flush cover	Gravel
			FILL / Sandy CLAY trace silt trace gravel: dark grey-brown; fine sand; fine, igneous gravel.		FILL	ND										ES		0.20	PID	<1ppm		
															*	ES		0.40	PID	<1ppm		
		0.70																0.50				
	27	1	CLAY (CI-CH) trace silt: grey mottled red-brown; medium to high plasticity.		RS	F to St												0.70				
																		0.80	PID	<1ppm		
																		1.00				
																B						
																ES			SPT	2,3,5 N=8		
																SPT		1.45				
		2																2				
		2.50	CLAY (CI-CH): grey mottled red-brown; medium to high plasticity; with ironstone gravels.															2.50			Backfill	
	26	3			RS		w<PL									SPT			SPT	7,11,21 N=32		
																		2.95				
	25	4				H												4.00				
																SPT			SPT	8,13,21 N=34		
																		4.45				
	24	5																5				
		5.50	CLAY (CI-CH): dark grey and orange-brown; medium to high plasticity; with very low strength siltstone beds, some ironstaining.															5.50			Bentonite	
	23	6			XWM											SPT			SPT	18,23,25/130		
																		5.93				
	22	7																7.00				
																SPT			SPT	11,25/140		
	21																	7.29				

NOTES: (#) Soil origin is "probable" unless otherwise stated. (^) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
METHOD: AD/T to 2.5m, then WB to 8m, then NMLC to 12.81m
REMARKS: * BD6/20250415 taken from 0.4-0.5m

OPERATOR: Groundtest (J.Johnson)

LOGGED: E.MILERS
CASING: HW to 2.6m

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Combined Log

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 28.9 AHD
COORDINATE: E:330206.3, N:6247718.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH15
PROJECT No: 234875.00
DATE: 15/04/25 - 16/04/25
SHEET: 2 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL ORIGIN(#)	SOIL CONSIS.(*) DENSITY.(*)	SOIL MOISTURE	ROCK WEATH.	ROCK DEPTH (m)	ROCK STRENGTH	ROCK RECOVERY (%)	ROCK RQD	ROCK FRACTURE SPACING (m)	ROCK DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS	BACKFILL	WELL PIPE
	20	8.00	LAMINITE: dark grey shale (45%); interlaminited with fine grained, pale grey sandstone (55%). Ashfield Shale.					XW / HW	8.00	VL - L				8.02m: JT, 30°, PR, SN Fe 8.05-8.15m: DS, Clay,100mm 8.20m: JT, 40°, PR, SN Fe 8.23-8.40m: B x5, 0°, PR, CT Clay 8.45-8.53m: DS, 80mm 8.56-8.75m: B x9, 0-10°, PR, CT Clay 8.75-8.85m: DS, 100mm 8.88-8.95m: DS, 70mm 9.02m: EW, Clay 30mm 9.06-9.42m: B x7, 0-10°, PR, CT Clay 1mm, SM 9.92m: B, 5°, PR, VNR Clay, SM 10.48-10.56m: DS, 60mm 11.64m: JT, 40-90°, CU, CN, SM, (11.59-11.75m)							
	19	9	From 8.00m-12.81m: dark grey and brown. Ashfield Shale						9.06	M - H	100	50				C		9					
	18	10							10.56									10	PLT	PL(A)=0.04MPa PL(A)=0.02MPa PL(A)=0.15MPa PL(A)=0.46MPa PL(A)=0.72MPa PL(A)=0.87MPa PL(A)=1.9MPa PL(A)=0.72MPa PL(A)=1.0MPa PL(A)=0.23MPa PL(A)=1.4MPa PL(A)=1.2MPa			
	17	11						FR		H								11					
		12									100	100				C		11.10	PLT	PL(A)=2.8MPa PL(A)=2.4MPa PL(A)=3.0MPa			
		13	Borehole discontinued at 12.81m depth. Target Depth Reached.															12	PLT	PL(A)=2.0MPa			
		14																12.81					
		15																					

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
METHOD: AD/T to 2.5m, then WB to 8m, then NMLC to 12.81m
REMARKS: * BD6/20250415 taken from 0.4-0.5m

OPERATOR: Groundtest (J.Johnson)

LOGGED: E.MILERS
CASING: HW to 2.6m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

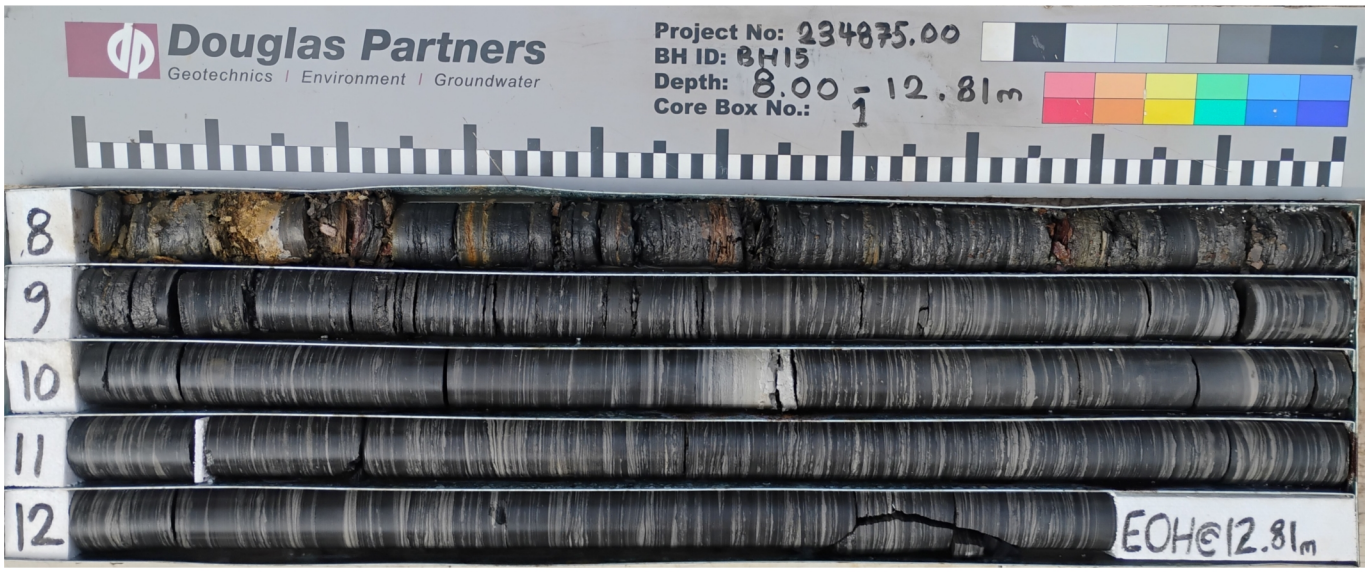
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CORE PHOTO LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 28.9 AHD
COORDINATE: E:330206.3, N:6247718.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH15
PROJECT No: 234875.00
DATE: 15/04/25 - 16/04/25
SHEET: 1 of 1



8.00-12.81 m depth

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BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 29.6 AHD
COORDINATE: E:330175.3, N:6247737.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH16
PROJECT No: 234875.00
DATE: 16/04/25
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL ORIGIN(#)	SOIL CONSIS.(*) DENSITY.(*)	SOIL MOISTURE	ROCK WEATH.	ROCK DEPTH (m)	ROCK STRENGTH	ROCK RECOVERY (%)	ROCK RQD	ROCK FRACTURE SPACING (m)	ROCK DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS	BACKFILL	WELL PIPE
16/04/25 NFGWOWA	29	0.08	ASPHALTIC PAVERS.		FILL	NA	NA									ES	0.10–0.20	0.10	PID	<1ppm	Bentonite; Upstanding cover	
		0.25	FILL / Gravelly SAND with clay; fine; fine to coarse gravel.		FILL	ND	M											0.20				
		0.55	FILL / SAND with clay trace gravel: pale brown; fine to medium; fine gravel.		FILL											ES	0.60–0.80	0.60	PID	<1ppm		
		0.95	FILL / Sandy CLAY trace gravel: brown; fine - medium sand; fine - coarse gravel.													ES	0.80–0.95	0.80	PID	<1ppm		
	28	1.30	CLAY (CI-CH) trace silt: red-brown mottled grey; medium to high plasticity.		RS	F	w<PL									SPT	1.30–1.45	0.95	SPT	3,3,2 N=5		
		1.50														ES	1.45–1.50	1.30	PID	<1ppm		
		2.00														B	1.50–2.00	1.50				
	27	2.50				St										SPT	2.50–2.95	2.00				
		2.95																2.50	SPT PP	2,5,5 N=10 240-300kPa	Sand	
	26	4.00	CLAY (CI-CH): red-brown mottled grey; medium to high plasticity; ironstained, with bands of very low strength siltstone.		XWM	H										SPT	4.00–4.45	2.95				
		4.45																4.00	SPT PP	8,16,22 N=38 450-600kPa	Bentonite	
	25	5																5				
	24	6																6			Backfill	
	23	7														SPT	7.00–7.09	7.00	SPT PP	25/88 600kPa >		
	22	7.50	SILTSTONE: dark grey and grey. Ashfield Shale.					HW	7.50	(VL)								7.09				

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: E.MILERS
METHOD: DT to 0.08m, then AD/T to 2.5m, then WB to 8m, then NMLC to 12.84m
CASING: HW to 2.5m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

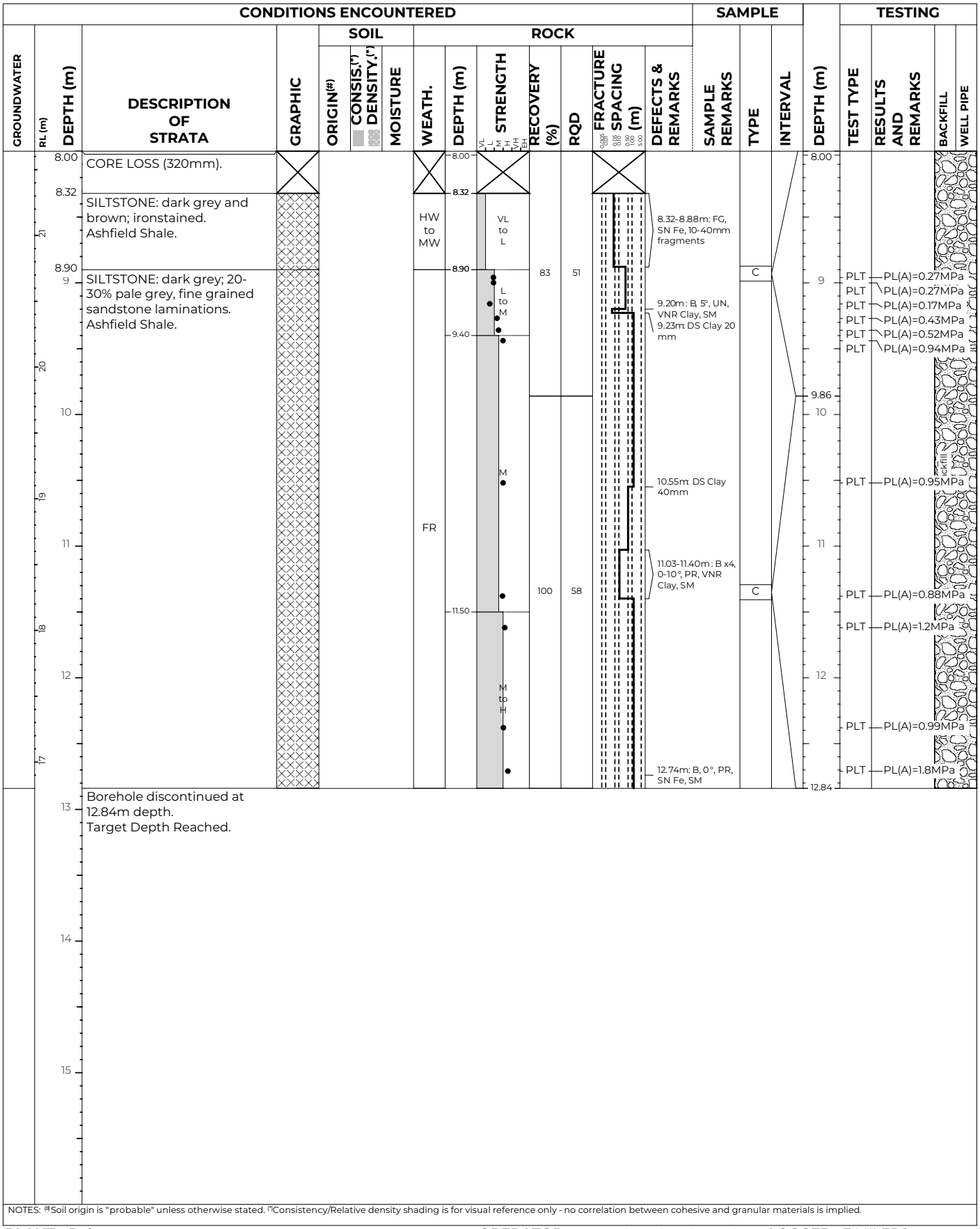
Douglas PARTNERS

BOREHOLE LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 29.6 AHD
COORDINATE: E:330175.3, N:6247737.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH16
PROJECT No: 234875.00
DATE: 16/04/25
SHEET: 2 of 2



NOTES: (#)Soil origin is "probable" unless otherwise stated. (†)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Bobcat
OPERATOR: Groundtest (J.Johnson)
LOGGED: E.MILERS
METHOD: DT to 0.08m, then AD/T to 2.5m, then WB to 8m, then NMLC to 12.84m
CASING: HW to 2.5m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Combined Log

CORE PHOTO LOG

CLIENT: Newington College
PROJECT: Newington Masterplan
LOCATION: 244 Stanmore Road, Stanmore, Sydney, NSW 2048

SURFACE LEVEL: 29.6 AHD
COORDINATE: E:330175.3, N:6247737.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH16
PROJECT No: 234875.00
DATE: 16/04/25
SHEET: 1 of 1



8.00-12.84 m depth

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Terminology, Symbols and Abbreviations

November 2023

Introduction to Terminology, Symbols and Abbreviations

Douglas Partners' reports, investigation logs, and other correspondence may use terminology which has quantitative or qualitative connotations. To remove ambiguity or uncertainty surrounding the use of such terms, the following sets of notes pages may be attached Douglas Partners' reports, depending on the work performed and conditions encountered:

- Soil Descriptions;
- Rock Descriptions; and
- Sampling, insitu testing, and drilling methodologies

In addition to these pages, the following notes generally apply to most documents.

Abbreviation Codes

Site conditions may also be presented in a number of different formats, such as investigation logs, field mapping, or as a written summary. In some of these formats textual or symbolic terminology may be presented using textual abbreviation codes or graphic symbols, and, where commonly used, these are listed alongside the terminology definition. For ease of identification in these note pages, textual codes are presented in these notes in the following style XW. Code usage conforms with the following guidelines:

- Textual codes are case insensitive, although herein they are generally presented in upper case; and
- Textual codes are contextual (i.e. the same or similar combinations of characters may be used in different contexts with different meanings (for example `PL` is used for plastic limit in the context of soil moisture condition, as well as in `PL(A)` for point load test result in the testing results column)).

Data Integrity Codes

Subsurface investigation data recorded by Douglas Partners is generally managed in a highly structured database environment, where records "span" between a top and bottom depth interval. Depth interval "gaps" between records are considered to introduce ambiguity, and, where appropriate, our practice guidelines may require contiguous data sets. Recording meaningful data is not always appropriate (for example assigning a "strength" to a concrete pavement) and the following codes may be used to maintain contiguity in such circumstances.

Term	Description	Abbreviation Code
Core loss	No core recovery	KL
Unknown	Information was not available to allow classification of the property. For example, when auguring in loose, saturated sand auger cuttings may not be returned.	UK
No data	Information required to allow classification of the property was not available. For example if drilling is commenced from the base of a hole predrilled by others	ND
Not Applicable	Derivation of the properties not appropriate or beyond the scope of the investigation. For example providing a description of the strength of a concrete pavement	NA

Graphic Symbols

Douglas Partners' logs contain a "graphic" column which provides a pictorial representation of the basic composition of the material. The symbols used are directly representing the material name stated in the adjacent "Description of Strata" column, and as such no specific graphic symbology legend has been provided in these notes.

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Soil Descriptions

Terminology
Symbols
Abbreviations

March 2024

Introduction

All materials which are not considered to be "in-situ rock" are described in general accordance with the soil description model of AS 1726-2017 Part 6.1.3, and can be broken down into the following description structure:



The "classification" comprises a two character "group symbol" providing a general summary of dominant soil characteristics. The "name" summarises the particle sizes within the soil which most influence its behaviour. The detailed description presents more information about composition, condition, structure, and origin of the soil.

Classification, naming and description of soils require the relative proportion of particles of different sizes within the whole soil mixture to be considered.

Particle size designation and Behaviour Model

Solid particles within a soil are differentiated on the basis of size.

The engineering behaviour properties of a soil can subsequently be modelled to be either "fine grained" (also known as "cohesive" behaviour) or "coarse grained" ("non cohesive" behaviour), depending on the relative proportion of fine or coarse fractions in the soil mixture.

Particle Size Designation	Particle Size (mm)	Behaviour Model	
		Behaviour	Approximate Dry Mass
Boulder	>200	Excluded from particle behaviour model as "oversize"	
Cobble	63 - 200		
Gravel[1]	2.36 - 63	Coarse	>65%
Sand[1]	0.075 - 2.36		
Silt	0.002 - 0.075	Fine	>35%
Clay	<0.002		

[1] – refer grain size subdivision descriptions below

The behaviour model boundaries defined above are not precise, and the material behaviour should be assumed from the name given to the material (which considers the particle fraction which dominates the behaviour, refer "component proportions" below), rather than strict observance of the proportions of particle sizes. For example, if a material is named a "Sandy CLAY", this is indicative that the material exhibits fine grained behaviour, even if the dry mass of coarse grained material may exceed 65%.

Component proportions

The relative proportion of the dry mass of each particle size fraction is assessed to be a "primary", "secondary", or "minor" component of the soil mixture, depending on its influence over the soil behaviour.

Component Proportion Designation	Definition[1]	Relative Proportion	
		In Fine Grained Soil	In Coarse Grained Soil
Primary	The component (particle size designation, refer above) which dominates the engineering behaviour of the soil	The clay/silt component with the greater proportion	The sand/gravel component with the greater proportion
Secondary	Any component which is not the primary, but is significant to the engineering properties of the soil	Any component with greater than 30% proportion	Any granular component with greater than 30%; or Any fine component with greater than 12%
Minor[2]	Present in the soil, but not significant to its engineering properties	All other components	All other components

[1] As defined in AS1726-2017 6.1.4.4

[2] In the detailed material description, minor components are split into two further sub-categories. Refer "identification of minor components" below.

Composite Materials

In certain situations, a lithology description may describe more than one material, for example, collectively describing a layer of interbedded sand and clay. In such a scenario, the two materials would be described independently, with the names preceded or followed by a statement describing the arrangement by which the materials co-exist. For example, "INTERBEDDED Silty CLAY AND SAND".

Soil Descriptions

Classification

The soil classification comprises a two character group symbol. The first character identifies the primary component. The second character identifies either the grading or presence of fines in a coarse grained soil, or the plasticity in a fine grained soil. Refer AS1726-2017 6.1.6 for further clarification.

Soil Name

For most soils, the name is derived with the primary component included as the noun (in upper case), preceded by any secondary components stated in an adjective form. In this way, the soil name also describes the general composition and indicates the dominant behaviour of the material.

Component [1]	Prominence in Soil Name
Primary	Noun (eg "CLAY")
Secondary	Adjective modifier (eg "Sandy")
Minor	No influence

[1] – for determination of component proportions, refer component proportions on previous page

For materials which cannot be disaggregated, or which are not comprised of rock or mineral fragments, the names "ORGANIC MATTER" or "ARTIFICIAL MATERIAL" may be used, in accordance with AS1726-2017 Table 14.

Commercial or colloquial names are not used for the soil name where a component derived name is possible (for example "Gravelly SAND" rather than "CRACKER DUST").

Materials of "fill" or "topsoil" origin are generally assigned a name derived from the primary/secondary component (where appropriate). In log descriptions this is preceded by uppercase "FILL" or "TOPSOIL". Origin uncertainty is indicated in the description by the characters (?), with the degree of uncertainty described (using the terms "probably" or "possibly" in the origin column, or at the end of the description).

Identification of minor components

Minor components are identified in the soil description immediately following the soil name. The minor component fraction is usually preceded with a term indicating the relative proportion of the component.

Minor Component Proportion Term	Relative Proportion	
	In Fine Grained Soil	In Coarse Grained Soil
With	All fractions: 15-30%	Clay/silt: 5-12% sand/gravel: 15-30%
Trace	All fractions: 0-15%	Clay/silt: 0-5% sand/gravel: 0-15%

The terms "with" and "trace" generally apply only to gravel or fine particle fractions. Where cobbles/boulders are encountered in minor proportions (generally less than about 12%) the term "occasional" may be used. This term describes the sporadic distribution of the material within the confines of the investigation excavation only, and there may be considerable variation in proportion over a wider area which is difficult to factually characterise due to the relative size of the particles and the investigation methods.

Soil Composition

Plasticity

Descriptive Term	Laboratory liquid limit range	
	Silt	Clay
Non-plastic materials	Not applicable	Not applicable
Low plasticity	≤50	≤35
Medium plasticity	Not applicable	>35 and ≤50
High plasticity	>50	>50

Note, Plasticity descriptions generally describe the plasticity behaviour of the whole of the fine grained soil, not individual fine grained fractions.

Grain Size

Type		Particle size (mm)
Gravel	Coarse	19 - 63
	Medium	6.7 - 19
	Fine	2.36 – 6.7
Sand	Coarse	0.6 - 2.36
	Medium	0.21 - 0.6
	Fine	0.075 - 0.21

Grading

Grading Term	Particle size (mm)
Well	A good representation of all particle sizes
Poorly	An excess or deficiency of particular sizes within the specified range
Uniformly	Essentially of one size
Gap	A deficiency of a particular size or size range within the total range

Note, AS1726-2017 provides terminology for additional attributes not listed here.

Soil Condition

Moisture

The moisture condition of soils is assessed relative to the plastic limit for fine grained soils, while for coarse grained soils it is assessed based on the appearance and feel of the material. The moisture condition of a material is considered to be independent of stratigraphy (although commonly these are related), and this data is presented in its own column on logs.

Applicability	Term	Tactile Assessment	Abbreviation code
Fine	Dry of plastic limit	Hard and friable or powdery	w<PL
	Near plastic limit	Can be moulded	w=PL
	Wet of plastic limit	Water residue remains on hands when handling	w>PL
	Near liquid limit	"oozes" when agitated	w=LL
	Wet of liquid limit	"oozes"	w>LL
Coarse	Dry	Non-cohesive and free running	D
	Moist	Feels cool, darkened in colour, particles may stick together	M
	Wet	Feels cool, darkened in colour, particles may stick together, free water forms when handling	W

The abbreviation code NDF, meaning "not-assessable due to drilling fluid use" may also be used.

Note, observations relating to free ground water or drilling fluids are provided independent of soil moisture condition.

Consistency/Density/Compaction/Cementation/Extremely Weathered Material

These concepts give an indication of how the material may respond to applied forces (when considered in conjunction with other attributes of the soil). This behaviour can vary independent of the composition of the material, and on logs these are described in an independent column and are generally mutually exclusive (i.e it is inappropriate to describe both consistency and compaction at the same time). The method by which the behaviour is described depends on the behaviour model and other characteristics of the soil as follows:

- In fine grained soils, the "consistency" describes the ease with which the soil can be remoulded, and is generally correlated against the materials undrained shear strength;
- In granular materials, the relative density describes how tightly packed the particles are, and is generally correlated against the density index;
- In anthropogenically modified materials, the compaction of the material is described qualitatively;
- In cemented soils (both natural and anthropogenic), the cemented "strength" is described qualitatively, relative to the difficulty with which the material is disaggregated; and
- In soils of extremely weathered material origin, the engineering behaviour may be governed by relic rock features, and expected behaviour needs to be assessed based the overall material description.

Quantitative engineering performance of these materials may be determined by laboratory testing or estimated by correlated field tests (for example penetration or shear vane testing). In some cases, performance may be assessed by tactile or other subjective methods, in which case investigation logs will show the estimated value enclosed in round brackets, for example (VS).

Consistency (fine grained soils)

Consistency Term	Tactile Assessment	Undrained Shear Strength (kPa)	Abbreviation Code
Very soft	Extrudes between fingers when squeezed	<12	VS
Soft	Mouldable with light finger pressure	>12 - ≤25	S
Firm	Mouldable with strong finger pressure	>25 - ≤50	F
Stiff	Cannot be moulded by fingers	>50 - ≤100	St
Very stiff	Indented by thumbnail	>100 - ≤200	VSt
Hard	Indented by thumbnail with difficulty	>200	H
Friable	Easily crumbled or broken into small pieces by hand	-	Fr

Relative Density (coarse grained soils)

Relative Density Term	Density Index	Abbreviation Code
Very loose	<15	VL
Loose	>15 - ≤35	L
Medium dense	>35 - ≤65	MD
Dense	>65 - ≤85	D
Very dense	>85	VD

Note, tactile assessment of relative density is difficult, and generally requires penetration testing, hence a tactile assessment guide is not provided.

Compaction (anthropogenically modified soil)

Compaction Term	Abbreviation Code
Well compacted	WC
Poorly compacted	PC
Moderately compacted	MC
Variably compacted	VC

Cementation (natural and anthropogenic)

Cementation Term	Abbreviation Code
Moderately cemented	MOD
Weakly cemented	WEK

Extremely Weathered Material

AS1726-2017 considers weathered material to be soil if the unconfined compressive strength is less than 0.6 MPa (i.e. less than very low strength rock). These materials may be identified as "extremely weathered material" in reports and by the abbreviation code XWM on log sheets. This identification is not correlated to any specific qualitative or quantitative behaviour, and the engineering properties of this material must therefore be assessed according to engineering principles with reference to any relic rock structure, fabric, or texture described in the description.

Soil Origin

Term	Description	Abbreviation Code
Residual	Derived from in-situ weathering of the underlying rock	RS
Extremely weathered material	Formed from in-situ weathering of geological formations. Has strength of less than 'very low' as per as1726 but retains the structure or fabric of the parent rock.	XWM
Alluvial	Deposited by streams and rivers	ALV
Fluvial	Deposited by channel fill and overbank (natural levee, crevasse splay or flood basin)	FLV
Estuarine	Deposited in coastal estuaries	EST
Marine	Deposited in a marine environment	MAR
Lacustrine	Deposited in freshwater lakes	LAC
Aeolian	Carried and deposited by wind	AEO
Colluvial	Soil and rock debris transported down slopes by gravity	COL
Slopewash	Thin layers of soil and rock debris gradually and slowly deposited by gravity and possibly water	SW
Topsoil	Mantle of surface soil, often with high levels of organic material	TOP
Fill	Any material which has been moved by man	FILL
Littoral	Deposited on the lake or seashore	LIT
Unidentifiable	Not able to be identified	UID

Cobbles and Boulders

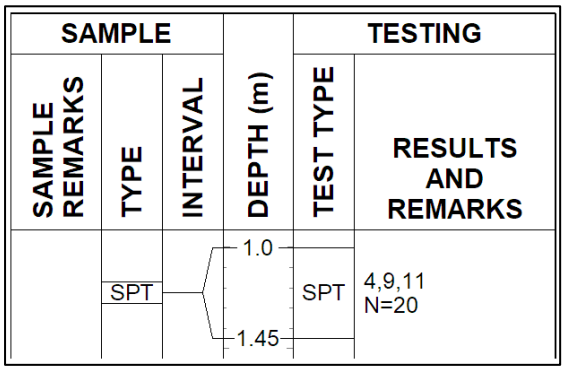
The presence of particles considered to be "oversize" may be described using one of the following strategies:

- Oversize encountered in a minor proportion (when considered relative to the wider area) are noted in the soil description; or
- Where a significant proportion of oversize is encountered, the cobbles/boulders are described independent of the soil description, in a similar manner to composite soils (described above) but qualified with "MIXTURE OF".

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Sampling and Testing

A record of samples retained, and field testing performed is usually shown on a Douglas Partners' log with samples appearing to the left of a depth scale, and selected field and laboratory testing (including results, where relevant) appearing to the right of the scale, as illustrated below:



Sampling

The type or intended purpose for which a sample was taken is indicated by the following abbreviation codes.

Sample Type	Code
Auger sample	A
Acid Sulfate sample	ASS
Bulk sample	B
Core sample	C
Disturbed sample	D
Environmental sample	ES
Driven Tube sample	DT
Gas sample	G
Piston sample	P
Sample from SPT test	SPT
Undisturbed tube sample	U[1]
Water sample	W
Material Sample	MT
Core sample for unconfined compressive strength testing	UCS

[1] – numeric suffixes indicate tube diameter/width in mm

The above codes only indicate that a sample was retained, and not that testing was scheduled or performed.

Field and Laboratory Testing

A record that field and laboratory testing was performed is indicated by the following abbreviation codes.

Test Type	Code
Pocket penetrometer (kPa)	PP
Photo ionisation detector (ppm)	PID
Standard Penetration Test x/y =*x* blows for *y* mm penetration HB = hammer bouncing HW = fell under weight of hammer	SPT
Shear vane (kPa)	V
Unconfined compressive strength, (MPa)	UCS
Point load test, (MPa), axial (A), diametric (D), irregular (I)	PLT(_)
Dynamic cone penetrometer, followed by blow count penetration increment in mm (cone tip, generally in accordance with AS1289.6.3.2)	DCP9/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150
Dynamic probe super heavy, followed by blow count penetration increment in mm	DPSH/100

Groundwater Observations

	water seepage/inflow
	water seepage/outflow
	standing or observed water level
NFGWO	no free groundwater observed
OBS	observations obscured by drilling fluids

Drilling or Excavation Methods/Tools

The drilling/excavation methods used to perform the investigation may be shown either in a dedicated column down the left-hand edge of the log, or stated in the log footer. In some circumstances abbreviation codes may be used.

Method	Abbreviation Code
Direct Push	DP
Solid flight auger. Suffixes: /T = tungsten carbide tip, /V = v-shaped tip	AD[1]
Air Track	AT
Diatube	DT[1]
Hand auger	HA[1]
Hand tools (unspecified)	HAND
Existing exposure	X
Hollow flight auger	HSA[1]
HQ coring	HQ3
HMLC series coring	HMLC
NMLC series coring	NMLC
NQ coring	NQ3
PQ coring	PQ3
Predrilled	PD
Push tube	PT[1]
Ripping tyne/ripper	R
Rock roller	RR[1]
Rock breaker/hydraulic hammer	EH
Sonic drilling	SON[1]
Mud/blade bucket	MB[1]
Toothed bucket	TB[1]
Vibrocore	VC[1]
Vacuum excavation	VE
Wash bore (unspecified bit type)	WB[1]

[1] – numeric suffixes indicate tool diameter/width in mm

Appendix D

Site Assessment Criteria

1. Introduction

1.1 Guidelines

The following key guidelines were consulted for deriving the site assessment criteria (SAC):

- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013).
- CRC CARE *Health screening levels for petroleum hydrocarbons in soil and groundwater* (CRC CARE, 2011).
- ANZG *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG, 2018).
- ANZECC *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC, 2000).
- HEPA PFAS National Environmental Management Plan (NEMP) (HEPA, 2025).

1.2 General

The SAC applied in the current investigation are informed by the CSM which identified human and environmental receptors to potential contamination at the site. Analytical results are assessed (as a Tier 1 assessment) against the SAC comprising primarily the investigation and screening levels of Schedule B1 of NEPC (2013).

Given the Newington College Stanmore Campus have students from year 7 to 12, the following inputs are relevant to the selection and/or derivation of the SAC:

- Land use: School buildings and associated sports complex:
    - Corresponding to land use category 'A', residential with garden / accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry)), also includes children's day care centres, preschools and primary schools. This has been adopted herein as a screening level given Newington College also has a nearby primary school, and students from the primary school may access the secondary campus. Where an exceedance of this threshold is identified, further consideration of the risk will be undertaken.
    - Corresponding to land use category 'C', public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate. This category may be adopted in the event of category 'A' exceedances, subject to assessment of exposure risk.
- Soil type: sand / clay.

2. Soils

2.1 Health investigation and screening levels

The generic health investigation levels (HIL) and health screening levels (HSL) are considered to be appropriate for the assessment of human health risk via all relevant pathways of exposure associated with contamination at the site. The adopted soil HIL and HSL for the contaminants of concern are in Table 1 and Table 2.

Table 1: Health investigation levels (mg/kg)

Contaminant	HIL-A	HIL-C
Metals		
Arsenic	100	300
Cadmium	20	90
Chromium (VI)	100	300
Copper	6000	17 000
Lead	300	600
Mercury (inorganic)	40	80
Nickel	400	1200
Zinc	7400	30 000
PAH		
B(a)P TEQ	3	3
Total PAH	300	300
Phenols		
Phenol	3000	40 000
Pentachlorophenol	100	120
OCP		
DDT+DDE+DDD	240	400
Aldrin and dieldrin	6	10
Chlordane	50	70
Endosulfan	270	340
Endrin	10	20
Heptachlor	6	10
HCB	10	10
Methoxychlor	300	400

Contaminant	HIL-A	HIL-C
OPP		
Chlorpyrifos	160	250
PCB		
PCB	1	1

Table 2: Health screening levels (mg/kg)

Contaminant	HSL-A&B	HSL-C
SAND	**0 m to <1 m**	**0 m to <1 m**
Benzene	0.5	NL
Toluene	160	NL
Ethylbenzene	55	NL
Xylenes	40	NL
Naphthalene	3	NL
TRH F1	45	NL
TRH F2	110	NL
CLAY	**0 m to <1 m**	**0 m to <1 m**
Benzene	0.7	NL
Toluene	480	NL
Ethylbenzene	NL	NL
Xylenes	110	NL
Naphthalene	5	NL
TRH F1	50	NL
TRH F2	280	NL

Notes: TRH F1 is TRH C_6-C_{10} minus BTEX
TRH F2 is TRH >C_{10}-C_{16} minus naphthalene
The soil saturation concentration (Csat) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds Csat, a soil vapour source concentration for a petroleum mixture could not exceed a level that would results in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'

Table 3: Health screening levels for direct contact (mg/kg)

Contaminant	DC HSL-A	DC HSL-C
Benzene	100	120
Toluene	14 000	18 000
Ethylbenzene	4500	5300
Xylenes	12 000	15 000

Contaminant	DC HSL-A	DC HSL-C
Naphthalene	1400	1900
TRH F1	4400	5100
TRH F2	3300	3800
TRH F3	4500	5300
TRH F4	6300	7400

Notes: TRH F1 is TRH C_6-C_{10} minus BTEX
TRH F2 is TRH >C_{10}-C_{16} minus naphthalene

2.2 Health investigation levels for per- and poly-fluoroalkyl substances in soil

The laboratory analytical results for per- and poly-fluoroalkyl substances (PFAS) in soil have been assessed against HIL published in HEPA (2025). The HIL represent a nationally agreed suite that should be used to inform site investigations. The HIL are intentionally conservative, and an exceedance of these criteria may not constitute a risk if other exposure pathways are controlled. An exceedance of the HIL should trigger further investigations, such as a site-specific risk assessment. At the time of this investigation, screening values were available only for perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and perfluorohexane sulfonate (PFHxS).

The HIL derived from Table 5 of HEPA (2025) are in Table 4.

Table 4: Health investigation levels (mg/kg)

Contaminant	HIL-A	HIL-C
PFOS and PFHxS *	0.003	1
PFOA	0.06	10

Notes: * Includes PFOS only, PFHxS only and the sum of the two.

2.3 Asbestos in soil

The HSL for asbestos in soil are based on likely exposure levels for different scenarios published in NEPC (2013) for the following forms of asbestos:

- Bonded asbestos containing material (ACM); and
- Fibrous asbestos and asbestos fines (FA and AF).

The HSL are in Table 5.

Table 5: Health screening levels for asbestos

Form of asbestos	HSL-A	HSL-C
ACM	0.01%	0.02%
FA and AF	0.001%	0.001%
FA and AF and ACM	No visible asbestos for surface soil *	No visible asbestos for surface soil *

Notes: Surface soils defined as top 10 cm.
* Based on site observations at the sampling points and the analytical results of surface samples.

Where insufficient sample recovery is possible for FA and AF analysis the presence or absence of asbestos at a limit of reporting of 0.1 g/kg (AS 5370:2024) were for the assessment as an initial screen.

2.4 Ecological investigation levels

Ecological investigation levels (EIL) and added contaminant limits (ACL), where appropriate, have been derived in NEPC (2013) for arsenic, copper, chromium (III), nickel, lead, zinc, DDT and naphthalene. The adopted EIL derived using the interactive (excel) calculation spreadsheet on the NEPM toolbox website are shown in Note: site specific data (pH and CEC) of Site B was adopted for Site A given the pH and CEC measured from Site A was an outlier (pH was 11.1 and CEC was 82) Table 7 with inputs into their derivation shown in Table 6.

Table 6: Inputs to the derivation of the ecological investigation levels

Variable	Input	Rationale
Age of contaminants	"Aged" (>2 years)	Assumed based on site history
pH	Stage 01 to Stage 05 *: 5 (Natural), 8.9 (fill) Stage 06: 4.85 (Natural), 8.7 (fill)	Average of laboratory results
CEC	Stage 01 to Stage 05*: 2.4 $cmol_c/kg$ (natural) 18 $cmol_c/kg$ (fill) Stage 06: 3.85 (Natural), 6.6 (fill)	Average of laboratory results
Clay content	All sites: 10%	Clay being the predominant soil type observed within development area
Traffic volumes	High	The site is bounded by public roads
State / Territory	NSW	Site locality

*Note: site specific data (pH and CEC) of stage 02-04 site was adopted for stage 01 site given the pH and CEC measured from stage 01 site was an outlier (pH was 11.1 and CEC was 82)

Table 7: Ecological investigation levels (mg/kg)

Contaminant	EIL-A-B-C
Metals	
Arsenic	100
Copper	Stage 01 to 05: 230 (fill), 70 (natural) Stage 06: 150 (fill), 100 (natural)
Nickel	Stage 01 to Stage 05: 250 (fill), 10 (natural) Stage 06: 65 (fill), 20 (natural)
Chromium III	410 (all site)
Lead	1100
Zinc	Stage 01 to Stage 05: 760 (fill), 200 (natural) Stage 06: 410 (fill), 220 (natural)
PAH	
Naphthalene	170
OCP	
DDT	180

Notes: EIL-A-B-C urban residential and public open space

2.5 Ecological screening levels

Ecological screening levels (ESL) are used to assess the risk of selected petroleum hydrocarbon compounds, BTEX and benzo(a)pyrene to terrestrial ecosystems. The adopted ESL are shown in Table 8.

Table 8: Ecological screening levels (mg/kg)

Contaminant	Soil type	ESL-A-B-C
Benzene	Coarse	50
Toluene	Coarse	85
Ethylbenzene	Coarse	70
Xylenes	Coarse	105
TRH F1	Coarse / Fine	180*

Contaminant	Soil type	ESL-A-B-C
TRH F2	Coarse / Fine	120*
TRH F3	Coarse	300
TRH F4	Coarse	2800
B(a)P	Coarse	0.7
Benzene	Fine	65
Toluene	Fine	105
Ethylbenzene	Fine	125
Xylenes	Fine	45
TRH F1	Coarse / Fine	180*
TRH F2	Coarse / Fine	120*
TRH F3	Fine	1300
TRH F4	Fine	5600
B(a)P	Fine	0.7

Notes: ESL are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability
TRH F1 is TRH C_6-C_{10} minus BTEX
TRH F2 is TRH >C_{10}-C_{16} including naphthalene
ESL-A-B-C urban residential and public open space

2.6 Ecological soil guideline values

The interim ecological soil guideline values (EGV) derived from Table 6 of HEPA (2025) are in Table 9.

Table 9: Ecological soil guideline values (mg/kg) – all land uses

Contaminant	Direct exposure	Indirect exposure
PFOS	1	0.003
PFOA	10 / 0.005	0.003
PFHxS	NC	NC

Notes: NC no criterion
*For intensely developed sites with no secondary consumers and minimal potential for indirect ecological exposure, a higher criterion of up to 0.14 mg/kg PFOS may be appropriate.

2.7 Management limits

In addition to appropriate consideration and application of the HSL and ESL, there are additional considerations which reflect the nature and properties of petroleum hydrocarbons, including:

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosion hazards; and
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services.

The adopted management limits are in Table 10.

Table 10: Management limits (mg/kg)

Contaminant	Soil type	ML-A-B-C
TRH F1	Coarse	700
TRH F2	Coarse	1000
TRH F3	Coarse	2500
TRH F4	Coarse	10 000
TRH F1	Fine	800
TRH F2	Fine	1000
TRH F3	Fine	3500
TRH F4	Fine	10 000

Notes: TRH F1 is TRH C_6-C_{10} including BTEX
TRH F2 is TRH >C_{10}-C_{16} including naphthalene
ML-A-B-C residential, parkland and public open space

3. Groundwater

3.1 Introduction

The groundwater investigation levels (GIL) used for interpretation of the groundwater data (as a Tier 1 assessment) have been selected based on the potential risks posed from contamination sourced from the site to receptors at or down-gradient of the site, as identified by the conceptual site model (CSM). The receptors, exposure points and pathways are summarised in Table 11.

Table 11: Summary of potential receptors and potential risks

Receptor	Location	Exposure point	Exposure pathway
Surface water aquatic ecosystem	Down-gradient from site.	Receiving surface water body at the groundwater discharge point.	Exposure to contaminants.
Occupants of buildings	On site and down-gradient from site.	Enclosed buildings (existing or proposed).	Inhalation of VOC (including TRH and BTEX) overlying VOC impacted groundwater via the vapour intrusion pathway.

The rationale for the selection of GIL is in Table 12.

Table 12: Groundwater investigation level rationale

Receptor / beneficial use	GIL	Source	Comments / rationale
Aquatic ecosystem	DGV	ANZG (2018)	95% LOP for non-bioaccumulative contaminants 99% LOP for bioaccumulative contaminants

Receptor / beneficial use	GIL	Source	Comments / rationale
Aquatic ecosystem	DGV	HEPA (2025)	Freshwater 99% LOP as recommended for potential bioaccumulation Screening values were only available for PFOS and PFOA at the time of this investigation.
Building occupants (vapour intrusion)	HSL	NEPC (2013)	2 m to 4

Notes: DGV default guideline value
% LOP percentage level of protection of species
HSL health screening level
GV guideline value
LTV long term value (up to 100 years)
STV short term value (up to 20 years)

3.2 Groundwater investigation levels for aquatic ecosystems

Table 13: Groundwater investigation levels for protection of aquatic ecosystems (µg/L)

Contaminant	Freshwater DGV 95% LOP	Notes
Metals / metalloids		
Arsenic	24 / 13	Levels provided for As III / As IV respectively. Moderate reliability.
Cadmium	0.2	Very high reliability.
Chromium (VI)	1	Chromium VI levels adopted as initial screen for total chromium. Very high reliability.
Copper	1.4	Very high reliability.
Lead	3.4	Moderate reliability.
Mercury (inorganic)	0.06	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Nickel	11	Low reliability.
Zinc	8	Very high reliability.
BTEX		
Benzene	950	Moderate reliability.
Ethylbenzene	80	Unknown reliability.
m-Xylene	75	Unknown reliability.
o-xylene	350	Low reliability.
p-Xylene	200	Low reliability.
Toluene	180	Unknown reliability.

Contaminant	Freshwater DGV 95% LOP	Notes
PAH		
Anthracene	0.01	99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
Benzo(a)pyrene	0.1	99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
Fluoranthene	1	99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
Naphthalene	16	Low reliability.
Phenanthrene	0.6	99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
Phenols		
Phenol	320	Moderate reliability.
Pentachlorophenol	3.6	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
2,4,6-Trichlorophenol	3	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
OCP		
Aldrin	0.001	Unknown reliability and LOP.
Chlordane	0.03	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
DDT	0.006	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Dieldrin	0.01	Unknown reliability and LOP.
Endosulfan	0.03	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Endrin	0.01	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Heptachlor	0.01	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Methoxychlor	0.005	Unknown reliability and LOP.
OPP		
Chlorpyrifos	0.01	Moderate reliability.
Diazinon	0.01	Moderate reliability.
Dimethoate	0.15	Low reliability.
Fenitrothion	0.2	Moderate reliability.

Contaminant	Freshwater DGV 95% LOP	Notes
Malathion	0.05	Moderate reliability.
Parathion	0.004	Moderate reliability.
PCB		
Aroclor 1242	0.3	99% LOP adopted as recommended due to potential for bioaccumulation. Low reliability.
Aroclor 1254	0.01	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
VOC		
Tetrachloroethene (PCE)	70	Unknown reliability.
Trichloroethene (TCE)	330	Unknown reliability.
cis-1,2-dichloroethene (DCE)	700	Unknown reliability.
Chloroethene (vinyl chloride / VC)	100	Unknown reliability.
Tetrachloromethane (carbon tetrachloride / CT)	240	Unknown reliability.
Trichloromethane (chloroform / TCM)	370	99% LOP adopted as recommended to protect key species from chronic toxicity. Unknown reliability.

Notes: 95% LOP for non-bioaccumulative contaminants
99% LOP for bioaccumulative contaminants

3.3 Health screening levels for vapour intrusion

The HSL to evaluate potential vapour intrusion risks derived from NEPC (2013) are in Table 14. There are no generic HSL for groundwater within 2 m of the ground (or basement) level.

Table 14: Groundwater health screening levels for vapour intrusion (µg/L)

Contaminant	HSL-A&B	Solubility limit
CLAY	**2 m to <4 m**	**-**
Benzene	5000	59 000
Toluene	NL	61 000
Ethylbenzene	NL	3900
Xylenes	NL	21 000
Naphthalene	NL	170

Contaminant	HSL-A&B	Solubility limit
TRH F1	NL	9000
TRH F2	NL	3000

Notes: TRH F1 is TRH C_6-C_{10} minus BTEX
TRH F2 is TRH >C_{10}-C_{16} minus naphthalene
The solubility limit is defined as the groundwater concentration at which the water cannot dissolve any more of an individual chemical based on a petroleum mixture. The soil vapour that is in equilibrium with the groundwater will be at its maximum. If the derived groundwater HSL exceeds the water solubility limit, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.

4. References

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Appendix E

Summary Results Tables [Douglas, 2025]

Table E1: Summary of Laboratory Results Stage 01 - SAC

				Priority metals								Priority PAH				Priority TRH						BTEX				Priority phenol
				Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Naphthalene [b]	Benzo(a)pyrene (B(a)P)	Benzo(a)pyrene TEQ (B(a)P TEQ)	Total PAH	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Phenolics
			PQL	4	0.4	1	1	1	0.1	1	1	1	0.05	0.5	0.05	25	50	25	50	100	100	0.2	0.5	1	1	5
Sample ID	Depth	Soil Profile	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH11	0.5 - 0.6 m	Fill	09/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH11	0.8 - 1 m	Fill	09/04/25	**4**	<0.4	**13**	**32**	**130**	**0.4**	**5**	**77**	<1	**0.77**	**1.1**	**6.2**	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	100 -
BH11	1.2 - 1.5 m	Fill	10/04/25	<4	<0.4	**13**	**18**	**51**	**0.4**	**5**	**58**	<1	**0.8**	**1.2**	**6.5**	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	NL 170	- 0.7	3 -	300 -	- -	- 120	90 180	NL -	- 1,300	- 5,600	1 65	NL 105	NL 125	310 45	- -
BH12	0.8 - 1 m	Fill	10/04/25	**9**	<0.4	**33**	**26**	**98**	**0.2**	**17**	**76**	<1	**0.88**	**1.3**	**8**	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	100 -
BH12	1.3 - 1.5 m	Fill	10/04/25	**7**	<0.4	**13**	**23**	**62**	**0.1**	**8**	**120**	<1	**1.4**	**1.9**	**11**	<25	<50	<25	<50	**170**	**130**	<0.2	<0.5	<1	<1	-
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	NL 170	- 0.7	3 -	300 -	- -	- 120	90 180	NL -	- 1,300	- 5,600	1 65	NL 105	NL 125	310 45	- -
BH12	1.8 - 2.3 m	Fill	10/04/25	**5**	<0.4	**20**	**24**	**65**	**0.3**	**7**	**60**	<1	**0.78**	**1.1**	**6.2**	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	NL 170	- 0.7	3 -	300 -	- -	- 120	90 180	NL -	- 1,300	- 5,600	1 65	NL 105	NL 125	310 45	- -
BH12	2.6 - 3 m	Natural	10/04/25	**4**	<0.4	**6**	**7**	**22**	<0.1	<1	**6**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				100 100	20 -	100 410	6,000 70	300 1,100	40 -	400 10	7,400 200	NL 170	- 0.7	3 -	300 -	- -	- 120	150 180	NL -	- 1,300	- 5,600	2 65	NL 105	NL 125	NL 45	- -
BH13	0 - 0.2 m	Fill	17/04/25	<4	<0.4	**24**	**63**	**15**	**0.2**	**120**	**53**	<0.1	**0.55**	**0.8**	**5.8**	<25	<50	<25	<50	**480**	<100	<0.2	<0.5	<1	<1	<5
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	100 -
BH14	0.1 - 0.2 m	Fill	14/04/25	<4	<0.4	**41**	**94**	**14**	<0.1	**14**	**46**	<1	**0.5**	**0.6**	**4.6**	<25	**53**	<25	**53**	**840**	**1,200**	<0.2	<0.5	<1	<1	<5
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	100 -
BH14	0.4 - 0.5 m	Fill	14/04/25	<4	<0.4	**20**	**100**	**30**	<0.1	**22**	**75**	<1	**2.1**	**3**	**24**	<25	<50	<25	<50	**310**	**200**	<0.2	<0.5	<1	<1	-
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	- -
BH15	0.1 - 0.2 m	Fill	15/04/25	<4	<0.4	**16**	**99**	**5**	<0.1	**80**	**42**	<1	**0.2**	<0.5	**2.2**	<25	<50	<25	<50	**370**	**540**	<0.2	<0.5	<1	<1	<5
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	100 -
BH15	0.4 - 0.5 m	Fill	15/04/25	**5**	<0.4	**20**	**16**	**26**	<0.1	**17**	**15**	<1	**0.1**	<0.5	**1.1**	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	100 -
BD6/20250415	0.4 - 0.5 m	Fill	15/04/25	**5**	<0.4	**24**	**36**	**53**	<0.1	**39**	**39**	<0.1	**3.1**	**4.6**	**26**	<25	<50	<25	<50	**310**	**150**	<0.2	<0.5	<1	<1	-
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	- -
BH15 - [TRIPLICATE]	0.4 - 0.5 m	Fill	15/04/25	**4**	<0.4	**20**	**21**	**33**	<0.1	**22**	**16**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH15	0.8 - 1 m	Natural	15/04/25	**6**	<0.4	**22**	**15**	**26**	<0.1	**19**	**9**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				100 100	20 -	100 410	6,000 70	300 1,100	40 -	400 10	7,400 200	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	- -
BH16	0.1 - 0.2 m	Fill	17/04/25	<4	<0.4	**7**	**12**	**6**	<0.1	**5**	**25**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	100 -
BH16	0.4 - 0.5 m	Fill	17/04/25	**7**	<0.4	**5**	**8**	**11**	<0.1	**2**	**21**	<1	**0.07**	<0.5	**0.3**	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	100 -
BH16	0.6 - 0.8 m	Fill	17/04/25	**6**	<0.4	**7**	**11**	**26**	<0.1	**2**	**18**	<1	**9.9**	**15**	**170**	<25	<50	<25	<50	**570**	**140**	<0.2	<0.5	<1	<1	<5
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	100 -
BH16	0.8 - 0.95 m	Fill	17/04/25	**12**	<0.4	**6**	**33**	**26**	<0.1	**3**	**17**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45	100 -

Lab result

HIL/HSL value EIL/ESL/EGV value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab, refer to the lab report **Blue** = DC exceedance **Red** = EGV-indirect exceedance HSL 0-<1 Exceedance

Bold = Lab detections - = Not tested or No HIL/HSL/EIL/ESL (as applicable) or Not applicable NL = Not limiting NAD = No Asbestos detected

HIL = Health investigation level HSL = Health screening level (excluding DC) EIL = Ecological investigation level ESL = Ecological screening level EGV = Environmental Guideline Value ML = Management Limit DC = Direct Contact HSL

Notes:

a QA/QC replicate of sample listed directly below the primary sample

b Naphthalene reported as highest detection from the BTEXN or PAH suite, or if both results <PQL as lowest PQL

c EIL criteria applies to DDT only

Site Assessment Criteria (SAC):

SAC based on generic land use thresholds for Residential A with garden/accessible soil

Refer to the SAC section of report for information of SAC sources and rationale. Summary information as follows:

HIL	HIL-A (NEPC, 2013 or HEPA, 2020 (PFAS only))	EGV	EGV, all land uses, direct exposure (HEPA, 2020)
HSL (vapour intrusion)	HSL-A/B (NEPC, 2013)	ESL	Urban Residential and Public Open Space (NEPC, 2013)
DC	Direct contact HSL A Residential (Low density) (CRC CARE, 2011)	ML	Residential, Parkland and Public Open Space (NEPC, 2013)
		EGV-Indir	EGV, all land uses, Indirect exposure (HEPA, 2020)

Table E1: Summary of Laboratory Results Stage 01 - SAC

				Priority OCP										Priority OPP	PCB	Priority PFAS					Asbestos (NEPM)							Asbestos ID		pH, EC and CEC	
				DDT+DDE+DDD [c]	Aldrin + Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Mirex	Chlorpyrifos	Total PCB	Total Positive PFAS	PFOA	PFOS + PFHxS	PFOS	PFHxS	Asbestos ID in soil >0.1g/kg	Trace Analysis (NEPC)	Total Asbestos#1	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation	FA and AF Estimation	FA and AF Estimation	Asbestos ID in soil >0.1g/kg	Trace Analysis (AS)	pH 1:5 soil:water	Cation Exchange Capacity
			PQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0001	0.0001	0.0001	0.0001	0.0001			0.1				0.001				1
Sample ID	Depth	Soil Profile	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	g/kg	-	g	g	%(w/w)	-	-	pH Units	cmol/kg
BH11	0.5 - 0.6 m	Fill	09/04/25	-	-	-	-	-	-	-	-	-	-	-	**0.0021**	**0.0004**	**0.0017**	**0.0017**	<0.0001	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.06 10	0.003 -	0.003 1	0.003 -							- -			- -	- -
BH11	0.8 - 1 m	Fill	09/04/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH11	1.2 - 1.5 m	Fill	10/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH12	0.8 - 1 m	Fill	10/04/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH12	1.3 - 1.5 m	Fill	10/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH12	1.8 - 2.3 m	Fill	10/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH12	2.6 - 3 m	Natural	10/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -						- -	- -			- -	- -
BH13	0 - 0.2 m	Fill	17/04/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH14	0.1 - 0.2 m	Fill	14/04/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH14	0.4 - 0.5 m	Fill	14/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	**11.1**	**82**
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -						- -	- -			- -	- -
BH15	0.1 - 0.2 m	Fill	15/04/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH15	0.4 - 0.5 m	Fill	15/04/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -	- -	0.06 10	0.003 -	0.003 1	0.003 -						- -	0.001 -			- -	- -
BD6/20250415	0.4 - 0.5 m	Fill	15/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -						- -	- -			- -	- -
BH15 - [TRIPLICATE]	0.4 - 0.5 m	Fill	15/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -						- -	- -			- -	- -
BH15	0.8 - 1 m	Natural	15/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH16	0.1 - 0.2 m	Fill	17/04/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH16	0.4 - 0.5 m	Fill	17/04/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH16	0.6 - 0.8 m	Fill	17/04/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	NAD	NAD	<0.1	NAD	NAD	-	<0.001	-	-	-	-
				240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -	- -	- -	- -	- -	- -						- -	0.001 -			- -	- -
BH16	0.8 - 0.95 m	Fill	17/04/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -	- -	- -	- -	- -	- -						- -	- -			- -	- -

Lab result

HIL/HSL value EIL/ESL/EGV value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab, refer to the lab report **Blue** = DC exceedance **Red** = EGV-indirect exceedance HSL 0-<1 Exceedance

Bold = Lab detections - = Not tested or No HIL/HSL/EIL/ESL (as applicable) or Not applicable NL = Not limiting NAD = No Asbestos detected

HIL = Health investigation level HSL = Health screening level (excluding DC) EIL = Ecological investigation level ESL = Ecological screening level EGV = Environmental Guideline Value ML = Management Limit DC = Direct Contact HSL

Notes:

a QA/QC replicate of sample listed directly below the primary sample

b Naphthalene reported as highest detection from the BTEXN or PAH suite, or if both results <PQL as lowest PQL

c EIL criteria applies to DDT only

Site Assessment Criteria (SAC):

SAC based on generic land use thresholds for Residential A with garden/accessible soil

Refer to the SAC section of report for information of SAC sources and rationale. Summary information as follows:

HIL	HIL-A (NEPC, 2013 or HEPA, 2020 (PFAS only))	EGV	EGV, all land uses, direct exposure (HEPA, 2020)
HSL (vapour intrusion)	HSL-A/B (NEPC, 2013)	ESL	Urban Residential and Public Open Space (NEPC, 2013)
DC	Direct contact HSL A Residential (Low density) (CRC CARE, 2011)	ML	Residential, Parkland and Public Open Space (NEPC, 2013)
		EGV-Indir	EGV, all land uses, Indirect exposure (HEPA, 2020)

Table E2: Summary of Laboratory Results – Stage 02 -04 SAC

				Priority metals								Priority PAH				Priority TRH							BTEX			
				Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Naphthalene [b]	Benzo(a)pyrene (B(a)P)	Benzo(a)pyrene TEQ (B(a)P TEQ)	Total PAH	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	TPH >C16-C34 (SG)	F4 (>C34-C40)	Benzene	Toluene	Ethylbenzene	Total Xylenes
			PQL	4	0.4	1	1	1	0.1	1	1	1	0.05	0.5	0.05	25	50	25	50	100	100	100	0.2	0.5	1	1
Sample ID	Depth	Soil Profile	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH6	0 - 0.1 m	Fill	04/04/25	**5**	<0.4	**14**	**68**	**41**	**0.2**	**7**	**140**	<1	**0.2**	<0.5	**1.8**	<25	<50	<25	<50	**250**	-	**180**	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BH6	0.15 - 0.25 m	Fill	04/04/25	**6**	<0.4	**9**	**42**	**140**	<0.1	**2**	**89**	<1	**0.1**	<0.5	**0.6**	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BH6	0.15 - 0.5 m	Fill	04/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH07	0.1 - 0.2 m	Fill	14/04/25	<4	<0.4	**54**	**47**	**52**	<0.1	**70**	**92**	<1	**120**	**160**	**1,500**	<25	**93**	<25	**93**	**1,400**	**570**	**400**	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 1,300	- 5,600	0.7 65	480 105	NL 125	110 45
BH07	0.4 - 0.5 m	Fill	14/04/25	**8**	<0.4	**28**	**6**	**22**	<0.1	**5**	**6**	<1	**1.1**	**1.5**	**14**	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BH08	0.2 - 0.3 m	Fill	09/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH08	0.35 - 0.5 m	Fill	09/04/25	<4	<0.4	**14**	**17**	**20**	<0.1	**2**	**25**	<1	**0.3**	<0.5	**4**	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BH08	0.8 - 1 m	Natural	09/04/25	**5**	<0.4	**9**	**8**	**19**	<0.1	<1	**1**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 70	300 1,100	40 -	400 10	7,400 200	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BD5/20250409	0.8 - 1 m	Natural	09/04/25	**5**	<0.4	**17**	**10**	**24**	<0.1	1	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				100 100	20 -	100 410	6,000 70	300 1,100	40 -	400 10	7,400 200	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BH09	0.2 - 0.3 m	Fill	08/04/25	<4	<0.4	**25**	**75**	**4**	<0.1	**170**	**56**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BH09	0.5 - 0.6 m	Fill	08/04/25	**6**	<0.4	**19**	**15**	**68**	**0.2**	**6**	**13**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BH09	0.8 - 1 m	Natural	08/04/25	**5**	<0.4	**16**	**6**	**25**	<0.1	<1	**1**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 70	300 1,100	40 -	400 10	7,400 200	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BH10	0.05 - 0.2 m	Fill	28/04/25	<4	<0.4	**5**	**4**	**8**	<0.1	**3**	**18**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BH10 - [TRIPLICATE]	0.05 - 0.2 m	Fill	28/04/25	<4	<0.4	**6**	**5**	**14**	<0.1	**4**	**22**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH10	0.5 - 0.6 m	Fill	28/04/25	**7**	<0.4	**19**	**20**	**89**	**0.2**	**5**	**46**	<1	**0.66**	**1**	**7.4**	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 230	300 1,100	40 -	400 250	7,400 760	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- -	- 5,600	0.7 65	480 105	NL 125	110 45
BH10	1 - 1.1 m	Natural	28/04/25	**5**	<0.4	**17**	**15**	**42**	**0.1**	**4**	**41**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 70	300 1,100	40 -	400 10	7,400 200	NL 170	- 0.7	3 -	300 -	- -	- 120	90 180	NL -	- 1,300	- -	- 5,600	1 65	NL 105	NL 125	310 45
BH10	1.2 - 1.3 m	Natural	28/04/25	**6**	<0.4	**14**	**13**	**23**	<0.1	**1**	**2**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	-	<100	<0.2	<0.5	<1	<1
				100 100	20 -	100 410	6,000 70	300 1,100	40 -	400 10	7,400 200	NL 170	- 0.7	3 -	300 -	- -	- 120	90 180	NL -	- 1,300	- -	- 5,600	1 65	NL 105	NL 125	310 45

Lab result

HIL/HSL value EIL/ESL/EGV value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab, refer to the lab report **Blue** = DC exceedance **Red** = EGV-indirect exceedance HSL 0-<1 Exceedance

Bold = Lab detections - = Not tested or No HIL/HSL/EIL/ESL (as applicable) or Not applicable NL = Not limiting NAD = No Asbestos detected

HIL = Health investigation level HSL = Health screening level (excluding DC) EIL = Ecological investigation level ESL = Ecological screening level EGV = Environmental Guideline Value ML = Management Limit DC = Direct Contact HSL

Notes:

a QA/QC replicate of sample listed directly below the primary sample

b Naphthalene reported as highest detection from the BTEXN or PAH suite, or if both results <PQL as lowest PQL

c EIL criteria applies to DDT only

Site Assessment Criteria (SAC):

SAC based on generic land use thresholds for Residential A with garden/accessible soil

Refer to the SAC section of report for information of SAC sources and rationale. Summary information as follows:

HIL	HIL-A (NEPC, 2013 or HEPA, 2020 (PFAS only))	EGV	EGV, all land uses, direct exposure (HEPA, 2020)
HSL (vapour intrusion)	HSL-A/B (NEPC, 2013)	ESL	Urban Residential and Public Open Space (NEPC, 2013)
DC	Direct contact HSL A Residential (Low density) (CRC CARE, 2011)	ML	Residential, Parkland and Public Open Space (NEPC, 2013)
		EGV-Indir	EGV, all land uses, Indirect exposure (HEPA, 2020)

Table E2: Summary of Laboratory Results

				Priority phenols	Priority OCP									Priority OPP	PCB	Asbestos							pH, EC and CEC	
				Total Phenolics	DDT+DDE+DDD [c]	Aldrin + Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Mirex	Chlorpyrifos	Total PCB	Asbestos ID in soil >0.1g/kg	Asbestos ID in soil <0.1g/kg	Trace Analysis (NEPC)	ACM >7mm Estimation	FA and AF Estimation	FA and AF Estimation	Total Asbestos#1	pH 1:5 soil:water	Cation Exchange Capacity
			PQL	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1						0.001	0.1		1
Sample ID	Depth	Soil Profile	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	g	g	%(w/w)	g/kg	pH Units	cmol/kg
BH6	0 - 0.1 m	Fill	04/04/25	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -				- -	- -	0.001 -		- -	- -
BH6	0.15 - 0.25 m	Fill	04/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				- -	- -	- -		- -	- -
BH6	0.15 - 0.5 m	Fill	04/04/25	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				- -	- -	0.001 -		- -	- -
BH07	0.1 - 0.2 m	Fill	14/04/25	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	-	-	<0.001	<0.1	**8.9**	**18**
				100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -				- -	- -	0.001 -		- -	- -
BH07	0.4 - 0.5 m	Fill	14/04/25	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -				- -	- -	0.001 -		- -	- -
BH08	0.2 - 0.3 m	Fill	09/04/25	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				- -	- -	0.001 -		- -	- -
BH08	0.35 - 0.5 m	Fill	09/04/25	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -				- -	- -	0.001 -		- -	- -
BH08	0.8 - 1 m	Natural	09/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				- -	- -	- -		- -	- -
BD5/20250409	0.8 - 1 m	Natural	09/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				- -	- -	- -		- -	- -
BH09	0.2 - 0.3 m	Fill	08/04/25	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -				- -	- -	0.001 -		- -	- -
BH09	0.5 - 0.6 m	Fill	08/04/25	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				- -	- -	0.001 -		- -	- -
BH09	0.8 - 1 m	Natural	08/04/25	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -				- -	- -	0.001 -		- -	- -
BH10	0.05 - 0.2 m	Fill	28/04/25	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -				- -	- -	0.001 -		- -	- -
BH10 - [TRIPLICATE]	0.05 - 0.2 m	Fill	28/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				- -	- -	- -		- -	- -
BH10	0.5 - 0.6 m	Fill	28/04/25	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				- -	- -	0.001 -		- -	- -
BH10	1 - 1.1 m	Natural	28/04/25	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				- -	- -	0.001 -		- -	- -
BH10	1.2 - 1.3 m	Natural	28/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5**	**2.4**
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				- -	- -	- -		- -	- -

Lab result

HIL/HSL value EIL/ESL/EGV value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab, refer to the lab report **Blue** = DC exceedance **Red** = EGV-indirect exceedance HSL 0-<1 Exceedance

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a QA/QC replicate of sample listed directly below the primary sample

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HIL	HIL-A (NEPC, 2013 or HEPA, 2020 (PFAS only))	EGV	EGV, all land uses, direct exposure (HEPA, 2020)
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DC	Direct contact HSL A Residential (Low density) (CRC CARE, 2011)	ML	Residential, Parkland and Public Open Space (NEPC, 2013)
		EGV-Indir	EGV, all land uses, Indirect exposure (HEPA, 2020)

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Table E3: Summary of Laboratory Results of Stage 06 - SAC

				Priority metals								Priority PAH				Priority TRH					
				Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Naphthalene [b]	Benzo(a)pyrene (B(a)P)	Benzo(a)pyrene TEQ (B(a)P TEQ)	Total PAH	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)
			PQL	4	0.4	1	1	1	0.1	1	1	0.1	0.05	0.5	0.05	25	50	25	50	100	100
Sample ID	Depth	Soil Profile	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH1	0.15 - 0.25 m	Fill/ Road Base	03/04/25	<4	<0.4	**7**	**7**	**16**	<0.1	**6**	**18**	<0.1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100
				100 100	20 -	100 410	6,000 150	300 1,100	40 -	400 65	7,400 410	3 170	- 0.7	3 -	300 -	- -	- 120	45 180	110 -	- 300	- 2,800
BH1	0.15 - 0.25 m	Material	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH2	0.13 - 0.23 m	Fill	03/04/25	<4	<0.4	**7**	**26**	**39**	<0.1	**4**	**21**	<1	**0.2**	<0.5	**1.8**	<25	<50	<25	<50	<100	<100
				100 100	20 -	100 410	6,000 150	300 1,100	40 -	400 65	7,400 410	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600
BH2	0.25 - 0.35 m	Natural	03/04/25	<4	<0.4	**3**	<1	**10**	<0.1	<1	**2**	<1	**0.09**	<0.5	**0.09**	<25	<50	<25	<50	<100	<100
				100 100	20 -	100 410	6,000 100	300 1,100	40 -	400 20	7,400 220	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600
BH3	0.2 - 0.3 m	Fill/ Road Base	03/04/25	<4	<0.4	**26**	**85**	**19**	<0.1	**32**	**42**	<1	**0.2**	<0.5	**1.6**	<25	<50	<25	<50	**430**	**750**
				100 100	20 -	100 410	6,000 150	300 1,100	40 -	400 65	7,400 410	3 170	- 0.7	3 -	300 -	- -	- 120	45 180	110 -	- 300	- 2,800
BH3	0.5 - 0.6 m	Fill	03/04/25	<4	<0.4	**17**	**9**	**15**	<0.1	**17**	**21**	<1	**0.3**	<0.5	**2.8**	<25	<50	<25	<50	<100	<100
				100 100	20 -	100 410	6,000 150	300 1,100	40 -	400 65	7,400 410	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600
BH3	1 - 1.1 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH3	1.8 - 1.9 m	Fill	03/04/25	<4	<0.4	**9**	**7**	**500**	<0.1	**2**	**70**	<1	**0.2**	<0.5	**1.6**	<25	<50	<25	<50	<100	<100
				100 100	20 -	100 410	6,000 150	300 1,100	40 -	400 65	7,400 410	NL 170	- 0.7	3 -	300 -	- -	- 120	90 180	NL -	- 1,300	- 5,600
BH3	2.4 - 2.6 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH3	3 - 3.2 m	Natural	03/04/25	**4**	<0.4	**12**	<1	**32**	<0.1	<1	**5**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100
				100 100	20 -	100 410	6,000 100	300 1,100	40 -	400 20	7,400 220	NL 170	- 0.7	3 -	300 -	- -	- 120	150 180	NL -	- 1,300	- 5,600
BH4	0.4 - 0.6 m	Fill	03/04/25	<4	<0.4	**3**	**4**	**20**	<0.1	**2**	**30**	<1	**0.1**	<0.5	**0.4**	<25	<50	<25	<50	<100	<100
				100 100	20 -	100 410	6,000 150	300 1,100	40 -	400 65	7,400 410	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600
BH4 - [TRIPLICATE]	0.4 - 0.6 m	Fill	03/04/25	<4	<0.4	**2**	**3**	**18**	<0.1	**1**	**16**	-	-	-	-	-	-	-	-	-	-
				100 100	20 -	100 410	6,000 150	300 1,100	40 -	400 65	7,400 410	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BD02/20250402	0.4 - 0.6 m	Fill	03/04/25	<4	<0.4	**2**	**2**	**17**	<0.1	<1	**15**	<1	**0.1**	<0.5	**0.4**	<25	<50	<25	<50	<100	<100
				100 100	20 -	100 410	6,000 150	300 1,100	40 -	400 65	7,400 410	5 170	- 0.7	3 -	300 -	- -	- 120	50 180	280 -	- 1,300	- 5,600
BH4	1 - 1.2 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH4	1.5 - 1.7 m	Fill	03/04/25	**4**	<0.4	**26**	**47**	**290**	**0.2**	**2**	**69**	<1	**0.2**	<0.5	**2.2**	<25	<50	<25	<50	<100	<100
				100 100	20 -	100 410	6,000 150	300 1,100	40 -	400 65	7,400 410	NL 170	- 0.7	3 -	300 -	- -	- 120	90 180	NL -	- 1,300	- 5,600

Lab result

HIL/HSL value EIL/ESL/EGV value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab, refer to the lab report **Blue** = DC exceedance **Red** = EGV-indirect exceedance HSL 0-<1 Exceedance

Bold = Lab detections - = Not tested or No HIL/HSL/EIL/ESL (as applicable) or Not applicable NL = Not limiting NAD = No Asbestos detected

HIL = Health investigation level HSL = Health screening level (excluding DC) EIL = Ecological investigation level ESL = Ecological screening level EGV = Environmental Guideline Value ML = Management Limit DC = Direct Contact HSL

Notes:

a QA/QC replicate of sample listed directly below the primary sample

b Naphthalene reported as highest detection from the BTEXN or PAH suite, or if both results <PQL as lowest PQL

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Site Assessment Criteria (SAC):

SAC based on generic land use thresholds for Residential A with garden/accessible soil

Refer to the SAC section of report for information of SAC sources and rationale. Summary information as follows:

HIL	HIL-A (NEPC, 2013 or HEPA, 2020 (PFAS only))	EGV	EGV, all land uses, direct exposure (HEPA, 2020)
HSL (vapour intrusion)	HSL-A/B (NEPC, 2013)	ESL	Urban Residential and Public Open Space (NEPC, 2013)
DC	Direct contact HSL A Residential (Low density) (CRC CARE, 2011)	ML	Residential, Parkland and Public Open Space (NEPC, 2013)
		EGV-Indir	EGV, all land uses, Indirect exposure (HEPA, 2020)

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Table E3: Summary of Laboratory Results of Stage 06 - SAC

				TRH		BTEX				Priority phenol	Priority OCP									Priority OPP	PCB
				TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Phenolics	DDT+DDE+DDD [c]	Aldrin + Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Mirex	Chlorpyrifos	Total PCB
			PQL	25	50	0.2	0.5	1	1	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sample ID	Depth	Soil Profile	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH1	0.15 - 0.25 m	Fill/ Road Base	03/04/25	<25	<50	<0.2	<0.5	<1	<1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
				- -	- -	0.5 50	160 85	55 70	40 105	100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -
BH1	0.15 - 0.25 m	Material	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH2	0.13 - 0.23 m	Fill	03/04/25	<25	<50	<0.2	<0.5	<1	<1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
				- -	- -	0.7 65	480 105	NL 125	110 45	100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -
BH2	0.25 - 0.35 m	Natural	03/04/25	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	0.7 65	480 105	NL 125	110 45	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH3	0.2 - 0.3 m	Fill/ Road Base	03/04/25	<25	**670**	<0.2	<0.5	<1	<1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
				- -	- -	0.5 50	160 85	55 70	40 105	100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -
BH3	0.5 - 0.6 m	Fill	03/04/25	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	0.7 65	480 105	NL 125	110 45	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH3	1 - 1.1 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH3	1.8 - 1.9 m	Fill	03/04/25	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	1 65	NL 105	NL 125	310 45	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH3	2.4 - 2.6 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH3	3 - 3.2 m	Natural	03/04/25	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	2 65	NL 105	NL 125	NL 45	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH4	0.4 - 0.6 m	Fill	03/04/25	<25	<50	<0.2	<0.5	<1	<1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
				- -	- -	0.7 65	480 105	NL 125	110 45	100 -	240 180	6 -	50 -	270 -	10 -	6 -	10 -	300 -	10 -	160 -	1 -
BH4 - [TRIPLICATE]	0.4 - 0.6 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BD02/20250402	0.4 - 0.6 m	Fill	03/04/25	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	0.7 65	480 105	NL 125	110 45	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH4	1 - 1.2 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH4	1.5 - 1.7 m	Fill	03/04/25	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	1 65	NL 105	NL 125	310 45	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Lab result

HIL/HSL value EIL/ESL/EGV value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

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DC	Direct contact HSL A Residential (Low density) (CRC CARE, 2011)	ML	Residential, Parkland and Public Open Space (NEPC, 2013)
		EGV-Indir	EGV, all land uses, Indirect exposure (HEPA, 2020)

Table E3: Summary of Laboratory Results of Stage 06 - SAC

				Priority PFAS					Asbestos							Asbestos ID in materials		pH, EC and CEC	
				Total Positive PFAS	PFOA	PFOS + PFHxS	PFOS	PFHxS	Asbestos ID in soil >0.1g/kg	Asbestos ID in soil <0.1g/kg	Trace Analysis (NEPC)	ACM >7mm Estimation	FA and AF Estimation	FA and AF Estimation	Total Asbestos#1	Asbestos ID in materials	Asbestos Summary	pH 1:5 soil:water	Cation Exchange Capacity
			PQL	0.0001	0.0001	0.0001	0.0001	0.0001						0.001	0.1		0.1		1
Sample ID	Depth	Soil Profile	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	g	g	%(w/w)	g/kg	-		pH Units	cmol/kg
BH1	0.15 - 0.25 m	Fill/ Road Base	03/04/25	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1			-	-
				- -	- -	- -	- -	- -				- -	- -	0.001 -				- -	- -
BH1	0.15 - 0.25 m	Material	03/04/25	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	**Detected**	**Detected**	-	-
				- -	- -	- -	- -	- -				- -	- -	0.001 -				- -	- -
BH2	0.13 - 0.23 m	Fill	03/04/25	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-	-	-
				- -	- -	- -	- -	- -				- -	- -	0.001 -				- -	- -
BH2	0.25 - 0.35 m	Natural	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5.4**	**5.7**
				- -	- -	- -	- -	- -				- -	- -	- -				- -	- -
BH3	0.2 - 0.3 m	Fill/ Road Base	03/04/25	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-	**8.4**	**25**
				- -	- -	- -	- -	- -				- -	- -	0.001 -				- -	- -
BH3	0.5 - 0.6 m	Fill	03/04/25	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-	**9**	**6.6**
				- -	0.06 10	0.003 -	0.003 1	0.003 -				- -	- -	0.001 -				- -	- -
BH3	1 - 1.1 m	Fill	03/04/25	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-	-	-
				- -	- -	- -	- -	- -				- -	- -	0.001 -				- -	- -
BH3	1.8 - 1.9 m	Fill	03/04/25	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-	-	-
				- -	- -	- -	- -	- -				- -	- -	0.001 -				- -	- -
BH3	2.4 - 2.6 m	Fill	03/04/25	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-	-	-
				- -	- -	- -	- -	- -				- -	- -	0.001 -				- -	- -
BH3	3 - 3.2 m	Natural	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**4.3**	**2**
				- -	- -	- -	- -	- -				- -	- -	- -				- -	- -
BH4	0.4 - 0.6 m	Fill	03/04/25	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-	-	-
				- -	- -	- -	- -	- -				- -	- -	0.001 -				- -	- -
BH4 - [TRIPLICATE]	0.4 - 0.6 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -				- -	- -	- -				- -	- -
BD02/20250402	0.4 - 0.6 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				- -	- -	- -	- -	- -				- -	- -	- -				- -	- -
BH4	1 - 1.2 m	Fill	03/04/25	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-	-	-
				- -	- -	- -	- -	- -				- -	- -	0.001 -				- -	- -
BH4	1.5 - 1.7 m	Fill	03/04/25	-	-	-	-	-	NAD	NAD	NAD	-	-	<0.001	<0.1	-	-	-	-
				- -	- -	- -	- -	- -				- -	- -	0.001 -				- -	- -

Lab result

HIL/HSL value EIL/ESL/EGV value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab, refer to the lab report **Blue** = DC exceedance **Red** = EGV-indirect exceedance HSL 0-<1 Exceedance

Bold = Lab detections - = Not tested or No HIL/HSL/EIL/ESL (as applicable) or Not applicable NL = Not limiting NAD = No Asbestos detected

HIL = Health investigation level HSL = Health screening level (excluding DC) EIL = Ecological investigation level ESL = Ecological screening level EGV = Environmental Guideline Value ML = Management Limit DC = Direct Contact HSL

Notes:

a QA/QC replicate of sample listed directly below the primary sample

b Naphthalene reported as highest detection from the BTEXN or PAH suite, or if both results <PQL as lowest PQL

c EIL criteria applies to DDT only

Site Assessment Criteria (SAC):

SAC based on generic land use thresholds for Residential A with garden/accessible soil

Refer to the SAC section of report for information of SAC sources and rationale. Summary information as follows:

HIL	HIL-A (NEPC, 2013 or HEPA, 2020 (PFAS only))	EGV	EGV, all land uses, direct exposure (HEPA, 2020)
HSL (vapour intrusion)	HSL-A/B (NEPC, 2013)	ESL	Urban Residential and Public Open Space (NEPC, 2013)
DC	Direct contact HSL A Residential (Low density) (CRC CARE, 2011)	ML	Residential, Parkland and Public Open Space (NEPC, 2013)
		EGV-Indir	EGV, all land uses, Indirect exposure (HEPA, 2020)

Table E4: Summary of Laboratory Results of Groundwater

		Metals & Metalloids - Dissolved								TRH				BTEX											
		Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	F1 (C6-C10) BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	Benzene	Toluene	Ethylbenzene	o-Xylene	m+p-Xylene	Total Xylenes	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Naphthalene	Benzo(a)pyrene (BaP)
	PQL	1	0.1	1	1	1	0.05	1	1	10	50	100	100	1	1	1	1	2	1	0.01	0.01	0.01	0.01	1	0.01
ANZG (2018) 95% LOP Fresh (Hardness adjusted)		13	0.2 ^	1	1.4	4.1^	**0.06**	12.5^	9.1^					950	180	80	350	75				**0.01**		16	**0.1**
NEPC (2013) HSL 2-4m										NL	NL			5,000	NL	NL			NL					NL	
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH1	29/04/25	<1	<0.1	<1	<1	<1	<0.05	**10**	**26**	<10	<50	<100	<100	<1	<1	<1	<1	<2	<1	<0.01	<0.01	<0.01	<0.01	<1	<0.01
BD01	29/04/25	<1	<0.1	<1	<1	<1	<0.05	**9**	**25**	<10	<50	**110**	<100	<1	<1	<1	<1	<2	<1	<0.01	<0.01	<0.01	<0.01	<1	<0.01
BH6	29/04/25	<1	<0.1	<1	**1**	<1	<0.05	**13**	**30**	<10	<50	<100	<100	<1	<1	<1	<1	<2	<1	<0.01	<0.01	<0.01	<0.01	<1	<0.01
BH15	29/04/25	<1	**0.1**	<1	**6**	<1	<0.05	**27**	**69**	<10	<50	<100	<100	<1	<1	<1	<1	<2	<1	<0.01	<0.01	<0.01	<0.01	<1	<0.01

Notes:

^ Hardness adjusted value

\- No criterion / not defined / not tested / not applicable

* QA/QC replicate of sample listed directly below the primary sample

NL Not limiting

PQL Practical quantitation limit

Shaded cell is exceedance of guideline value

Where one or more guideline value is exceeded, the cell is shaded to the colour of the highest guideline value exceeded

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013), health screening level Clay 2-4m

ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 95% level of protection of species for Fresh aquatic ecosystems [NB: 99% level of protection adopted for bioaccumulative chemicals]

ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, orange text is 'unknown' level of protection

Underlining of ANZG (2018) criteria indicates a criteria with an 'unknown' level of protection.

ANZG (2018) DGV adopted for most conservative species of following analytes: DGV for xylene (m) adopted for xylene (m+p); DGV for CrVI adopted for total chromium; DGV for AsV adopted for total arsenic

ANZG (2018) DGV adopted for aluminium in freshwater is for receiving waters with pH >6.5. For receiving waters with pH <6.5 suitability of the more conservative, low reliability DGV of unknown LOP should be considered

ANZG (2018) Ammonia DGV is pH and temperature dependant. DGV for a pH of 8 provided in table.

Table E4: Summary of Laboratory Results of Groundwater

		PAH										OCP														
		Benzo(b+k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Sum of detected PAH	DDE	DDT	DDD	Aldrin	Dieldrin	Aldrin + Dieldrin (calculated)	alpha-chlordane	gamma-Chlordane	Endosulfan I	Endosulfan II	Endosulfan Sulphate	Endrin	Endrin Aldehyde	Heptachlor
	PQL	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.001	0.001	0.001	0.001
ANZG (2018) 95% LOP Fresh (Hardness adjusted)						**1**			**0.6**				**0.006**		**0.001**	**0.01**							**0.01**		**0.01**
NEPC (2013) HSL 2-4m																									
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH1	29/04/25	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001
BD01	29/04/25	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	29/04/25	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001
BH15	29/04/25	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001

Notes:

^ Hardness adjusted value

\- No criterion / not defined / not tested / not applicable

* QA/QC replicate of sample listed directly below the primary sample

NL Not limiting

PQL Practical quantitation limit

Shaded cell is exceedance of guideline value

Where one or more guideline value is exceeded, the cell is shaded to the colour of the highest guideline value exceeded

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013), health screening level Clay 2-4m

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ANZG (2018) Ammonia DGV is pH and temperature dependant. DGV for a pH of 8 provided in table.

Table E4: Summary of Laboratory Results of Groundwater

										OPP																
		Heptachlor Epoxide	Hexachlorobenzene	Methoxychlor	alpha-BHC	beta-BHC	delta-BHC	Lindane	Sum of detected OCP	Azinphos methyl (Guthion)	Bromophos-ethyl	Chlorpyrifos	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Ronnel (fenchlorphos)	Fenitrothion	Fenthion	Malathion	Parathion	Parathion-methyl	Methidathion	Fenamiphos	Sum of detected OPP
	PQL	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.02	0.05	0.009	0.05	0.01	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.004	0.05	0.05	0.05	0.004
ANZG (2018) 95% LOP Fresh (Hardness adjusted)			0.1	**0.005**				0.2		0.02		**0.00004**		0.01		0.15			0.2		0.05	0.004				
NEPC (2013) HSL 2-4m																										
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH1	29/04/25	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.02	<0.05	<0.009	<0.05	<0.01	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.004	<0.05	<0.05	<0.05	<0.004
BD01	29/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	29/04/25	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.02	<0.05	<0.009	<0.05	<0.01	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.004	<0.05	<0.05	<0.05	<0.004
BH15	29/04/25	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.02	<0.05	<0.009	<0.05	<0.01	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.004	<0.05	<0.05	<0.05	<0.004

Notes:

^	Hardness adjusted value
-	No criterion / not defined / not tested / not applicable
*	QA/QC replicate of sample listed directly below the primary sample
NL	Not limiting
PQL	Practical quantitation limit

Shaded cell is exceedance of guideline value

Where one or more guideline value is exceeded, the cell is shaded to the colour of the highest guideline value exceeded

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013), health screening level Clay 2-4m

ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 95% level of protection of species for Fresh aquatic ecosystems [NB: 99% level of protection adopted for bioaccumulative chemicals]

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ANZG (2018) Ammonia DGV is pH and temperature dependant. DGV for a pH of 8 provided in table.

Table E4: Summary of Laboratory Results of Groundwater

		PCB																					
		Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Aroclor 1260	Sum of detected PCB	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	tetrachloroethene (PCE)	1,1,2-trichloroethane	Trichloroethene (TCE)	1,1-dichloroethane	1,1-Dichloroethene	1,1-dichloropropene	1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2,4-trichlorobenzene	1,2,4-trimethyl benzene	1,2-dibromo-3-chloropropane
	PQL	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ANZG (2018) 95% LOP Fresh (Hardness adjusted)					**0.3**		**0.01**				270	400	70	6,500	330		700		**3**		**85**		
NEPC (2013) HSL 2-4m																							
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH1	29/04/25	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BD01	29/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	29/04/25	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH15	29/04/25	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Notes:

^	Hardness adjusted value
-	No criterion / not defined / not tested / not applicable
*	QA/QC replicate of sample listed directly below the primary sample
NL	Not limiting
PQL	Practical quantitation limit
	Shaded cell is exceedance of guideline value
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	ANZG (2018) Ammonia DGV is pH and temperature dependant. DGV for a pH of 8 provided in table.

Table E4: Summary of Laboratory Results of Groundwater

		VOC (excluding BTEX)																								
		1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane	1,3,5-trimethylbenzene	1,3-dichlorobenzene	1,3-dichloropropane	1,4-dichlorobenzene	2,2-dichloropropane	2-chlorotoluene	4-chlorotoluene	4-isopropyl toluene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Tetrachloromethane (carbon tetachloride / CT)	Chloroethane	Chloroethene (vinyl chloride / VC)	Trichloromethane (chloroform / TCM)	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Isopropylbenzene (cumene)	Cyclohexane	dibromochloromethane
	PQL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	10	1	10	1	1	1	1	1
ANZG (2018) 95% LOP Fresh (Hardness adjusted)		160	1,900	900		260	1,100	60									240		100	770				30		
NEPC (2013) HSL 2-4m																										
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH1	29/04/25	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	**1**	<10	<1	<1	<1	<1	<1
BD01	29/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	29/04/25	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	<1	<10	<1	<1	<1	<1	<1
BH15	29/04/25	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	<1	<10	<1	<1	<1	<1	<1

Notes:

^	Hardness adjusted value
-	No criterion / not defined / not tested / not applicable
*	QA/QC replicate of sample listed directly below the primary sample
NL	Not limiting
PQL	Practical quantitation limit
	Shaded cell is exceedance of guideline value
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	ANZG (2018) DGV adopted for aluminium in freshwater is for receiving waters with pH >6.5. For receiving waters with pH <6.5 suitability of the more conservative, low reliability DGV of unknown LOP should be considered
	ANZG (2018) Ammonia DGV is pH and temperature dependant. DGV for a pH of 8 provided in table.

Table E4: Summary of Laboratory Results of Groundwater

		Dibromomethane	Dichlorodifluoromethane	1,2-dibromoethane	hexachlorobutadiene	Bromomethane	Monochlorobenzene	n-butylbenzene	n-propyl benzene	sec-butyl benzene	Styrene (vinylbenzene)	Tert-butyl benzene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichlorofluoromethane	Sum of detected VOC
	PQL	1	10	1	1	10	1	1	1	1	1	1	1	1	10	1
ANZG (2018) 95% LOP Fresh (Hardness adjusted)							55									
NEPC (2013) HSL 2-4m																
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH1	29/04/25	<1	<10	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<10	**1**
BD01	29/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	29/04/25	<1	<10	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1
BH15	29/04/25	<1	<10	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1

Notes:

^	Hardness adjusted value
-	No criterion / not defined / not tested / not applicable
*	QA/QC replicate of sample listed directly below the primary sample
NL	Not limiting
PQL	Practical quantitation limit
	Shaded cell is exceedance of guideline value
	Where one or more guideline value is exceeded, the cell is shaded to the colour of the highest guideline value exceeded
	NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013), health screening level Clay 2-4m
	ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 95% level of protection of species for Fresh aquatic ecosystems [NB: 99% level of protection adopted for bioaccumulative chemicals]
	ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, orange text is 'unknown' level of protection
	Underlining of ANZG (2018) criteria indicates a criteria with an 'unknown' level of protection.
	ANZG (2018) DGV adopted for most conservative species of following analytes: DGV for xylene (m) adopted for xylene (m+p); DGV for CrVI adopted for total chromium; DGV for AsV adopted for total arsenic
	ANZG (2018) DGV adopted for aluminium in freshwater is for receiving waters with pH >6.5. For receiving waters with pH <6.5 suitability of the more conservative, low reliability DGV of unknown LOP should be considered
	ANZG (2018) Ammonia DGV is pH and temperature dependant. DGV for a pH of 8 provided in table.

Table E5: Summary of Laboratory Results – Waste Classification of Stage 01 to 04

				Metals								TRH		BTEX				PAH				Phenols	OCP					OPP	PCB	PFAS				Asbestos
				Total Arsenic	Cadmium	Total Chromium	Lead	TCLP Lead	Mercury (inorganic)	Nickel	TCLP Nickel	TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes	Benzo(a)pyrene (B(a)P)	TCLP Benzo(a)pyrene (B(a)P)	Total PAH	TCLP Total PAH	Total Phenolics	Scheduled Chemical Waste (standard)	Chlordane	Total Endosulfan	Total Analysed OCP	Mirex	Total Analysed OPP	Total PCB	PFOA	TCLP PFOA	PFOS + PFHxS	TCLP PFOS + PFHxS	Summary
			PQL	4	0.4	1	1	0.03	0.1	1	0.02	25	50	0.2	0.5	1	1	0.05	0.0001	0.05		5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0001	0.00001	0.0001	0.00001	
Sample ID	Depth	Soil Profile	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/L	-
Site A																																		
BH11	0.5 - 0.6 m	Fill	09/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.0004**	**0.00001**	**0.0017**	**0.00002**	-
BH11	0.8 - 1 m	Fill	09/04/25	**4**	<0.4	**13**	**130**	**0.08**	**0.4**	**5**	-	<25	<50	<0.2	<0.5	<1	<1	**0.77**	-	**6.2**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH11	1.2 - 1.5 m	Fill	10/04/25	<4	<0.4	**13**	**51**	-	**0.4**	**5**	-	<25	<50	<0.2	<0.5	<1	<1	**0.8**	-	**6.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH12	0.8 - 1 m	Fill	10/04/25	**9**	<0.4	**33**	**98**	-	**0.2**	**17**	-	<25	<50	<0.2	<0.5	<1	<1	**0.88**	-	**8**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH12	1.3 - 1.5 m	Fill	10/04/25	**7**	<0.4	**13**	**62**	-	**0.1**	**8**	-	<25	**140**	<0.2	<0.5	<1	<1	**1.4**	<0.0001	**11**	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH12	1.8 - 2.3 m	Fill	10/04/25	**5**	<0.4	**20**	**65**	-	**0.3**	**7**	-	<25	<50	<0.2	<0.5	<1	<1	**0.78**	-	**6.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH12	2.6 - 3 m	Natural	10/04/25	**4**	<0.4	**6**	**22**	-	<0.1	<1	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0 - 0.2 m	Fill	17/04/25	<4	<0.4	**24**	**15**		**0.2**	**120**	<0.02	<25	**520**	<0.2	<0.5	<1	<1	**0.55**	-	**5.8**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH14	0.1 - 0.2 m	Fill	14/04/25	<4	<0.4	**41**	**14**	-	<0.1	**14**	-	<25	**1,300**	<0.2	<0.5	<1	<1	**0.5**	-	**4.6**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH14	0.4 - 0.5 m	Fill	14/04/25	<4	<0.4	**20**	**30**	-	<0.1	**22**	-	<25	**400**	<0.2	<0.5	<1	<1	**2.1**	<0.0001	**24**	**0.0013**	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	0.1 - 0.2 m	Fill	15/04/25	<4	<0.4	**16**	**5**		<0.1	**80**	**0.04**	<25	**510**	<0.2	<0.5	<1	<1	**0.2**	-	**2.2**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH15	0.4 - 0.5 m	Fill	15/04/25	**5**	<0.4	**20**	**26**		<0.1	**17**	-	<25	<50	<0.2	<0.5	<1	<1	**0.1**	-	**1.1**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0001	<0.00001	<0.0001	<0.00001	NAD
BD6/20250415	0.4 - 0.5 m	Fill	15/04/25	**5**	<0.4	**24**	**53**		<0.1	**39**	-	<25	**390**	<0.2	<0.5	<1	<1	**3.1**	<0.0001	**26**	**0.0013**	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15 - [TRIPLICATE]	0.4 - 0.5 m	Fill	15/04/25	**4**	<0.4	**20**	**33**		<0.1	**22**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	0.8 - 1 m	Natural	15/04/25	**6**	<0.4	**22**	**26**		<0.1	**19**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH16	0.1 - 0.2 m	Fill	17/04/25	<4	<0.4	**7**	**6**		<0.1	**5**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH16	0.4 - 0.5 m	Fill	17/04/25	**7**	<0.4	**5**	**11**		<0.1	**2**	-	<25	<50	<0.2	<0.5	<1	<1	**0.07**	-	**0.3**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH16	0.6 - 0.8 m	Fill	17/04/25	**6**	<0.4	**7**	**26**		<0.1	**2**	-	<25	**690**	<0.2	<0.5	<1	<1	**9.9**	<0.0001	**170**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH16	0.8 - 0.95 m	Fill	17/04/25	**12**	<0.4	**6**	**26**		<0.1	**3**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-
Site B																																		
BH6	0 - 0.1 m	Fill	04/04/25	**5**	<0.4	**14**	**41**	-	**0.2**	**7**	-	<25	**240**	<0.2	<0.5	<1	<1	**0.2**	-	**1.8**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH6	0.15 - 0.25 m	Fill	04/04/25	**6**	<0.4	**9**	**140**	<0.03	<0.1	**2**	-	<25	<50	<0.2	<0.5	<1	<1	**0.1**	-	**0.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	0.15 - 0.5 m	Fill	04/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH07	0.1 - 0.2 m	Fill	14/04/25	<4	<0.4	**54**	**52**	-	<0.1	**70**	**0.04**	<25	**1,700**	<0.2	<0.5	<1	<1	**120**	<0.0001	**1,500**	**0.032**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH07	0.4 - 0.5 m	Fill	14/04/25	**8**	<0.4	**28**	**22**	-	<0.1	**5**	-	<25	<50	<0.2	<0.5	<1	<1	**1.1**	-	**14**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH08	0.2 - 0.3 m	Fill	09/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH08	0.35 - 0.5 m	Fill	09/04/25	<4	<0.4	**14**	**20**	-	<0.1	**2**	-	<25	<50	<0.2	<0.5	<1	<1	**0.3**	-	**4**	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH08	0.8 - 1 m	Natural	09/04/25	**5**	<0.4	**9**	**19**	-	<0.1	<1	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD5/20250409	0.8 - 1 m	Natural	09/04/25	**5**	<0.4	**17**	**24**	-	<0.1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH09	0.2 - 0.3 m	Fill	08/04/25	<4	<0.4	**25**	**4**	-	<0.1	**170**	**0.26**	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH09	0.5 - 0.6 m	Fill	08/04/25	**6**	<0.4	**19**	**68**	-	**0.2**	**6**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH09	0.8 - 1 m	Natural	08/04/25	**5**	<0.4	**16**	**25**	-	<0.1	<1	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH10	0.05 - 0.2 m	Fill	28/04/25	<4	<0.4	**5**	**8**	-	<0.1	**3**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH10 - [TRIPLICATE]	0.05 - 0.2 m	Fill	28/04/25	<4	<0.4	**6**	**14**	-	<0.1	**4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10	0.5 - 0.6 m	Fill	28/04/25	**7**	<0.4	**19**	**89**	-	**0.2**	**5**	-	<25	<50	<0.2	<0.5	<1	<1	**0.66**	-	**7.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH10	1 - 1.1 m	Natural	28/04/25	**5**	<0.4	**17**	**42**	-	**0.1**	**4**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH10	1.2 - 1.3 m	Natural	28/04/25	**6**	<0.4	**14**	**23**	-	<0.1	**1**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waste Classification Criteria [f]																																		
CT1				100	20	100	100	-	4	40	-	650	10,000	10	288	600	1000	0.8	-	200	-	288	<50	-	60	-	-	4	<50	-	-	-	-	-
SCC1				500	100	1,900	1,500	-	50	1,050	-	650	10,000	18	518	1,080	1,800	10	-	200	-	518	<50	-	108	-	-	7.5	<50	18	-	1.8	-	-
TCLP1				-	-	-	-	5	-	-	2	-	-	-	-	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	0.5	-	0.05	-
CT2				400	80	400	400	-	16	160	-	2,600	40,000	40	1,152	2,400	4,000	3.2	-	800	-	1,152	<50	-	240	-	-	16	<50	-	-	-	-	-
SCC2				2,000	400	7,600	6,000	-	200	4,200	-	2,600	40,000	72	2,073	4,320	7,200	23	-	800	-	2,073	<50	-	432	-	-	30	<50	72	-	7.2	-	-
TCLP2				-	-	-	-	20	-	-	8	-	-	-	-	-	-	-	0.16	-	-	-	-	-	-	-	-	-	-	-	2	-	0.2	-
VENM Classification Criteria																																		
NEPC (1999)				1-50	1	5-1000	2-200	-	0.03	5-500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANZECC (1992)				0.2-30	0.04-2	0.5-110	<2-200	-	0.001-0.1	2-400	-	-	-	0.05 - 1	0.1 - 1	-	-	-	-	-	0.95-5	0.03 – 0.5	-	-	<0.001 - <0.97	-	-	-	0.02 – 0.1	-	-	-	-	-
ANZECC (2000)				1-53	0.016-0.78	2.5-673	2-81	-	-	1-517	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CT1 exceedance TCLP1 and/or SCC1 exceedance CT2 exceedance TCLP2 and/or SCC2 exceedance Asbestos detection

- = Not tested, no criteria or not applicable NAD = no asbestos detected

Notes:

a	QA/QC replicate of sample listed directly below the primary sample
b	Total chromium used as initial screen for chromium(VI).
c	Total recoverable hydrocarbons (TRH) used as an initial screen for total petroleum hydrocarbons (TPH)
d	Criteria for scheduled chemicals used as an initial screen
e	Criteria for Chlorpyrifos used as initial screen
f	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste
PQL	Practical quantitation limit
CT1	Maximum values of specific contaminant concentration (SCC) for classification without TCLP: General solid waste
SCC1	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
TCLP1	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
CT2	Maximum values of specific contaminant concentration (SCC) for classification without TCLP: Restricted solid waste
SCC2	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid waste
TCLP2	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid waste

Table E6: Summary of Laboratory Results of – Waste Classification of Stage 06

				Metals							TRH		BTEX				PAH		Phenols	OCP						OPP	PCB	PFAS				Asbestos
				Total Arsenic	Cadmium	Total Chromium	Lead	TCLP Lead	Mercury (inorganic)	Nickel	TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes	Benzo(a)pyrene (B(a)P)	Total PAH	Total Phenolics	Scheduled Chemical Waste (standard)	Chlordane	Total Endosulfan	Total Analysed OCP	Mirex	Total Analysed OPP	Total PCB	PFOA	TCLP PFOA	PFOS + PFHxS	TCLP PFOS + PFHxS	Summary
			PQL	4	0.4	1	1	0.03	0.1	1	25	50	0.2	0.5	1	1	0.05	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0001	0.00001	0.0001	0.00001	
Sample ID	Depth	Soil Profile	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/L	-
BH1	0.15 - 0.25 m	Fill	03/04/25	<4	<0.4	**7**	**16**	-	<0.1	**6**	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH1	0.15 - 0.25 m	Material	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Detected
BH2	0.13 - 0.23 m	Fill	03/04/25	<4	<0.4	**7**	**39**	-	<0.1	**4**	<25	<50	<0.2	<0.5	<1	<1	**0.2**	**1.8**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH2	0.25 - 0.35 m	Natural	03/04/25	<4	<0.4	**3**	**10**	-	<0.1	<1	<25	<50	<0.2	<0.5	<1	<1	**0.09**	**0.09**	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	0.2 - 0.3 m	Fill	03/04/25	<4	<0.4	**26**	**19**	-	<0.1	**32**	<25	**670**	<0.2	<0.5	<1	<1	**0.2**	**1.6**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BH3	0.5 - 0.6 m	Fill	03/04/25	<4	<0.4	**17**	**15**	-	<0.1	**17**	<25	<50	<0.2	<0.5	<1	<1	**0.3**	**2.8**	-	-	-	-	-	-	-	-	<0.0001	<0.00001	<0.0001	<0.00001	NAD
BH3	1 - 1.1 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH3	1.8 - 1.9 m	Fill	03/04/25	<4	<0.4	**9**	**500**	**2.2**	<0.1	**2**	<25	<50	<0.2	<0.5	<1	<1	**0.2**	**1.6**	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH3	2.4 - 2.6 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH3	3 - 3.2 m	Natural	03/04/25	**4**	<0.4	**12**	**32**	-	<0.1	<1	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.4 - 0.6 m	Fill	03/04/25	<4	<0.4	**3**	**20**	-	<0.1	**2**	<25	<50	<0.2	<0.5	<1	<1	**0.1**	**0.4**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	NAD
BD02/20250402	0.4 - 0.6 m	Fill	03/04/25	<4	<0.4	**2**	**17**	-	<0.1	<1	<25	<50	<0.2	<0.5	<1	<1	**0.1**	**0.4**	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4 - [TRIPLICATE]	0.4 - 0.6 m	Fill	03/04/25	<4	<0.4	**2**	**18**	-	<0.1	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	1 - 1.2 m	Fill	03/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
BH4	1.5 - 1.7 m	Fill	03/04/25	**4**	<0.4	**26**	**290**	-	**0.2**	**2**	<25	<50	<0.2	<0.5	<1	<1	**0.2**	**2.2**	-	-	-	-	-	-	-	-	-	-	-	-	NAD
Waste Classification Criteria [f]																															
CT1				100	20	100	100	-	4	40	650	10,000	10	288	600	1000	0.8	200	288	<50	-	60	-	-	4	<50	-	-	-	-	-
SCC1				500	100	1,900	1,500	-	50	1,050	650	10,000	18	518	1,080	1,800	10	200	518	<50	-	108	-	-	7.5	<50	18	-	1.8	-	-
TCLP1				-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	0.05	-
CT2				400	80	400	400	-	16	160	2,600	40,000	40	1,152	2,400	4,000	3.2	800	1,152	<50	-	240	-	-	16	<50	-	-	-	-	-
SCC2				2,000	400	7,600	6,000	-	200	4,200	2,600	40,000	72	2,073	4,320	7,200	23	800	2,073	<50	-	432	-	-	30	<50	72	-	7.2	-	-
TCLP2				-	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	0.2	-
VENM Classification Criteria																															
NEPC (1999)				1-50	1	5-1000	2-200	-	0.03	5-500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANZECC (1992)				0.2-30	0.04-2	0.5-110	<2-200	-	0.001-0.1	2-400	-	-	0.05 - 1	0.1 - 1	-	-	-	0.95-5	0.03 – 0.5	-	-	<0.001 - <0.97	-	-	-	0.02 – 0.1	-	-	-	-	-
ANZECC (2000)				1-53	0.016-0.78	2.5-673	2-81	-	-	1-517	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CT1 exceedance TCLP1 and/or SCC1 exceedance CT2 exceedance TCLP2 and/or SCC2 exceedance Asbestos detection

- = Not tested, no criteria or not applicable NAD = no asbestos detected

Notes:

a	QA/QC replicate of sample listed directly below the primary sample
b	Total chromium used as initial screen for chromium(VI).
c	Total recoverable hydrocarbons (TRH) used as an initial screen for total petroleum hydrocarbons (TPH)
d	Criteria for scheduled chemicals used as an initial screen
e	Criteria for Chlorpyrifos used as initial screen
f	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste
PQL	Practical quantitation limit
CT1	Maximum values of specific contaminant concentration (SCC) for classification without TCLP: General solid waste
SCC1	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
TCLP1	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
CT2	Maximum values of specific contaminant concentration (SCC) for classification without TCLP: Restricted solid waste
SCC2	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid waste
TCLP2	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid waste

Appendix F

Remediation Options Assessment and Evaluation

1. Introduction

The following key guidelines and technical reports were consulted in the preparation of this remediation options assessment:

- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM])* (NEPC, 2013); and
- CRC CARE *Remediation Action Plan: Development - Guideline on Performing Remediation Options Assessment* (CRC CARE, 2019a).

The first stage of developing a remediation strategy is to establish clear and measurable remediation objectives and remediation criteria (clean-up levels). These will form the requirements against which remediation options are assessed.

The next stage of the remediation options assessment is to select technology and management options, or combinations of options, that have the potential to reduce contaminant concentrations and/or apply management controls as necessary so that the remediation objectives are achieved and no unacceptable risk is posed by the contamination in the context of the current and proposed site use. Where several viable options have been identified, an assessment of each of the options will be required to determine which option will most adequately and sustainably meet the remediation objectives (CRC CARE, 2019a).

The remediation objectives are to:

- Address potentially unacceptable risks to relevant environmental values from contamination (refer to the CSM in Section 7); and
- Render the site suitable, from a contamination perspective, for the proposed development (refer to Section 2).

2. Hierarchy of remediation options

NEPC (2013) stipulates the preferred hierarchy of options for site clean-up (remediation) and/or management which is outlined as follows:

- On-site treatment of the contamination so that it is destroyed, or the associated risk is reduced to an acceptable level; and
- Off-site treatment of excavated soil, so that the contamination is destroyed, or the associated risk is reduced to an acceptable level, after which soil is returned to the site.

or, if these two options are not practicable:

- Consolidation and isolation of the soil on site by containment with a properly designed barrier; and
- Removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material; or,

- Where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

3. Remediation options assessment

3.1 Introduction

Based on the preliminary site investigation (Douglas, 2025) and Conceptual Site Model (CSM) the anticipated potential contamination at the site, requiring remediation or management, comprises:

- Asbestos containing material (ACM) in fill at Stage 06, and potentially at other stages; and
- Polycyclic aromatic hydrocarbons (PAH) in fill in Stages 01, 02 and 03, and potentially in other stages.

The data gap investigation (DGI) may identify other contaminants in fill, however it is considered that the remediation options listed below are likely to be sufficient to address other potential contaminants in fill.

No groundwater remediation requirement has been identified to date.

3.2 Remediation options assessment

Given the nature of the contamination issues at the site and the necessary earthworks (final landform) as part of the proposed development, only two options for addressing soil contamination have been considered, as follows:

- On-site management / cap and contain (consolidation and isolation by containment); and
- Excavation and off-site disposal.

The following key guidelines have been consulted in the assessment of each option and the determination of the preferred option:

- CRC CARE *Technology Guide: Soil - Containment* (CRC CARE, 2019c);
- CRC CARE *Technology Guide: Soil - Excavation* (CRC CARE, 2019b);
- WA DoH *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (WA DoH, 2021); and
- WorkCover NSW *Managing Asbestos in or on Soil* (WorkCover NSW, 2014).

Relevant technical considerations include:

- Asbestos cannot be physically destroyed; and
- Excavation is proposed at parts of the site resulting in a net deficit of soil / rock such that some material requires off-site disposal, irrespective of the contamination issues.

The on-site capping and containment of contaminated soils is viable from a technical perspective and comprises the retention or relocation of impacted fill beneath a physical barrier such as handstand and/or clean soils. The advantage of such an option is that the method is more sustainable (i.e. limiting unnecessary landfilling) and in most cases cost effective. However, this option requires notification of capped contamination on the property title, and ongoing maintenance and management under a long-term management plan. There are also ongoing liabilities with such an approach.

The off-site disposal option removes the contamination and its ongoing liabilities, and delivers a 'clean' works area for subsequent construction. However, the method is less sustainable and often carries a larger expense.

In consultation with the client, Doulas understand that the construction program and cost constraints do not allow time or budget for on-site capping. Another consideration important to the client is the ongoing liability associated with a cap and contain strategy. Accordingly, the preferred remediation strategy is excavation and off-site disposal.

4. Preferred remediation strategy

The preferred remediation option selected, taking in to account technical considerations (as discussed herein), and other project specific considerations (such as program, cost and consideration of ongoing liability implications) is excavation and off-site disposal of contaminated fill.

5. References

CRC CARE. (2019a). *Remediation Action Plan: Development - Guideline on Performing Remediation Options Assessment*. National Remediation Framework: CRC for Contamination Assessment and Remediation of the Environment.

CRC CARE. (2019b). *Technology Guide: Soil - Excavation*. National Remediation Framework: CRC for Contamination Assessment and Remediation of the Environment.

CRC CARE. (2019c). *Technology Guide: Soil - Containment*. National Remediation Framework: CRC for Contamination Assessment and Remediation of the Environment.

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]*. Australian Government Publishing Services Canberra: National Environment Protection Council.

WA DoH. (2021). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. WA Department of Health.

WorkCover NSW. (2014). *Managing Asbestos in or on Soil*. March 2014: WorkCover NSW, NSW Government.

Appendix G

Site Management Plan

1. Introduction

This general site management plan (SMP) has been developed to minimise potentially adverse impacts on the environment, and worker and public health as a result of the proposed remediation works.

The Remediation Contractor must have in place a construction environmental management plan (CEMP) (or similar) which is specific to the equipment used for the remediation and the proposed methods to be adopted by the Remediation Contractor. This SMP has been prepared to augment the Remediation Contractor's CEMP and contains general details for aspects of the work, as per reporting requirements for a remediation action plan (RAP) under NSW EPA *Guidelines for Consultants Reporting on Contaminated Land* (NSW EPA, 2020).

Apart from the management principles outlined in this SMP, the Remediation Contractor must also ensure compliance with all relevant environmental legislation and regulations, including (but not limited to) the following:

- Contaminated Land Management Act 1997 NSW (CLM Act);
- Protection of the Environment Operations Act 1997 NSW (POEO Act);
- Protection of the Environment Legislation Amendment Act 2011 NSW;
- Protection of the Environment Operations Amendment (Scheduled Activities and Waste) Regulation 2008 NSW;
- Environmentally Hazardous Chemicals Act 1985 NSW;
- Environmental Offences and Penalties Act 1989 NSW;
- Pesticide Act 1999 NSW and Pesticides Regulation 2017; and
- Work Health and Safety Act 2017 NSW (WHS Act) and Work Health and Safety Regulations 2017 NSW.

2. Roles and responsibilities

2.1 Principal

The Principal is responsible for the environmental performance of the proposed remediation works, including implementation of acceptable environmental controls during remediation works. The Principal will retain the overall responsibility for ensuring this RAP is appropriately implemented. The Principal is to nominate a representative (the Principal's Representative), who is responsible for overseeing the implementation of this RAP. The actual implementation of the RAP will, however, be conducted by the Remediation Contractor on behalf of the Principal.

The Principal is responsible for providing appropriate information to the Remediation Contractor to allow them to safely plan the required works. This includes the asbestos register for the site and this RAP.

The Principal is also responsible for implementing an appropriate communications plan.

2.2 **Remediation Contractor**

The Remediation Contractor will be the party responsible for daily implementation of this RAP and shall fulfil the responsibilities of the Remediation Contractor as defined by SafeWork NSW. It is noted that the Remediation Contractor may appoint appropriately qualified sub-contractors or sub-consultants to assist in fulfilling the requirements of the procedures. The Remediation Contractor will appoint a Site Manager.

In addition to the implementation of the RAP it will be the Remediation Contractors responsibility to:

- Obtain / ensure relevant sub-contractors obtain specific related approvals as necessary to implement the earthworks including permits for removal of asbestos-containing material, SafeWork NSW notification etc.;
- Develop or request and review any site plans to manage the works to be conducted; and
- Ensure that all remediation works and other related activities are undertaken in accordance with this RAP.
- Maintain all site records related to the implementation of this RAP including but not limited to:
    - Tracking of all movement of soil within the site, on to site and off-site from cradle to grave;
    - Transportation Record: comprising a record of all truckloads of soil (including aggregate) entering the site, including truck identification (e.g. registration number), date, time, source site, load characteristics (e.g. type of material, i.e. quarried aggregate, etc.), approximate volume, use (e.g. general site raising, service trenches, etc.);
    - Disposal dockets: for any soil disposed off-site including transportation records, spoil source, spoil disposal location, receipt provided by the receiving waste facility / site;
    - Imported materials records: records for any soil imported onto the site, including source site, classification reports, inspection records of soil upon receipt at site and transportation records;
    - Records relating to any unexpected finds and contingency plans implemented;
    - Photographic records by all contractors and consultants of the works undertaken within their purview of responsibilities;
    - Airborne asbestos monitoring records; and
    - Interim / final visual and sampling clearances for any asbestos related works.
- Ensure sufficient information is provided to engage or direct all required parties, including sub-contractors, to implement the requirements of the RAP other than those that are the direct responsibility of the Remediation Contractor;
- Manage the implementation of any recommendation made by those parties in relation to work undertaken in accordance with the RAP;
- Inform, if appropriate, the relevant regulatory authorities of any non-conformances with the procedures and requirements of the RAP in accordance with the procedures outlined in this document;
- Retain records of any contingency actions;

- On completion of the project, to review the RAP records for completeness and update as necessary; and
- Recommend any modification to general documentation which would further improve the environmental outcomes of this RAP.

2.3 Surveyor

The project surveyor will be a registered surveyor engaged by the Remediation Contractor to undertake surveying works as required by this RAP.

2.4 Asbestos Contractor

The Asbestos Contractor will be responsible for undertaking all asbestos work involving any asbestos impacted fill. In the case of friable asbestos finds, a Class A licenced removalist will be required for the removal of asbestos (issued by SafeWork NSW).

The Asbestos Contractor can be the same entity as the Remediation Contractor.

2.5 Sub-contractors

All sub-contractors will be inducted onto the site, informed of their responsibilities in relation to this RAP and sign their agreement to abide by the RAP requirements. Where necessary, sub-contractors will also be trained in accordance with the requirements of this document. All sub-contractors must conduct their operations in accordance with the RAP as well as all applicable regulatory requirements.

2.6 Environmental Consultant

The Environmental Consultant will provide advice on implementing the RAP. The Environmental Consultant will be responsible for:

- Undertake any required assessments where applicable (e.g. waste classification, validation);
- Provide advice and recommendations arising from monitoring and/or inspections, including unexpected finds; and
- Notify the Client with any results of assessments, and any observed non-conformances.

2.7 Site workers

All workers on the site are responsible for observing the requirements of this RAP and other management plans. These responsibilities include the following:

- Being inducted on the site and advised of the general nature of the remediation / environmental issues at the site;
- Being aware of the requirements of this plan;
- Wearing appropriate personal protective equipment (PPE) as required by this plan;
- Only entering restricted areas when permitted; and
- Requesting clarification when unclear of requirements of this or any other plans (e.g. safe work method statements (SWMS)).

3. Water management

3.1 Stormwater

Stormwater must be managed during the remediation works such that potential adverse impacts from surface runoff (e.g. cross contamination, mobilisation of contaminants in soil particles, etc.) are appropriately mitigated. Accordingly, the Remediation Contractor will take appropriate measures which may include:

- Construction, where necessary, of stormwater diversion channels, bunding and linear drainage sumps with catch pits in and around the remediation areas to divert stormwater from the contaminated areas;
- Provision of appropriately located sediment traps including geotextiles; and
- Discharge of excess water in excavations / low points on a regular basis to limit the potential for flooding.

3.2 Dewatering of excavations

Any runoff or seepage water accumulated in site excavations that requires removal must initially be sampled and tested for suspended solids, pH and any contaminants of potential concern (CoPC) as identified by the Environmental Consultant. The options for management of excavation pump-out water, dependent upon the test results, are for disposal of the water as follows:

- Discharge to stormwater with prior approval from Council. Provided the test results comply with relevant ANZG *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG, 2018), or any other compliance requirements stipulated by Council. The Environmental Consultant must consider the most appropriate criteria to be used; or
- Discharge to sewer, as industrial trade wastewater, with prior approval from Sydney Water. This option would require the analysis of a larger list of analytes, and compliance with the Sydney Water acceptance standards; or
- Pumping by a liquid waste contractor for removal of the water off-site, in accordance with regulatory requirements.

Note that, depending on the type and scale of the dewatering required, a permit (water use approval) may need to be obtained through NSW Water.

4. Soil management plan

The Remediation Contractor will develop a plan to mitigate cross contamination as part of the CEMP to be implemented throughout the works.

4.1 Stockpiling of contaminated material

Contaminated material shall be excavated and stockpiled at a suitably segregated location(s) away from sensitive areas (e.g. water bodies, drainage lines, stormwater pits, etc.) and ongoing excavations, and in a manner that will not cause nuisance to the neighbouring properties. Soil stockpiles are to be managed as follows:

- An impermeable membrane such as plastic sheeting should be provided at the surface by the Remediation Contractor prior to stockpiling. Plastic sheeting should be taped at joins, as necessary;
- All stockpiles of contaminated material shall be surrounded by star pickets and marking tape or other suitable material to clearly delineate their boundaries;
- Stockpiles shall be lightly conditioned by sprinkler or covered by geotextile or similar cover to prevent dust generation (if remaining overnight);
- Stockpiles impacted, or potentially impacted, with asbestos must be covered by geotextile or similar cover to prevent dust generation;
- Measures should be taken by the Remediation Contractor to prevent the migration of stockpile materials (i.e. perimeter bunds, hay bales, silt fences, etc.); and
- A record of stockpile locations (stockpile register), dimensions, descriptions, environmental controls, etc. should be maintained by the Remediation Contractor.

All movement of soil within the site is to be tracked by the Remediation Contractor, from cradle to grave. Copies of tracking records must be provided to the Environmental Consultant.

4.2 Stockpiling imported material

Imported material shall be stockpiled at a suitably segregated location(s) away from sensitive areas (e.g. water bodies, drainage lines, stormwater pits, etc.) and ongoing excavations, and in a manner that will not cause nuisance to the neighbouring properties. Soil stockpiles are to be managed as follows:

- Imported material should not be stockpiled within un-remediated areas of the site. If this is unavoidable an impermeable membrane such as plastic sheeting should be provided at the surface by the Remediation Contractor prior to stockpiling. Plastic sheeting should be taped at joins, as necessary;
- All stockpiles shall be surrounded by star pickets and marking tape or other suitable material to clearly delineate their boundaries;
- Stockpiles shall be lightly conditioned by sprinkler or covered by geotextile or similar cover to prevent dust generation (if remaining overnight); and
- A record of stockpile locations (stockpile register), dimensions, descriptions, environmental controls, etc. should be maintained by the Remediation Contractor.

All movement of soil within the site is to be tracked by the Remediation Contractor, from cradle to grave. Copies of tracking records must be provided to the Environmental Consultant.

4.3 Transport of material off-site and on to site

Transport of contaminated material from the site and imported material to the site shall be via a clearly delineated haul route(s) and this route shall be used exclusively for entry and egress of vehicles used to transport contaminated materials within and away from the site, and onto and within the site. The proposed transport route(s) (to be determined by the Remediation Contractor) will be notified to Council and truck dispatch shall be logged and recorded by the Remediation Contractor for each load leaving or arriving the site. A record of the truck dispatch will be provided to the Environmental Consultant.

All haulage routes for trucks transporting soil, materials, equipment or machinery to and from the site should be selected to meet the following objectives:

- Comply with all road traffic rules;
- Minimise noise, vibration and dust to adjacent premises; and
- Use State roads and minimise use of local roads as far as practicable.

The remediation work will be conducted such that all vehicles:

- Conduct deliveries of soil, materials, equipment or machinery only during the specified hours of remediation;
- Have securely covered loads to prevent any dust or odour emissions during transportation; and
- Exit the site in a forward direction.

In addition, measures will be implemented to ensure no contaminated material is spilled onto public roadways or tracked off-site on vehicle wheels. Roadways will be kept clean throughout the remediation works and will be broomed, if necessary, to achieve a clean environment.

All loads will be securely covered and may be lightly wetted, if required, to ensure that no materials or dust are dropped or deposited outside or within the site. Prior to exiting the site each truck should be inspected by Remediation Contractor personnel and either noted as clean (wheels and chassis) or broomed prior to leaving the site. Any soil spilled onto surrounding streets will be cleaned by mechanical or hand methods, on a daily basis.

Removal of waste materials from the site shall only be carried out contractors holding the appropriate license(s), consent or approvals to dispose the waste materials according to the waste classification and with the appropriate approvals obtained from the EPA, were required.

Materials imported onto the site shall only be carried out contractors holding the appropriate license(s), consent or approvals to transport the materials with the appropriate approvals obtained from the EPA, were required.

All movement of soil within the site is to be tracked by the Remediation Contractor, from cradle to grave. Copies of tracking records must be provided to the Environmental Consultant.

5. Noise and vibration control plan

All equipment and machinery should be operated in an efficient manner to minimise the emission of noise. The use of any plant and/or machinery should not cause unacceptable vibrations to nearby properties and should meet Council requirements.

6. Dust control plan

Dust emissions must be confined within the site boundary as far as is practicable. The following example dust control procedures could be employed to comply with this requirement, as necessary:

- Erection of dust screens around the perimeter of the site (as applicable);
- Securely covering all loads entering or exiting the site;
- Use of water sprays across the site to suppress dust;
- Stockpiles shall be lightly conditioned by sprinkler or covered by geotextile or similar cover to prevent dust generation (if remaining overnight);
- Stockpiles impacted, or potentially impacted, with asbestos must be covered by geotextile or similar cover to prevent dust generation;
- Include wheel wash (if applicable); and
- Keeping excavation and stockpile surfaces moist.

Regular checking of the fugitive dust issues is to be undertaken. Remedial measures are to be undertaken to rectify any cases of excessive dust.

7. Odour control plan

No odours should be detected at any boundary of the site during remediation works by an authorised Council Officer relying solely on sense of smell. The following example procedures could be employed to comply with this requirement as necessary:

- Use of appropriate covering techniques such as plastic sheeting, polythene or geotextile membranes to cover excavation faces or stockpiles;
- Fine spray of water and/or hydrocarbon mitigating agent on impacted areas/stockpiles or loads to lightly condition the material;
- If required, restrict uncovered stockpiles to appropriate sizes to minimise odour generation;
- Ceasing works during periods of inclement weather such as high winds or heavy rain;
- Regular checking of the fugitive dust and odour issues to ensure compliance. Undertake immediate remediation measures to rectify any cases of excessive dust or odour (e.g. use of misting sprays or odour masking agent); and
- Adequate maintenance of equipment and machinery to minimise exhaust emissions.

8. Work health and safety plan

8.1 General

It is the Remediation Contractor's responsibility to devise a SWMS[1] (or series thereof, for various respective tasks) and to implement proper controls that enable the personnel undertaking the remediation to work in a safe environment. This RAP and SMP does not relieve the Remediation Contractor or other contractors of their ultimate responsibility for occupational health and safety of their workforce and to prevent contamination of areas outside the 'remediation' workspace. This RAP and SMP sets out general procedures and the minimum standards and guidelines for remediation that will need to be used in preparing the safe work method statement.

This work health safety plan (WHSP) has been prepared with refence to CRC CARE *Remediation Action Plan: Implementation - Guideline on Health and Safety* (CRC CARE, 2019). The requirements of this WHSP must be incorporated into the Remediation Contractor's SWMS.

All site work must be undertaken in a controlled and safe manner with due regard to potential hazards, training and safe work practices. To attain this the SWMS developed by the Remediation Contractor must comply with policies specified in the Work Health and Safety Regulation 2011.

All appropriate permits, licences and notifications required for the remediation activities must be obtained prior to the commencement of remediation works.

8.2 Site access

Appropriate fencing and signage must be installed around and within the site to prevent unauthorised access and restrict access to remediation areas and/or deep excavations. Access restrictions and administrative arrangements for management of entry of workers or related personnel on site is the responsibility of the Remediation Contractor.

Any existing pits or unstable areas on site that may generate potential safety, or operational risk should be demarcated and taped off, with appropriate rectification action undertaken (e.g. backfilling of pits).

8.3 Personnel and responsibilities

Before undertaking works on site, all personnel will be made aware of the officer responsible for implementing WHS procedures. All personnel must read and understand this WHSP and over-arching SWMS prior to commencing site works and sign a statement to that effect. Contractors employed at the site will be responsible for ensuring that their employees are aware of, and comply with, the requirements of this WHSP and Remediation Contractor's SWMS.

8.4 Chemical contamination hazards

Chemical compounds or substances that may be present in the soils at the site include the key CoPC PAH and asbestos. There is also a lower probability of other contaminants being present.

[1] Either a SWMS or construction environmental management plan (CEMP), or other equivalent document incorporating health and safety aspects of the proposed remedial works.

The risks associated with the identified contaminants to site personnel and workers involved in the remediation are considered to be low due to the concentrations within groundwater and soil vapour and limited exposure durations. These risks are associated with:

- Ingestion of contaminated soil and/or water;
- Dermal contact with contaminated soil and/or water; and
- Inhalation of dusts or vapours of the CoPC.

If asbestos is encountered in fill, this risk evaluation should be revised.

Personnel will endeavour, wherever possible, to avoid direct contact with potentially contaminated material. Workers must avoid the potential exposures listed above as far as is practicable. Appropriate personal protective equipment (PPE) must be used to mitigate potential risks.

8.5 Physical hazards

The following physical hazards are associated with conditions that may be created during remediation works:

- Heat exposure;
- Excavations;
- Buried services;
- Noise;
- Dust;
- Electrical equipment;
- Heavy equipment and truck operation; and
- Asbestos.

Safe work practices must be employed to manage the physical risks identified above. For the most part these risks can be managed through appropriate demarcation, access controls and the use of appropriate PPE.

8.6 Safe work practices

The appropriate safe work practices should be clearly defined by the Remediation Contractor in their SWMS. As a minimum, all personnel on site will be required to wear the following PPE:

- Steel-capped boots (mandatory);
- High visibility clothing / vest (mandatory);
- Safety glasses or safety goggles with side shields requirements (as necessary);
- Hard hat (as necessary);
- Appropriate respiratory and protective equipment for any works involving asbestos (as necessary); and

- Hearing protection when working in the vicinity of machinery or plant equipment if noise levels exceed exposure standards (as necessary).

Each item of PPE should meet the corresponding relevant Australian Standard(s).

Specific safe work practices will be adopted when working with asbestos, in accordance with (but not limited to) the following codes of practice:

- SafeWork NSW *Code of Practice, How to Manage and Control Asbestos in the Workplace* (SafeWork NSW, 2019a);
- SafeWork *NSW Code of Practice, How to Safely Remove Asbestos* (SafeWork NSW, 2019b);
- WorkCover *NSW Managing Asbestos in or on Soil* (WorkCover NSW, 2014); and
- NOHSC *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Ed* (NOHSC, 2005).

9. Remediation schedule and hours of operation

The remediation works will be conducted within the days and hours specified in the development consent.

10. Response to incidents

The key to effective management of incidents is the timely action taken before any situation reaches a reportable or critical level. Therefore, surveillance activities are extremely important and should be conducted for the measures prescribed herein and any other measures prescribed in any additional environmental management plan developed subsequently. During construction activities on the site, the following inspection or preventative actions should be performed by the Remediation Contractor:

- Regular inspection of works;
- Completion of routine environmental checklists and follow-up of non-compliance situations;
- Maintenance and supervision on-site; and
- An induction process for site personnel involved in the remediation works that includes relevant information on the contamination status of the site, the remediation works being undertaken, worker health and environmental protection requirements and ensures that all site personnel are familiar with the site emergency procedures.

An emergency response plan will be in place for all aspects of site works. Any emergency will be reported immediately to the site office and/or the Site Manager (and Safety Officer), and the appropriate emergency assistance should be sought. The Site Manager should be responsible for initiating an immediate emergency response using the resources available on the site. Where external assistance is required, the relevant emergency services should be contacted. A table such as that below, containing contact details for key personnel who may be involved in an environmental emergency response should be completed and be readily available to personnel at all times. The table should be completed, and thereafter amended, as required.

The Remediation Contractor will be responsible for ensuring that site personnel are aware of the emergency services available and the appropriate contact details. A site Safety Officer should be contactable, or available, on-site during remediation and development works.

Contact details for key utilities are included in the event of needing to respond to incidents. Blank cells are 'to be confirmed' and should be completed prior to works commencing when all entities are confirmed.

Table 1: Summary of roles and contact details

Role	Personnel / contact	Phone contact details
Principal	TBC	TBC
Principal's Representative	TBC	TBC
Site Manager	TBC	TBC
Remediation Contractor and Builder	TBC	TBC
Site Office	TBC	TBC
Environmental Consultant	TBC	TBC
Consent Authority	Inner West Council	
Regulator	NSW EPA (pollution line and general enquiries)	131 555
Utility Provider	Water (Sydney Water Corporation)	13 20 92
Utility Provider	Power (Ausgrid)	13 13 88
Utility Provider	Gas (Jemena Limited)	131 909
Utility Provider	Telecommunications (Telstra Corporation Limited)	13 22 03
Utility Provider	Telecommunications (Optus)	1800 505 777
Utility Provider	Telecommunications (NBN Co Limited)	1800 687 626

11. References

ANZG. (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Canberra, ACT: Australian and New Zealand Governments and Australian state and territory governments.

CRC CARE. (2019). *Remediation Action Plan: Implementation - Guideline on Health and Safety.* National Remediation Framework: CRC for Contamination Assessment and Remediation of the Environment.

NOHSC. (2005). *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Ed.* Canberra, April 2005, NOHSC:3003: National Occupational Health and Safety Commission, Commonwealth of Australia.

NSW EPA. (2020). *Guidelines for Consultants Reporting on Contaminated Land.* Contaminated Land Guidelines: NSW Environment Protection Authority.

SafeWork NSW. (2019a). *Code of Practice, How to Manage and Control Asbestos in the Workplace*. August 2019.

SafeWork NSW. (2019b). *Code of Practice, How to Safely Remove Asbestos.* August 2019: SafeWork NSW, NSW Government.

WorkCover NSW. (2014). *Managing Asbestos in or on Soil.* March 2014: WorkCover NSW, NSW Government.

Appendix H

Contingency Plan and Unexpected Finds Protocol

1. General

Where the site conditions are found to be different than that anticipated during the remediation works, the proposed remediation approach may not be appropriate for the contamination encountered. In such cases the Environmental Consultant is to re-assess the contamination and remediation approach and inform the Site Auditor. Where necessary the Environmental Consultant will prepare an addendum to, or revision of, this RAP. Any addendum or revision is to be reviewed and agreed by the Site Auditor before its implementation.

2. Contingency plan

This contingency plan has been developed to provide guidance on processes to follow if contamination (or indicators of contamination), other than that included in the remediation strategy, (Section 11) is encountered during the remediation works. Any such finds shall be surveyed and the location documented.

Considering the site has been subject to only a preliminary previous investigation, there remains a potential for soil contamination to be present between sampled locations. In the event that signs of soil contamination, other than that included in the remediation strategy, are encountered during remediation e.g. evidence of asbestos containing material (ACM), petroleum, or other chemical odours which weren't previously identified the following protocols will apply:

- The Site Manager is to be notified and the affected area closed off by the use of barrier tape and warning signs;
- The Environmental Consultant is to be notified to inspect the area and assess the significance of the potential contamination and determine extent of remediation works (if deemed necessary) to be undertaken. An assessment report and management plan detailing this information will be compiled by the Environmental Consultant and provided to the Principal's Representative;
- The assessment results together with a suitable management plan shall be provided by the Principal's Representative to the Consent Authority (if required by the development consent) and Site Auditor;
- The agreed management / remedial strategy, based on the RAP and relevant guidelines (e.g. WA DoH (2021), for asbestos issues), shall be implemented; and
- All details of the assessment and remedial works are to be included in the site validation report.

3. Unexpected finds protocol

This unexpected finds protocol (UFP) has been developed to provide guidance on processes to follow if any unexpected find is encountered during the remediation or future civil and construction works. Any unexpected finds should be surveyed and the location documented.

All site personnel are to be inducted into their responsibilities under this (UFP), which should be included or referenced in the Remediation Contractors Environmental Management Plan.

All site personnel are required to report unexpected signs of environmental concern to the Site Manager if observed during the course of their works e.g. presence of potential unexploded ordinance, unnatural staining, potential contamination sources (such as buried drums or tanks) or chemical spills.

Should signs of concern be observed, the Site Manager, as soon as practical, will:

- Stop work in the affected area and ensure the area is barricaded to prevent unauthorised access;
- Notify authorities needed to obtain emergency response for any health or environmental concerns (e.g. fire brigade);
- Notify the Principal's Representative of the occurrence;
- Notify any of the authorities that the Remediation Contractor is legally / contractually required to notify (e.g. EPA, Council); and
- Notify the Environmental Consultant.

The Principal's Representative is to notify any of the authorities which the Principal is legally / contractually required to notify (e.g. EPA, Council). Where appropriate the Principals Representative will also implement appropriate community consultation in accordance with the Communications Plan.

The Environmental Consultant will assess the extent and significance of the find and develop an investigation, remediation or management approach using (where possible) the principles and procedures already outlined in the RAP. Where a Site Auditor is involved, the proposed approach will be discussed and agreed with the Site Auditor prior to implementation.

4. References

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM].* Australian Government Publishing Services Canberra: National Environment Protection Council.

WA DoH. (2021). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.* WA Department of Health.

Appendix I

Data Quality Objectives

1. Data quality objectives

The objective of the validation plan is to assess the results of validation testing against the remediation acceptance criteria (RAC) stated within Section 12.1, assess the resultant suitability of the site for the intended land use, and to provide information on any environmental impacts which may have resulted from the works.

The validation assessment will be conducted with reference to the seven step data quality objectives process (DQO) as outlined in NEPC (2013), described below.

Table 1: Data quality objectives

Step	Summary
1: State the problem	The site requires remediation and validation of remediation in order to render it suitable for educational land use. The objective of the validation plan is to confirm the successful implementation of this remediation action plan. A conceptual site model (CSM) for the proposed development has been prepared (Section 7).
2: Identify the decisions / goal of the study	The CSM identifies the contaminants of potential concern (CoPC) and the likely impacted media. The key CoPC impacting the site are: • Asbestos; and • BaP, BaP TEQ and PAH. The validation sampling results will be compared against the RAC. The preferred remediation strategy as outlined in the RAP is the excavation and disposal of contaminated soils. The success of the remediation and subsequent validation will be based on a comparison of the analytical results for all CoPC to the adopted RAC and, if necessary, compared to the 95% upper confidence limit (UCL) of the arithmetic mean (95% UCL) concentrations.
3: Identify the information inputs	Relevant inputs to the decision include: • The CSM, identifying the CoPC and affected media; • Analysis for the relevant CoPC using NATA accredited laboratories and methods, where possible; • Field and laboratory QA/QC data to assess the suitability of the environmental data for the validation assessment; • Results compared with the RAC; and • Assessments of aggregates, soil, etc imported as part of the permanent remediation works.
4: Define the study boundaries	The lateral boundaries of the site are shown on Drawing 1, Appendix A. The vertical boundaries are to the extent of contamination impact as determined from the site history assessment, site observations and previous investigations used to inform the RAP.

Step	Summary
5: Develop the analytical approach (or decision rule)	The decision rule is to compare all analytical results with the RAC. Initial comparisons will be with individual results then, where appropriate, summary statistics (including mean, standard deviation and 95% UCL), to further assess potential risks posed by the site contamination (for BaP and PAH). Quality control results are to be assessed according to their relative percent difference (RPD) values. For field and laboratory duplicate results, RPDs should generally be below 30%; for field blanks, results should be at or less than the limits of reporting (NEPC, 2013). The field and laboratory quality assurance assessment is included in Section 16.
6: Specify the performance or acceptance criteria	Baseline condition: Contaminants at the site and/or statistical analysis of data exceed the RAC and pose a potentially unacceptable risk to receptors (null hypothesis). Alternative condition: Contaminants at the site and statistical analysis of data complies with the RAC and therefore, do not pose a potentially unacceptable risk to receptors (alternative hypothesis). Unless conclusive information from the collected data is sufficient to reject the null hypothesis, it will be assumed that the baseline condition is true.
7: Optimise the design for obtaining data	Sampling design and procedures to be implemented to optimise data collection for achieving the DQO include the following: • Visual inspections in accordance with Section 13.3; • Sampling frequencies in accordance with Section 13.4; • Analysis for the CoPC at NATA accredited laboratories using NATA endorsed methods where possible; and • Adequately experienced environmental scientists / engineers conducting field work and sample analysis interpretation.

2. References

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM].* Australian Government Publishing Services Canberra: National Environment Protection Council.